NOAA Atlas 14

Precipitation-Frequency Atlas of the United States

Volume 9 Version 2.0: Southeastern States (Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi)

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffrey Bonnin

U.S. Department of Commerce

National Oceanic and Atmospheric Administration

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Table of Contents

1. Abstract

NOAA Atlas 14 contains precipitation frequency estimates for the United States and U.S. affiliated territories with associated 90% confidence intervals and supplementary information on temporal distribution of heavy precipitation, analysis of seasonality and trends in annual maximum series data, etc. It includes pertinent information on development methodologies and intermediate results. The results are published through the Precipitation Frequency Data Server (http://hdsc.nws.noaa.gov/hdsc/pfds).

The Atlas is divided into volumes based on geographic sections of the country. The Atlas is intended as the U.S. Government source of precipitation frequency estimates and associated information for the United States and U.S. affiliated territories.

2. Preface to Volume 9

NOAA Atlas 14 Volume 9 contains precipitation frequency estimates for selected durations and frequencies with 90% confidence intervals and supplementary information on temporal distribution of heavy precipitation, analysis of seasonality and trends in annual maximum series data, etc., for the six southeastern states of Alabama, Arkansas, Florida, Georgia, Louisiana, and Mississippi. The results are published through the Precipitation Frequency Data Server (http://hdsc.nws.noaa.gov/hdsc/pfds).

NOAA Atlas 14 Volume 9 was developed by the Hydrometeorological Design Studies Center within the Office of Hydrologic Development of the National Oceanic and Atmospheric Administration's National Weather Service. Any use of trade names in this publication is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Citation and version history. This documentation and associated artifacts such as maps, grids, and point-and-click results from the PFDS are part of a whole with a single version number and can be referenced as:

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffrey Bonnin (2013). NOAA Atlas 14 Volume 9 Version 2, *Precipitation-Frequency Atlas of the United States, Southeastern States*. NOAA, National Weather Service, Silver Spring, MD.

The version number has the format P.S where P is a primary version number representing a number of successive releases of primary information. Primary information is essentially the data. S is a secondary version number representing successive releases of secondary information. Secondary information includes documentation and metadata. S reverts to zero (or nothing; i.e., Version 2 and Version 2.0 are equivalent) when P is incremented. When documentation is completed and added without changing any prior information, the version number is not incremented.

The primary version number is stamped on the artifact or is included as part of the filename where the format does not allow for a version stamp (for example, files with gridded precipitation frequency estimates). All location-specific output from the PFDS is stamped with the version number and date of download.

Table 2.1 lists the version history associated with the NOAA Atlas 14 Volume 9 precipitation frequency project and indicates the nature of changes made.

Table 2.1. Version history of NOAA Atlas 14, Volume 9.

Version no.	**Date**	**Notes**
Version 1.0	October 2012	Draft data used in peer review
Version 2.0	April 2013	Final data released

3. Introduction

3.1. Objective

NOAA Atlas 14 Volume 9 provides precipitation frequency estimates for durations of 5-minutes through 60-days at average recurrence intervals of 1-year through 1,000-year for six southeastern states: Alabama, Arkansas, Florida, Georgia, Louisiana, and Mississippi. The estimates and associated bounds of 90% confidence intervals are provided at 30-arc seconds resolution. The Atlas also includes information on temporal distributions for heavy precipitation amounts for selected durations and seasonal information for annual maxima data used in the frequency analysis. In addition, the potential effects of climate change as trends in historic annual maximum series were examined.

The information in NOAA Atlas 14 Volume 9 supersedes precipitation frequency estimates for of Alabama, Arkansas, Georgia, Florida, Louisiana, and Mississippi contained in the following publications:

a. Weather Bureau's Technical Paper No. 40, *Rainfall Frequency Atlas of the United States for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years* (Hershfield, 1961);
b. Weather Bureau's Technical Paper No. 49, *Two- to Ten-Day Precipitation for Return Periods of 2 to 100 Years in the Contiguous United States* (Miller, 1964);
c. NOAA Technical Memorandum NWS HYDRO-35, *Five- to 60-Minute Precipitation Frequency for the Eastern and Central United States* (Frederick et al., 1977).

3.2. Approach and deliverables

Precipitation frequency estimates have been computed for a range of frequencies and durations using a regional frequency analysis approach based on L-moment statistics calculated from annual maximum series. This section provides an overview of the approach; greater detail is provided in Section 4.

The annual maximum series were extracted from precipitation measurements recorded at variable or constant time increments from 1-minute to 1-day obtained from various sources. The table in Appendix A.1 gives detailed information on all stations whose data were used in the frequency analysis. The annual maximum series data were screened for data quality. The 1-day and 1-hour annual maximum series data were also analyzed for potential trends (Appendix A.2).

A region of influence approach was used for the regional L-moments computation at each station across all selected durations between 15-minute and 60-day. A variety of probability distribution functions were examined for each region and duration and the most suitable distribution was selected. Distribution parameters, and consequently precipitation frequency estimates, were determined based on the mean of the annual maximum series at the station and the regionally determined higher order L-moments. Precipitation frequency estimates were smoothed across durations to ensure consistency. Partial duration series-based precipitation frequency estimates were calculated indirectly using Langbein's formula.

For areas where the snowfall contributes to the precipitation AMS, empirical equations were developed to estimate frequency estimates for rainfall (i.e., liquid precipitation only) from corresponding precipitation frequency estimates for selected durations up to 24-hours. In the NOAA Atlas Volume 9 project area, due to geo-climatic conditions, the contribution of snowfall to AMS is trivial, so no separate rainfall frequency analysis was needed.

A Monte-Carlo simulation approach was used to produce upper and lower bounds of the 90% confidence intervals for the precipitation frequency estimates. 5-minute and 10-minute precipitation frequency estimates and confidence intervals were computed by applying scaling factors to corresponding 15-minute estimates.

Grids of precipitation frequency estimates and 90% confidence intervals were determined based on grids of mean annual maxima and at-station precipitation frequency estimates. The mean annual maxima grid for each duration was derived from at-station mean annual maxima using PRISM interpolation methodology (Appendix A.3). The grids of precipitation frequency estimates and confidence limits for all frequencies were then derived in an iterative process using the inherently strong linear relationship that exists between mean annual maxima and precipitation frequency estimates at the 2-year recurrence interval and between precipitation frequency estimates at consecutive frequencies for a given duration (Section 4.8.2). The resulting grids were examined and adjusted in cases where inconsistencies occurred between durations and frequencies. Both spatially interpolated and point estimates for selected durations and frequencies were subject to external peer review (Appendix A.4).

Climate regions were delineated based on characteristics of annual maxima data. The regions were used in the extraction of annual maximum series, calculations of temporal distributions of heavy precipitation, and in a seasonality analysis of annual maxima. Temporal distributions, expressed in probability terms as cumulative percentages of precipitation totals, were computed for precipitation magnitudes exceeding precipitation frequency estimates for the 2-year recurrence interval for selected durations (Appendix A.5). The seasonality analysis was done by tabulating the number of annual maxima exceeding precipitation frequency estimates for several selected threshold frequencies (Appendix A.6).

NOAA Atlas 14 Volume 9 precipitation frequency estimates for any location in the project area are available in a variety of formats through the Precipitation Frequency Data Server (PFDS) at http://hdsc.nws.noaa.gov/hdsc/pfds (via a point-and-click interface); more details are provided in Section 5. Additional results and information available there include:

- ASCII grids of partial duration series-based and annual maximum series-based precipitation frequency estimates and related confidence limits for a range of durations and frequencies with associated Federal Geographic Data Committee-compliant metadata;
- cartographic maps of partial duration series-based precipitation frequency estimates for selected frequencies and durations;
- final, quality controlled annual maximum series for all observing locations used in the analysis;
- temporal distributions;
- seasonality analysis of annual maxima.

Cartographic maps were created to serve as visual aids and are not recommended for estimating precipitation frequency estimates. Users are advised to take advantage of the PFDS interface or the downloadable underlying ASCII grids for obtaining precipitation frequency estimates.

Precipitation frequency estimates from this Atlas are estimates for a point location and are not directly applicable for an area. Precipitation frequency estimates for each volume of NOAA Atlas 14 were computed independently using all available data at the time. Some discrepancies between volumes at project boundaries are inevitable and they will generally be more pronounced for rarer frequencies.

4. Frequency analysis

4.1. Project area

The project area, shown in Figure 4.1.1, encompasses Alabama, Arkansas, Florida, Georgia, Louisiana, and Mississippi and covers 331,500 square miles (858,581 square kilometers). The terrain ranges from low inland mountains to swamps and everglades at the coast. Most of the project area is within the low-lying Gulf Coastal Plain that has very flat to rolling terrain. The primary exceptions are in the northern parts of the project area - the Ozark Plateau and Ouachita Mountains in Arkansas, the Cumberland Plateau and foothills in Alabama, and the Appalachian Mountains in Alabama and Georgia.

The Ozark Plateau and Ouachita Mountains in the northwest half of Arkansas are part of the Interior Highlands and reach summits over 2,500 feet (762 meters) with valleys as low as 500 feet (152 meters). Arkansas' highest point, Mount Magazine at 2,753 feet (839 meters) is in the Ouachita Mountains.

The Cumberland Plateau flanks the western side of the southern Appalachian Mountains and reaches into the northern part of Alabama. These highlands are comprised of parallel ridges and valleys. Relief differences here are about 400 feet (123 meters). The foothills of the Cumberland Plateau extend into Mississippi and include that state's highest point which is only 806 feet (246 meters), Woodall Mountain.

The Appalachian Mountains, specifically the Blue Ridge Mountains, reach into northern Georgia and parts of northeast Alabama. They include Cheaha Mountain which is Alabama's highest point at 2,407 feet (734 meters). The peaks in Georgia attain elevations of more than 3,500 feet (1,067 meters) with the highest, Brasstown Bald at 4,784 feet (1,458 meters).

South of these features, the relatively flat Gulf Coastal Plain stretches across southern Arkansas, Louisiana, Mississippi, Alabama, Georgia, and Florida. In Georgia and Florida, it merges with the Atlantic Coastal Plain. Overall elevation is very low and decreases gradually from the north to sea level at the Gulf Coast and Atlantic Ocean. Louisiana is one of the lowest areas in the United States; its highest point is Driskill Mountain which is upland in the Gulf Coastal Plain at only 535 feet (163 meters). As the Plains approach the coast, the terrain becomes dominated by swamps, marshlands and beaches.

Other features in the project area include the Mississippi Alluvial Plains that surround the Mississippi River. The Mississippi River forms the eastern border of Arkansas and Louisiana and western border of Mississippi before it cuts through southeastern Louisiana to the Gulf. Only Arkansas has mentionable terrain in these plains – Crowley's Ridge rises to about 500 feet (150 meters). Southern Louisiana and the Mississippi Delta south of New Orleans is primarily marshland.

Lastly, most of the state of Florida is at or near sea level and forms a peninsula between the Gulf of Mexico and the Atlantic Ocean. It has approximately 1,350 miles (2,170 km) of coastline. Central and northern Florida have hills that reach elevations up to about 250 feet (76 meters). The state's highest point, 345 feet (105 m), is not on the peninsula but in northwest Florida at Britton Hill.

Within the project area, the largest, most-populated urban areas include Atlanta (GA), Birmingham (AL), Jackson (MS), Jacksonville (FL), Little Rock (AR), Miami (FL), and New Orleans (LA). Other large cities in the project area include Fayetteville (AR), Huntsville (AL), Shreveport (LA), and the metropolitan area around Tampa Bay (FL).

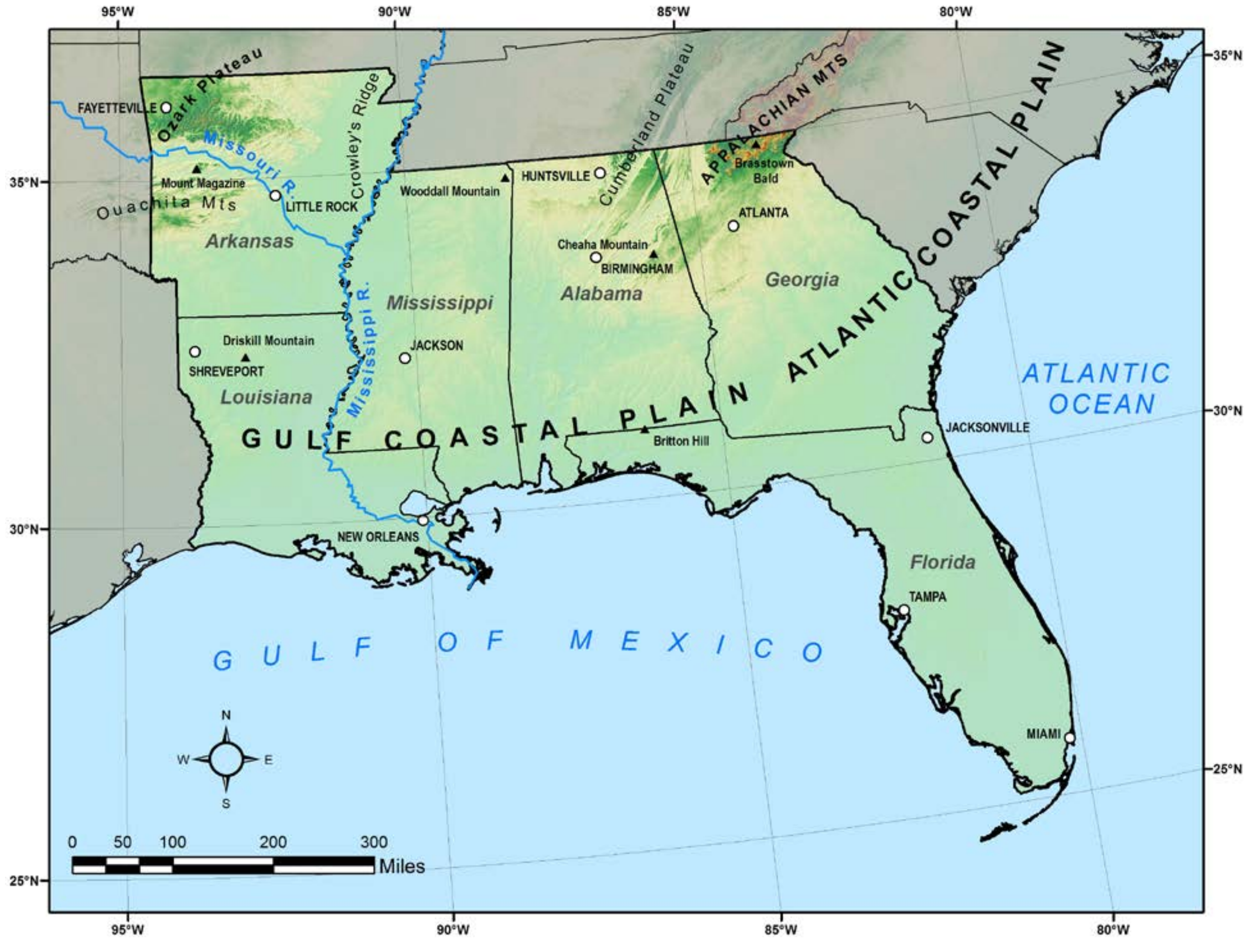


Figure 4.1.1. Project area for NOAA Atlas 14 Volume 9. (The shaded relief was obtained from USGS EROS Data Center.)

Climatology of heavy precipitation. The climatology of heavy precipitation in the project area is strongly influenced by the warm, humid, subtropical air that is generated by the Gulf of Mexico and the Atlantic Ocean. Variations in mean annual precipitation and mean annual maxima depend mainly on the distance from the warm waters of the Gulf of Mexico. Higher magnitudes of heavy precipitation occur in the south along the coast and tend to decrease from south to north in the project area. The Ozark Plateau, the Ouachita Mountains and the southern end of the Appalachian Mountains are the main areas with large changes in elevation that result in stronger orographic variations in heavy precipitation.

Under certain large-scale pressure patterns, strong low-level southerly flow can transport warm moist subtropical air from the Gulf of Mexico over the southern states. This moist warm air meets with cold dry air from the west. The combination creates an environment of high instability and wind shear. Severe convective storms are triggered and intensified by the combination of this unstable atmosphere and dynamic forcing through the passing of an upper-level trough, convergence boundary, dry line, or cold front. These fronts tend to have a north-south alignment but can shift more east-west and become stationary producing heavy rain over one area for several days. Thunderstorms that develop in this region can become more organized, forming squall lines that may mature into larger mesoscale convective complexes (MCCs). MCCs can persist through the night producing heavy stratiform rainfall. Heavy rainfall can also result from training thunderstorms, where consecutive storms follow the path of the preceding storm within a given system, which can lead to rainfall over one area for several hours.

In most of the southeastern states, these mechanisms can occur any time of year and can generate heavy precipitation (or annual maxima) for daily or longer durations. The exceptions are southeastern Georgia and the Florida peninsula where in the winter there is less influence due to the positioning of the subtropical jet stream that drives the major circulation patterns and keeps the systems from impacting the area during those months; for this area, daily maxima tend to occur in the spring through fall. For hourly durations, heavy precipitation is mostly likely to occur during the spring through fall throughout the project area with a maximum in the summer. Major systems and other dynamic forces are more prevalent in the spring through fall, although they can occur any time of year. During the summer months when there is weaker dynamic forcing, solar insolation and increased humidity tend to be the dominant factors for convective development of brief heavy storms. Solar insolation can also lead to the development of a sea-breeze front in Florida which often triggers strong afternoon thunderstorms.

During the summer and fall, other mechanisms to deliver heavy precipitation to the southeast are tropical cyclones (TCs), such as tropical depressions, tropical storms, and hurricanes. All the states in the project area are threatened with the potential of a landfalling TC. These tropical systems account for a majority of the extreme rainfall events along the coast. The amount of rain produced by these systems depends on their speed and size. As TCs move onshore they tend to slow down dispensing torrential amounts of rainfall over a few days.

Based on the climatology of heavy precipitation and precipitation mechanisms influencing the project area, two climate regions (shown in Figure 4.1.2) were delineated and used to assign a rainy season during the AMS extraction (Section 4.3), analysis of trends in AMS (Appendix A.2), analysis of temporal distributions of heavy precipitation (Appendix A.5), and in portraying the seasonality of annual maxima data (Appendix A.6). The Mississippi Valley region (region 1) also includes stations from the Mississippi Valley region (region 4) from NOAA Atlas 14 Volume 8.

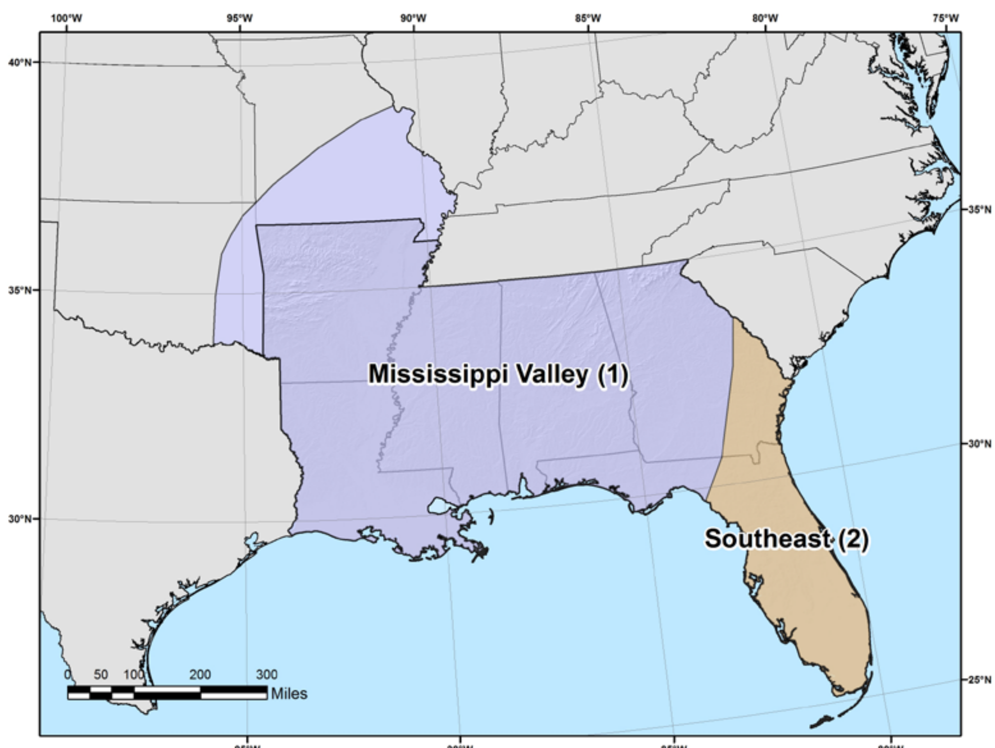


Figure 4.1.2. Two climate regions delineated for NOAA Atlas 14 Volume 9.

4.2. Precipitation data collection and formatting

Precipitation measurements were obtained for 7,861 stations from a number of federal, state, and local agencies. The majority of the stations were from the NWS Cooperative Observer Program's database maintained by the NOAA's National Climatic Data Center (NCDC). In order to have a uniform system of numbering, each station was assigned a unique six-digit identification number (station ID) where the first two digits were common for all stations from the same data provider. Except for NCDC stations, assigned identification numbers do not match identification numbers assigned by agencies that provided the data. A list of all agencies that provided the data for this project together with agencies' abbreviated names used in this document and the first two digits of stations' identification numbers are shown in Table 4.2.1.

All data were formatted to a common format at one of three base durations that corresponded to the original reporting period: 15-minute, 1-hour, or 1-day. Data recorded at variable time steps, were formatted at 15-minute increments. Where available, records extended through October 2011 with some stations updated through August 2012. Table 4.2.2 lists the total number of stations that were obtained and formatted for each reporting interval.

In addition, monthly maxima for various n-minute durations (5-minute through 60-minute) were obtained for 93 NCDC stations to which any available data from the NWS and Federal Aviation Administration's Automated Surface Observing System (ASOS) network were added; they were used to develop scaling factors used for generation of precipitation frequency estimates grids at 5-minute and 10-minute durations (Section 4.8.2).

Table 4.2.1. Agencies that provided data for the project with their abbreviations, dataset names, data reporting interval, and assigned common first two digits of station identification numbers.

Data provider	Abbreviation	Dataset name	Reporting interval	Common digits
University of Florida, Institute of Food and Agricultural Sciences	FAWN	Florida Automated Weather Network	15-min, 1-day	96
Midwestern Regional Climate Center	FORTS	19th Century Forts and Voluntary Observers Database	1-day	62, 63
Georgia Forestry Commission (GFC)	GA FORESTRY	Fire Weather System	1-hour	97
Illinois State Water Survey	NADP	National Atmospheric Deposition Program (NADP) dataset	1-day	54
National Climatic Data Center	NCDC	DSI-3200	1-day	01-41*
	NCDC	DSI-3240	1-hour	
	NCDC	DSI-3260	15-min	
National Interagency Fire Center, Western Region Climate Center	RAWS	Remote Automatic Weather Stations	1-hour	60
Natural Resources Conservation Service (NRCS)	NRCS SCAN	Soil Climate Analysis Network (SCAN)	1-day	56

Data provider	Abbreviation	Dataset name	Reporting interval	Common digits
Northwest Florida Water Management District	NWFWMD FL	N/A	15-min	91
Oklahoma Climatological Survey	OK MESONET	Oklahoma Mesonet	1-day	86
South Florida Water Management District	SFWMD FL	DBHYDRO database	15-min, 1-day	90
St. Johns River Water Management District	SJRWMD FL	N/A	1-day	92
Southwest Florida Water Management District	SWFWMD FL	N/A	1-hour	98
NASA, TRMM Satellite Validation Office	TRMM FL	MELB (KSC, SFL, STJ) gauge network	15-min	95
United States Geological Survey	USGS	National Water Information System data	15-min, 1-day	53

*NCDC IDs by state: 01 (Alabama), 03 (Arkansas), 08 (Florida), 09 (Georgia), 14 (Kansas), 15 (Kentucky), 16 (Louisiana), 22 (Mississippi), 23 (Missouri), 31 (North Carolina), 34 (Oklahoma), 38 (South Carolina), 40 (Tennessee), 41 (Texas)

Table 4.2.2. The number of stations that were obtained per reporting interval.

Data reporting interval	Number of stations
1-day	4,743
1-hour	1,573
15-minute or variable	1,545

4.3. Annual maximum series extraction

The precipitation frequency analysis approach used in this project is based on analysis of annual maximum series (AMS) across a range of durations. AMS for each station were obtained by extracting the highest precipitation amount for a particular duration in each successive calendar year. Calendar year was used in this project area, rather than a standard water year (October - September), based on the distribution of heavy precipitation events so that a year begins and ends during a relatively dry season. AMS at stations were extracted for all durations equal to and longer than the base duration (or reporting interval) up to 60 days. AMS for the 1-day through 60-day durations were compiled from daily, hourly, and 15-minute records. To accomplish this, 15-minute and hourly data were first aggregated to constrained 1-day (hours 0 to 24) values before extracting 1-day and longer duration annual maxima. Hourly and 15-minute data were used to compile AMS for 1-hour through 12-hour durations, where, 15-minute data were aggregated first to constrained 1-hour (0 to 60 minutes) values before extracting AMS. 15-minute data were also used to compile AMS for 15-minute and 30-minute durations.

The procedure for developing an AMS from a precipitation dataset used specific criteria designed to extract only reasonable maxima if a year was incomplete or had accumulated data. Accumulated data occurred in some records where observations were not taken regularly, so recorded numbers represent accumulated amounts over extended periods of time. Since the precipitation distribution over the period is unknown, the total amount was distributed uniformly across the whole period. All annual maxima that resulted from accumulated data were flagged and went through screening to ensure that the incomplete data did not result in erroneously low maxima (Section 4.5.1).

The criteria for AMS extraction were designed to exclude maxima if there were too many missing or accumulated data during the year and more specifically during critical months when precipitation maxima were most likely to occur ("wet season"). Wet seasons were resolved by assessing the periods in which two-thirds of annual maxima occurred at each station and by inspecting histograms of annual maxima for the 1-day and 1-hour durations in a region. The final wet season months were determined using the climate regions as depicted in Figure 4.1.2. The assigned wet season months are shown in Table 4.3.1.

Table 4.3.1. Wet season months for each region for daily and sub-daily durations.

Region	**Wet season months**	
	Daily durations	**Sub-daily durations**
Mississippi Valley (1)	January – December	April – October
Southeast (2)	March – October	May – October

The flowchart in Figure 4.3.1 depicts the AMS extraction criteria for all durations. Various thresholds for acceptable amounts of missing or accumulated data were applied to the year and wet season. The extracted maximum value of a given duration for a given year had to pass through all of the criteria in the flowchart to be accepted. Various codes were assigned to both accepted and rejected maxima based on the amount of missing and accumulated data in each year (see Figure 4.3.1) to assist in further quality control of AMS as described in Section 4.5.1.

For example, in a year with less than 20% of the measurements missing in the whole year and during the assigned wet season, if more than 66% of the measurements were accumulated, then the maxima for that year was (conditionally) rejected, and assigned code 130. If the year had between 33% and 66% accumulated data, then it was further screened by assessing the lengths of the accumulation periods. If the lengths of the accumulation periods for more than 33% of the accumulated data were equal to or longer than threshold accumulation period lengths (D_{thresh}), then the maximum for that year was (conditionally) rejected (code 140). Threshold accumulation period lengths were defined as matching the selected duration for durations less than 2 days, as equal to half of duration period for durations between 2 days and 20 days, and as equal to 15 days for durations equal to or longer than 30 days. If the year had less than 33% accumulated data, the extracted maximum was passed to another set of criteria for accumulations during its wet season, etc.

If a rejected annual maximum was higher than 95% of the accepted maxima at that station, then it was kept in the series (code 30). Also, if a rejected 1-day annual maximum was higher than any accumulated amount in a year, then it was kept in the series and assigned code 40. Years in which a maximum was rejected were marked as missing in the series.

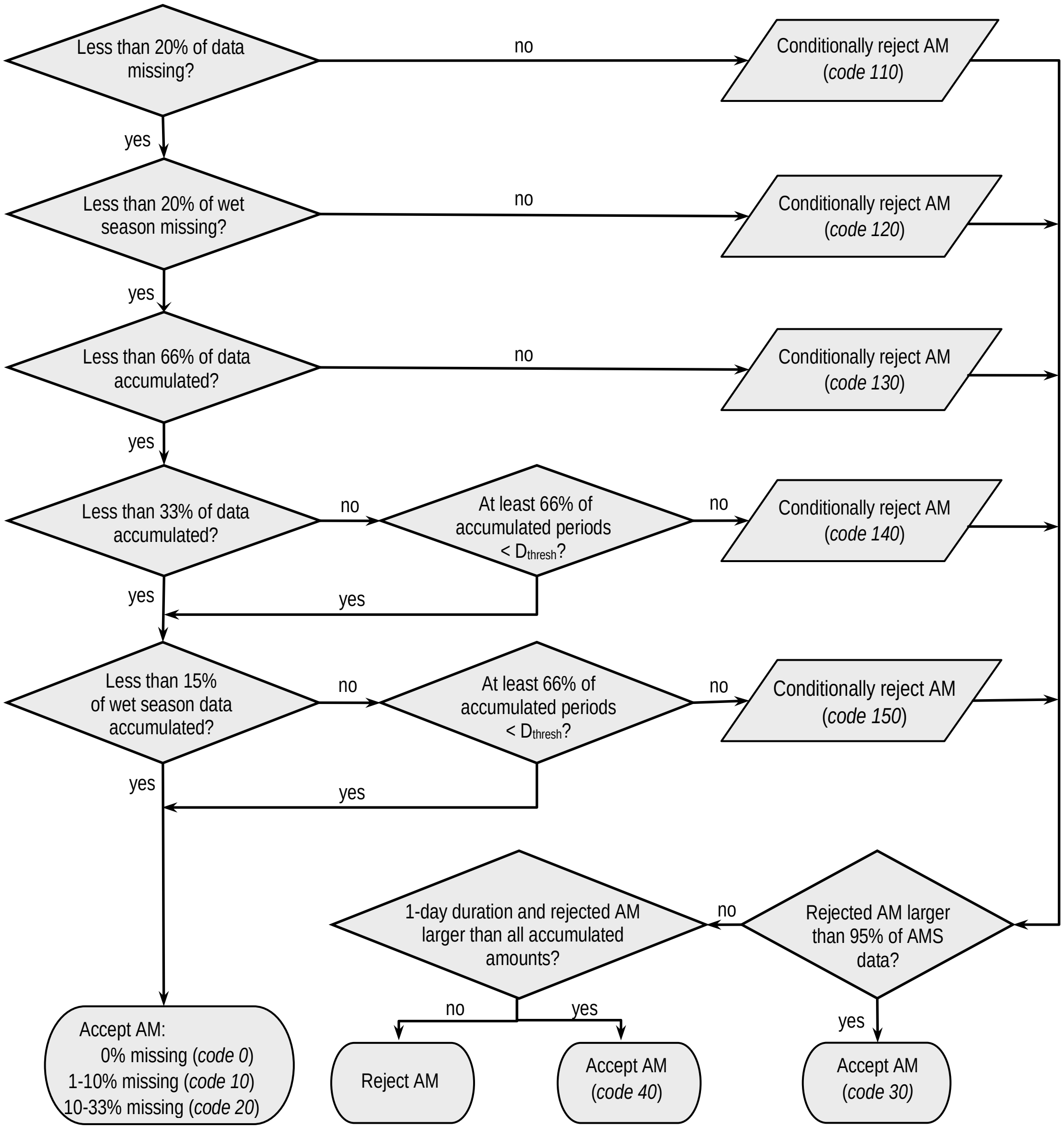


Figure 4.3.1. Criteria used to extract annual maxima. Data quality codes were assigned based on acceptance and rejection; D_{thresh} depends on duration.

4.4. Station screening

Station screening was done in the following order: a) examination of geospatial data, b) screening for duplicate records at co-located daily, hourly, and/or 15-minute stations and extending records using data from co-located stations, c) screening nearby stations for potentially merging records or removing shorter, less reliable records in station dense areas, and d) screening for sufficient number of years with usable data.

Geospatial data. Latitude, longitude, and elevation data for all stations were screened for errors. Several stations had to be re-located because they plotted in a different state or were clearly misplaced based on inspection of satellite images and maps. Misplacement was typically the result of no seconds recorded in latitude and longitude data. There were also several stations with no elevation data; for those stations, elevation was estimated from high-resolution digital elevation model (DEM) grids. Several corrections to metadata were also made based on input received during the peer review (see Appendix A.4)

Co-located stations. Co-located stations were defined as stations that have the same geospatial data, but report precipitation amounts at different time intervals. The screening of co-located stations was done as follows:

- If co-located 15-minute and hourly stations provided data for the same period and there were no differences in AMS for constrained 1-hour maxima (15-minute data aggregated on the clock hour), only the 15-minute station was retained and used to extract AMS for all longer durations.
- If a 15-minute or hourly station provided data for the same period as a co-located daily station and there were no differences in AMS for constrained 1-day maxima (15-minute or 1-hour data aggregated from 0 to 24 hours), only the 15-minute or hourly station was retained and used to extract AMS for all longer durations.
- If periods of record at co-located stations were consistent but did not completely overlap, aggregated data from the station with the shorter reporting interval were used to extend the record of the station with the longer reporting interval.
- If the station with the longer reporting interval had a longer period of record, then it was retained in the dataset in addition to the co-located station with the shorter reporting interval.

AMS data consistency across durations was ensured in later quality control procedures (Section 4.5.3).

Nearby stations. Nearby stations were defined as stations located within three miles with consideration to elevation differences. However, in areas of flat terrain, stations up to five miles apart or farther may have been considered. The records of nearby stations were considered for merging to increase record lengths. In station-dense areas, such as in Miami in Florida, some stations were removed from the analysis if a nearby station had a longer overlapping record or better quality data.

Record length. Record length was characterized by the number of years for which annual maxima could be extracted (i.e., data years) rather than the entire period of record. Only stations with at least 30 data years were considered for frequency analysis. Allowances were made for isolated stations or stations recording at very short intervals. A minimum of 20 data years was used for hourly stations.

Figure 4.4.1 shows histograms for the number of data years of stations available for frequency analysis across daily, hourly, and sub-hourly durations after all the screenings were done. The average and median record lengths as well as corresponding ranges of record lengths are given in Table 4.4.1.

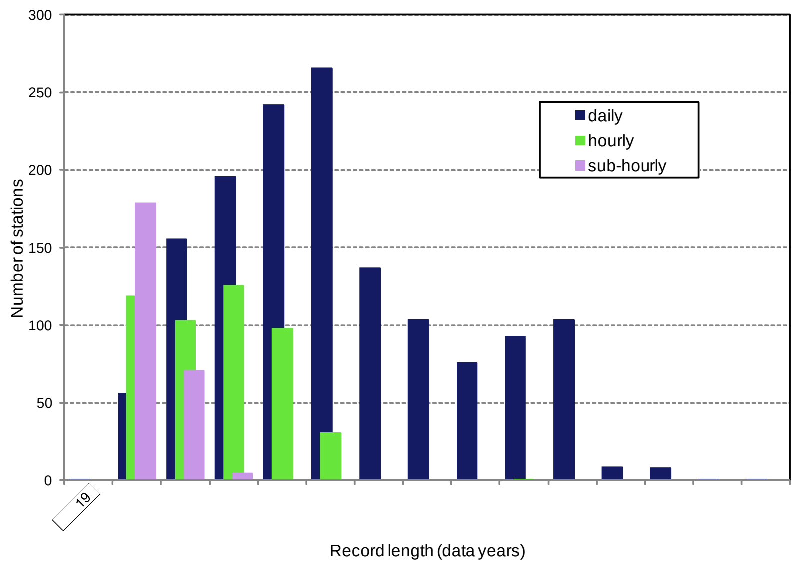


Figure 4.4.1. Number of stations used for precipitation frequency analysis grouped by record length for daily, hourly and sub-hourly durations.

Table 4.4.1. Record length statistics for stations used in frequency analysis for different durations.

Duration (D)	**Number of stations**	**Record length (data years)**		
		average	**median**	**range**
Daily (1-day ≤ D ≤ 60-day)	1,450	66	62	19 – 153
Hourly (1-hr ≤ D < 24-hr)	478	41	41	20 – 108
Sub-hourly (15-min ≤ D < 60-min)	255	27	26	20 – 48

Locations of stations recording precipitation data at 1-day intervals that were used in the frequency analysis are shown in Figure 4.4.2 and locations of stations recording at 1-hour and sub-hourly intervals are shown in Figure 4.4.3. More detailed information on each station whose data were used to calculate precipitation frequency estimates is given in three tables in Appendix A.1. The first table in the appendix lists stations in the core states of Alabama, Arkansas, Florida, Georgia, Louisiana and Mississippi. The second table lists stations in the approximately 1 degree buffer surrounding the core states. Those stations were used in the regionalization task (Section 4.6.2) and to assist with interpolation of at-station estimates (Section 4.8). The third table lists n-minute stations that were not directly used in frequency analysis but assisted in development of precipitation frequency estimates at 5-minute and 10-minute durations (Section 4.8.2). Information provided for each station includes: source, name, identification number and data reporting interval, as well as latitude, longitude, elevation, and period of record. All adjusted geospatial data are shown in bold font in the latitude, longitude, and/or elevation columns. Bold font in the period of record column was used to indicate stations whose records were extended with the data from co-located stations or whose records were lengthened by merging with another station. The metadata from the station listed as the 'Post-merge station ID' was retained in the dataset for the merged record; the metadata for this station will reflect the combined periods of records in bold text. If an hourly and a daily station with different IDs were co-located, then the metadata, including ID, of the daily station shown in the 'Co-located station ID' column of the table should be used to locate the hourly (or 15-minute) station on the PFDS web page.

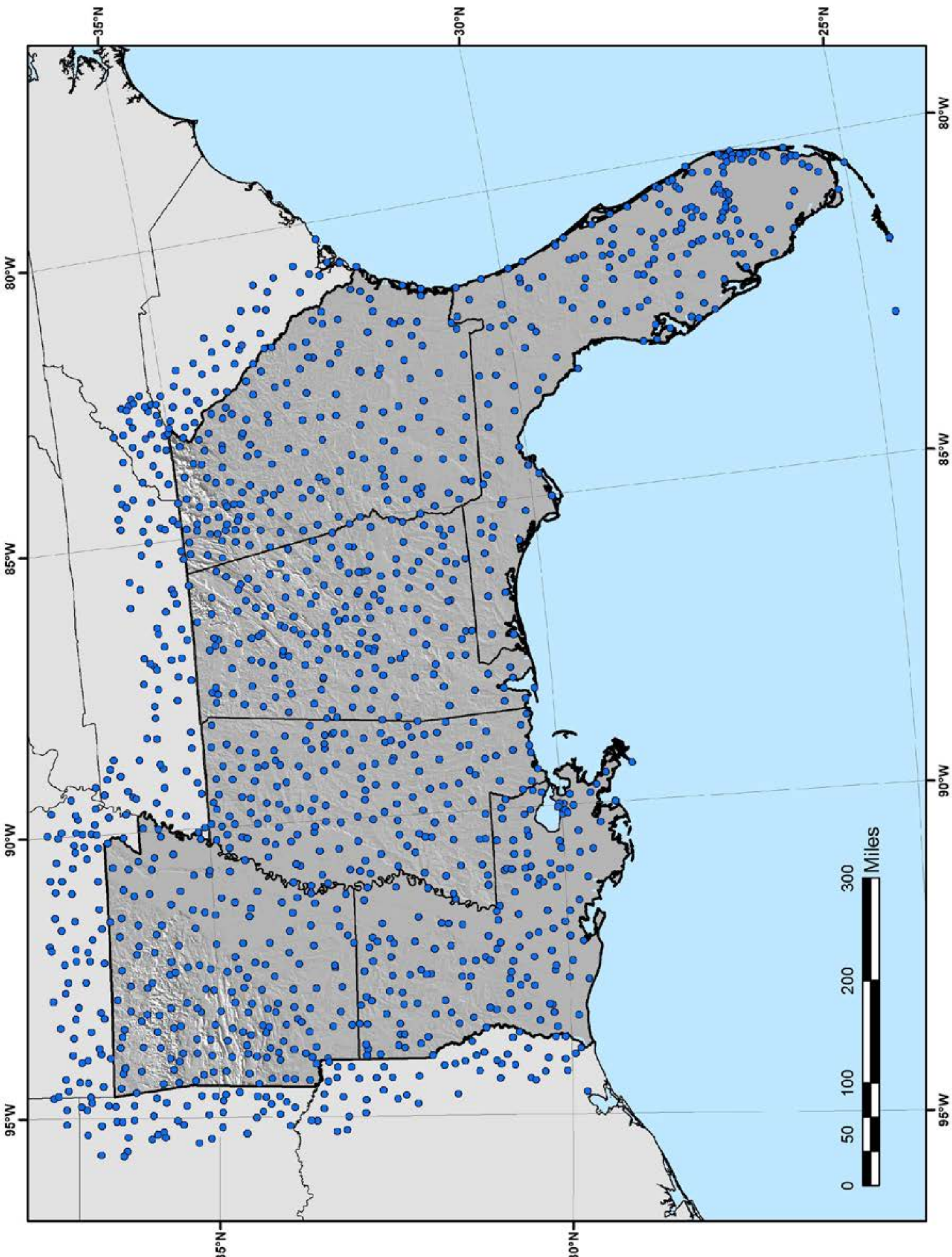


Figure 4.4.2. Map of stations recording at 1-day intervals used in frequency analysis.

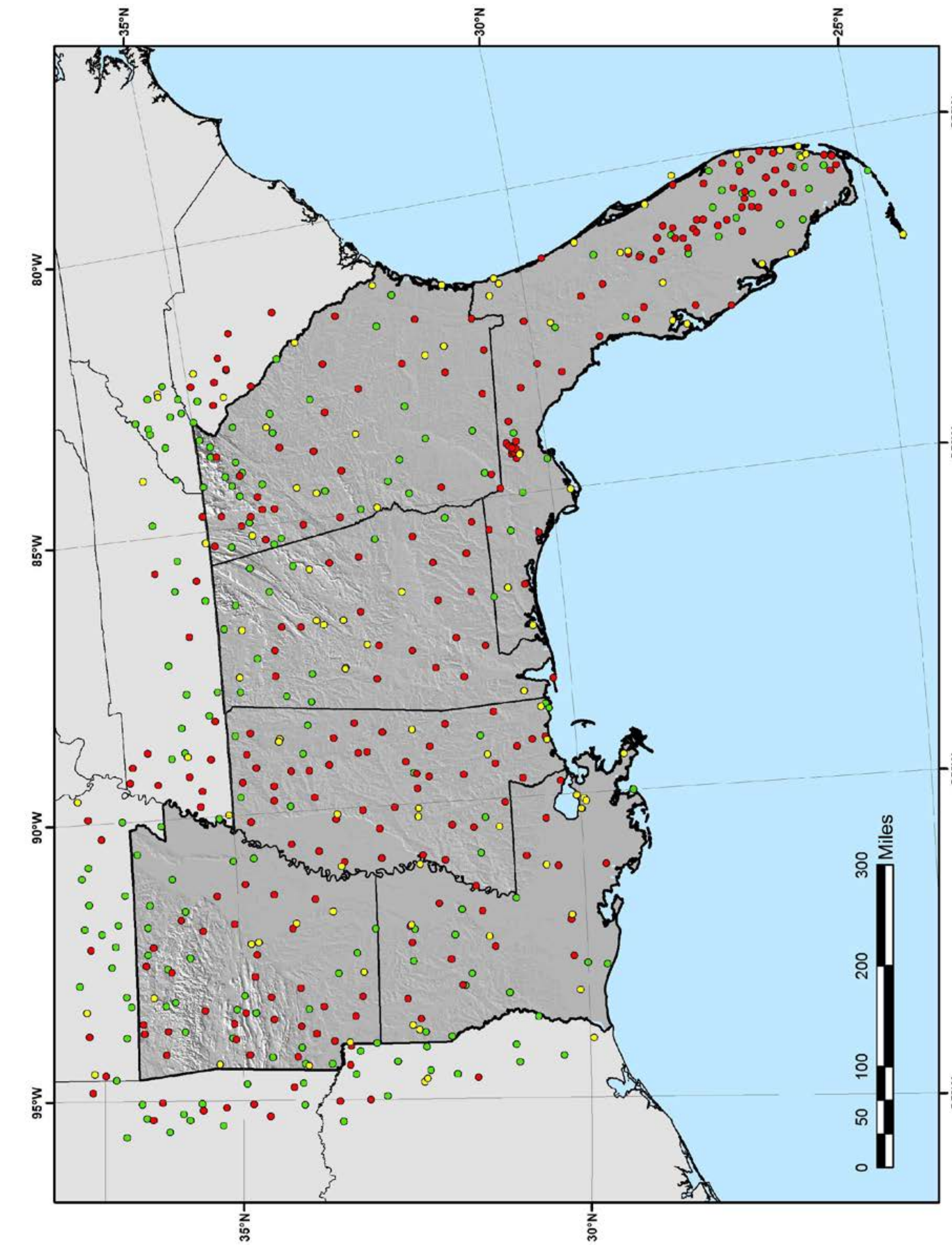


Figure 4.4.3. Map of stations recording at 1-hour (green circles) and 15-minute (or variable intervals and formatted to 15-minute; red circles) used in the analysis. Also, shown n-minute stations (yellow circles) used in the analysis.

4.5. AMS screening and quality control

4.5.1. Outliers

For this project, outliers are defined as annual maxima which depart significantly from the trend of the corresponding remaining maxima. Since data at both high and low extremities can considerably affect precipitation frequency estimates, they have to be carefully investigated and either corrected or removed from the AMS if due to measurement errors. The high and low outliers thresholds from the Grubbs-Beck statistical test (Interagency Advisory Committee on Water Data, 1982) and the median +/- two standard deviations thresholds were used to identify low and high outliers for all durations. Low outliers, which frequently came from years with missing and/or accumulated data, were typically removed from the annual maximum series. All values identified as high outliers were mapped with concurrent measurements at nearby stations. Questionable values that could not be confirmed were investigated further using climatological observation forms, monthly storm data reports and other historical weather event publications. Depending on the outcome of each investigation, values were either kept as is, corrected, or removed from the datasets. An example of outlier examination is shown in Figure 4.5.1: statistical tests indicated that a 24-hour amount of 10 inches recorded on July 9, 1916 at Adairsville (09-0041) in Georgia was an outlier. Further investigation of the original observation form for that date showed that the recorded value was actually accumulated over four consecutive days, and so the value was edited in the dataset.

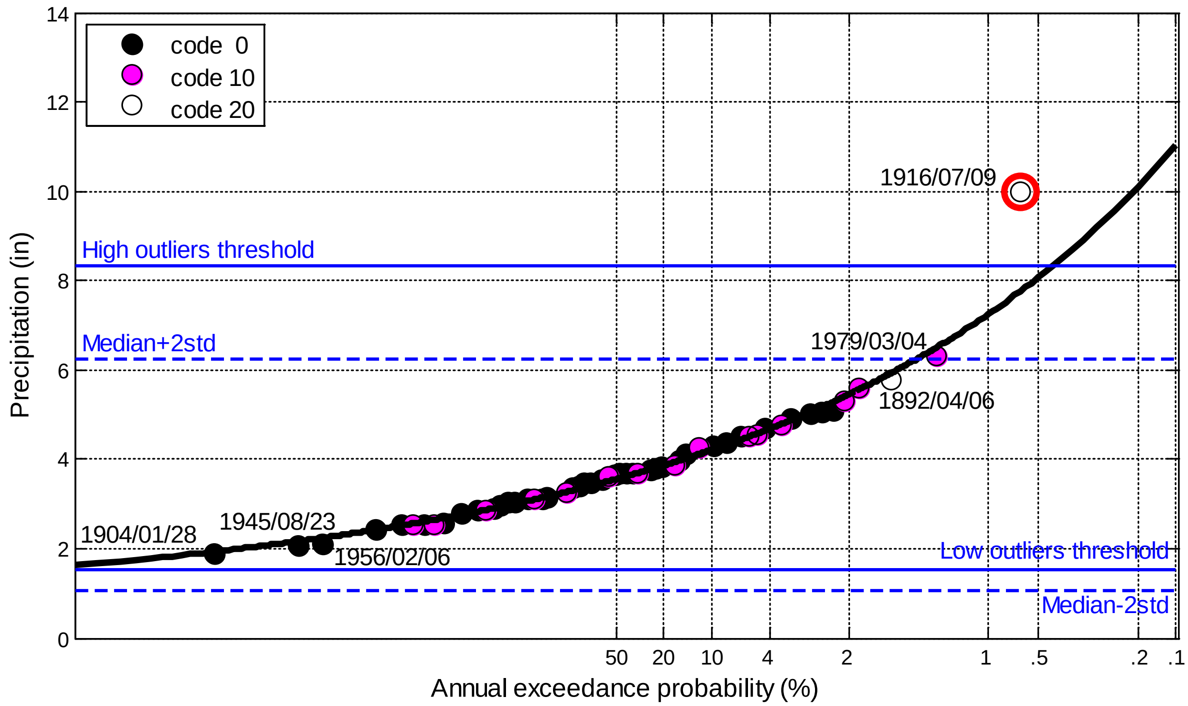


Figure 4.5.1. Outlier tests for 24-hour AMS at station 09-0041. Data quality codes were assigned to annual maxima during the extraction process (Section 4.3).

4.5.2. Correction for constrained observations

Daily durations. The majority of daily AMS data used in this project came from daily stations at which readings were taken once every day at fixed times (constrained observations). Due to the fixed beginning and ending of observation times at daily stations, it is to be expected that extracted (constrained) annual maxima were lower than the true (unconstrained) maxima, especially for shorter daily durations. To account for the likely failure of capturing the true-interval maxima, correction factors were applied to constrained AMS. The correction factor for each daily duration was estimated as the coefficient of a zero-intercept regression model using concurrent (occurring within +/- 1 day) constrained and unconstrained annual maxima from hourly stations as independent and dependent model variables, respectively. Correction factors for all daily durations are given in Table 4.5.1.

Table 4.5.1. Correction factors applied to constrained AMS data across daily durations.

Duration (days)	1	2	3	4	7	>7
Correction factor	1.12	1.04	1.03	1.02	1.01	1.00

Hourly durations. Similar adjustments were needed on hourly AMS data to account for the effects of constrained 'clock hour' on observations. The correction factors for hourly AMS were developed using co-located hourly (constrained) and 15-minute (unconstrained) concurrent (occurring within +/- 1 hour) annual maxima; they are shown in Table 4.5.2.

Table 4.5.2. Correction factors applied to constrained AMS data across hourly durations.

Duration (hours)	1	2	3	6	>6
Correction factor	1.09	1.04	1.02	1.01	1.00

Sub-hourly durations. No correction factors were applied to durations under 1-hour.

4.5.3. Inconsistencies across durations

At co-located stations, it was not unusual that corresponding annual maxima differed for some years during their overlapping periods of record. Related 1-day AMS at co-located daily and hourly stations were compared and each pair of significantly different estimates was investigated. Effort was made to identify the source of the error and to correct erroneous observations across all durations that were affected.

Annual maxima at each station were also compared across all durations in each year to ensure that the extracted amount for a longer duration was at least equal to the corresponding amount for the successive shorter duration. Inconsistencies of this type occurred at stations with a significant number of missing and/or accumulated data and resulted from different AMS extraction rules applied for different durations (Section 4.3), or from the correction for constrained observations (Section 4.5.2). In those cases, shorter duration annual maxima were used to replace annual maxima extracted for longer durations. Typically, adjustments of this type were very small.

4.5.4. Trend analysis

Precipitation frequency analysis methods used in NOAA Atlas 14 volumes are based on the assumption of a stationary climate over the period of observation (and application). Statistical tests for trends in AMS and the main findings for this project area are described in more detail in Appendix A.2. Briefly, the stationarity assumption was tested by applying a parametric *t*-test and non-parametric Mann-Kendal test for trends in means and Levene's test for trends in variance in the 1-day and 1-hour annual maximum series data at the 5% significance level. For the 1-day duration, testing was done on stations with at least 70 years of data; for the 1-hour duration, the minimum number of data years was lowered to 40 to increase sample size. Overall, the Mann-Kendall test detected slightly more positive trends in the means than the *t*-test: for the 1-hour duration, no trends were detected at about 87% and 90% of the stations, respectively; for the 1-day duration, no trends were detected at about 83% and 87% of the stations, respectively. Levene's test did not detect trends in variance at any station at the 1-hour duration and in about 95% of stations at 1-day. Spatial maps did not reveal any spatial coherence in trend results.

The relative magnitude of any trend in the AMS means was also assessed for both climate regions (see Figure 4.1.2). AMS were rescaled by corresponding mean values and then regressed against time. The regression results were tested as a set against a null hypothesis of zero serial correlation. The null hypothesis of no trends in AMS data could not be rejected at 5% significance level.

Therefore, the assumption of stationary AMS was accepted for this project area and no adjustment of AMS magnitudes was made.

4.6. Precipitation frequency estimates with confidence limits at stations

4.6.1. Overview of methodology and related terminology

Precipitation magnitude-frequency relationships at individual stations have been computed using a regional frequency analysis approach based on L-moment statistics. Frequency analyses were carried out on annual maximum series (AMS) for the following seventeen durations: 15-minute, 30-minute, 1-hour, 2-hour, 3-hour, 6-hour, 12-hour, 1-day, 2-day, 3-day, 4-day, 7-day, 10-day, 20-day, 30-day, 45-day and 60-day. Frequency estimates based on partial duration series (PDS), which include all amounts for a specified duration at a given station above a pre-defined threshold regardless of year, were developed from AMS data using a formula that allows for conversion between AMS and PDS frequencies. Precipitation frequency estimates at 5-minute and 10-minute durations were derived from corresponding 15-minute estimates. To assess the uncertainty in estimates, 90% confidence intervals were constructed on both AMS and PDS frequency curves.

Frequency analysis involves fitting an assumed distribution function to the data. The following distribution functions were analyzed in this project with the aim to identify a distribution that provides the best precipitation frequency estimates for the project area across all frequencies and durations: 3-parameter Generalized Extreme Value (GEV), Generalized Normal, Generalized Pareto, Generalized Logistic and Pearson Type III distributions; 4-parameter Kappa distribution; and 5-parameter Wakeby distribution.

When fitting a distribution to a precipitation annual maximum series extracted at a given location (and selected duration), the result is a frequency distribution relating precipitation magnitude to its annual exceedance probability (AEP). The inverse of the AEP is frequently referred to as the average recurrence interval (ARI), also known as return period. When used with the AMS-based frequency analysis, ARI does not represent the "true" average period between exceedance of a given precipitation magnitude, but the average period between years in which a given precipitation magnitude is exceeded at least once. Those two average periods can be considerably different for more frequent events. The "true" average recurrence interval (ARI) between exceedance of a particular magnitude can be obtained through frequency analysis of PDS.

Differences in magnitudes of corresponding frequency estimates (i.e., quantiles) from the two series are negligible for ARIs greater than about 15 years, but notable at smaller ARIs (especially for ARI $\leq$ 5 years). Because the PDS can include more than one event in any particular year, the results from a PDS analysis are considered to be more reliable for designs based on frequent events (e.g., Laurenson, 1987). To avoid confusion, herein the term AEP is used with AMS frequency analysis and ARI with PDS frequency analysis. The term "frequency" is interchangeably used to specify the ARI and AEP.

L-moments (Hosking and Wallis, 1997) provide an alternative way of describing frequency distributions to traditional product moments (conventional moments) or maximum likelihood approach. Since sample estimators of L-moments are linear combinations of ranked observations, they are less susceptible to the presence of outliers in the data than conventional moments and are well suited for the analysis of data that exhibit significant skewness. L-moments typically used to calculate parameters of various frequency distributions include 1st and 2nd order L-moments: L-location (λ_1) and L-scale (λ_2), and the following L-moment ratios: L-CV (τ), L-skewness (τ_3), and L-kurtosis (τ_4). L-CV, which stands for "coefficient of L-variation", is calculated as the ratio of L-scale to L-location (λ_2/λ_1). L-skewness and L-kurtosis represent ratios of the 3rd order (λ_3) and 4th order (λ_4) L-moments to the 2nd order (λ_2) L-moment, respectively, and thus are independent of scale.

One of the primary problems in precipitation frequency analysis is the need to provide estimates for average recurrence intervals that are significantly longer than available records. Regional approaches, which use data from stations that are expected to have similar frequency distributions, have been shown to yield more accurate estimates of extreme quantiles than approaches that use only data from a single station. The number of stations used to define a region should be large enough to smooth variability in at-station estimates, but also small enough that regional estimates still adequately represent local conditions. The region of influence approach (Burn, 1990) used in this volume defines regions such that each station has its own region with a potentially unique combination of nearby stations. Stations are selected based on the maximum allowable distance from the target station that is defined in a geographic space and in a space of selected statistical attribute variables. Like with other regionalization approaches, there is level of subjectivity involved in the process, for example, in choosing attribute variables, selecting the maximum allowable distance as well as attributes' weights and transformations for similarity distance algorithms. One of the advantages of the region of influence approach is that it results in a smooth transition in estimates across regional boundaries, which is relevant for the mapping of precipitation frequency estimates.

A frequency curve that is calculated from sample data represents some average estimate of the population frequency curve, but there is a high probability that the true value actually lies above or below the sample estimate. Confidence limits provide a measure of the uncertainty. They represent values between which one would expect the true value to lie with a certain confidence; they are not necessarily equidistant from the estimates. The width of a confidence interval between the upper and lower confidence limits is affected by a number of factors, such as the degree of confidence, sample size, exceedance probability, and so on. In this volume, simulation-based procedures were used to estimate confidence limits of a 90% confidence interval.

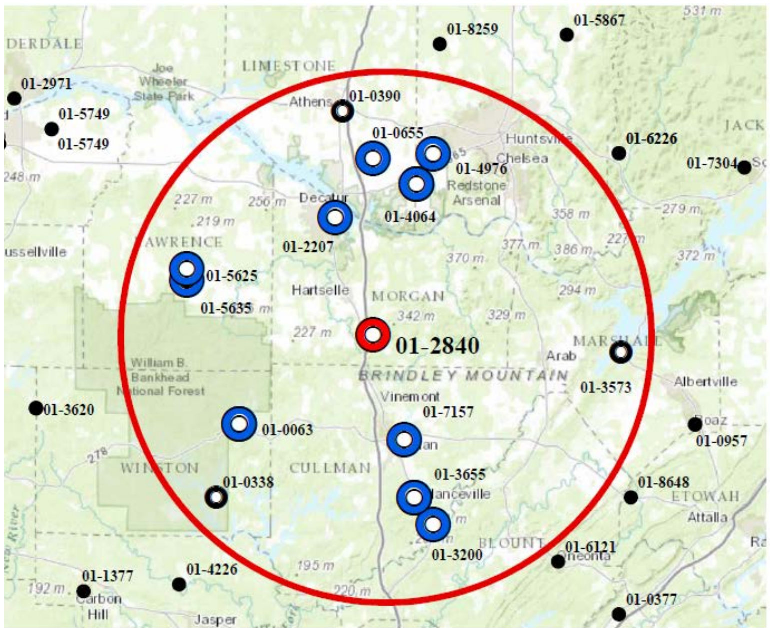
Precipitation frequency estimates from NOAA Atlas 14 are point estimates, and are not directly applicable to an area. The conversion of a point to an areal estimate is usually done by applying an appropriate areal reduction factor to the average of the point estimates within the subject area. Areal reduction factors are generally a function of the size of an area and the duration of the precipitation. The depth-area-duration curves from the Technical Paper No. 29 (U.S. Weather Bureau, 1960) developed for the contiguous United States, can be used for this purpose.

Precipitation frequency estimates for each NOAA Atlas 14 volume were computed independently using all available data at the time. Some discrepancies between volumes at project boundaries are inevitable and they will generally be more pronounced for more rare frequencies.

4.6.2. Regionalization

Initial regions for each station were created by grouping the closest 10 stations. Stations were then added to or removed from regions based on examination of their distance from a target station, elevation difference, difference in MAMs at various durations, inspection of their locations with respect to mountain ridges, etc. (see an example in Figure 4.6.1) and assessment of similarities/dissimilarities in the progression of relevant L-moment statistics across durations compared with other stations in the region (see Figure 4.6.2). Typically, final regions included between 8 and 16 stations with a cumulative number of data years between 600 and 1,100 for daily durations and 100 and 250 for hourly durations. However, in some areas of low station density, final numbers of data years for some regions were as low as 400 for daily durations and 50 for hourly durations.

Regional L-moments calculation. For a given duration, regional estimates of L-moment ratios (L-CV, L-skewness and L-kurtosis) were obtained by averaging corresponding station-specific estimates weighted by record lengths. Regional L-moment ratios were then used to estimate higher order L-moments at each station.



REGIONAL ANALYSIS FOR STATION 01-2840

i	ind	site_id	dist(mi)	elev	elev_diff	mam24hr	mam_diff	max1hr	max3hr	max6hr	max24hr	max48hr	n_24hr	n_1hr
Backup stations														
20	430	01-0957	42.75	1070	445	3.97	0.06	3.27	3.67	4.26	7.71	9.29	77	35
19	499	01-4226	40.29	486	-139	4.16	0.26	NaN	NaN	NaN	9.07	9.30	45	0
18	43	01-8670	39.71	520	-105	3.88	-0.02	3.60	4.18	4.44	6.80	9.15	44	41
17	568	01-8648	38.97	850	225	4.08	0.17	NaN	NaN	NaN	9.52	10.91	54	0
16	530	01-6226	38.89	640	15	3.94	0.04	3.71	4.30	4.60	7.66	8.27	44	31
15	42	01-8259	37.74	830	205	4.11	0.21	3.81	6.67	6.92	8.22	9.01	31	31
14	527	01-6121	37.37	892	267	4.17	0.27	NaN	NaN	NaN	10.51	11.95	97	0
13	485	01-3573	31.73	578	-47	3.84	-0.06	NaN	NaN	NaN	10.01	10.75	90	0
12	414	01-0338	28.80	745	120	3.78	-0.12	NaN	NaN	NaN	7.17	7.44	45	0
11	417	01-0390	28.56	680	55	4.01	0.11	NaN	NaN	NaN	9.21	11.96	65	0
Selected stations														
10	478	01-3200	25.30	502	-123	4.06	0.16	NaN	NaN	NaN	8.51	8.51	46	0
9	522	01-5635	25.17	622	-3	4.06	0.16	2.62	3.12	4.44	8.09	10.94	70	28
8	507	01-4976	24.20	581	-44	3.63	-0.27	NaN	NaN	NaN	8.69	9.13	77	0
7	424	01-0655	22.34	600	-25	3.86	-0.04	NaN	NaN	NaN	8.80	12.52	61	0
6	488	01-3655	21.28	592	-33	4.02	0.11	2.92	3.67	4.54	7.03	9.68	61	48
5	408	01-0063	20.45	766	141	4.20	0.30	3.27	5.20	6.26	7.28	11.11	55	46
4	496	01-4064	19.90	624	-1	3.84	-0.06	3.36	4.49	4.98	10.21	12.03	67	52
3	458	01-2207	15.67	581	-44	3.37	-0.53	NaN	NaN	NaN	7.17	7.17	77	0
2	546	01-7157	13.90	800	175	3.99	0.09	NaN	NaN	NaN	10.11	10.11	103	0
1	470	01-2840	0.00	625	0	3.90	0.00	NaN	NaN	NaN	8.48	10.17	52	0

total number of years: 669 174

Figure 4.6.1. An example of spatial plot with accompanying table used in an interactive process for adding or removing stations from a region for station Falkville 1 E, AL (01-2840).

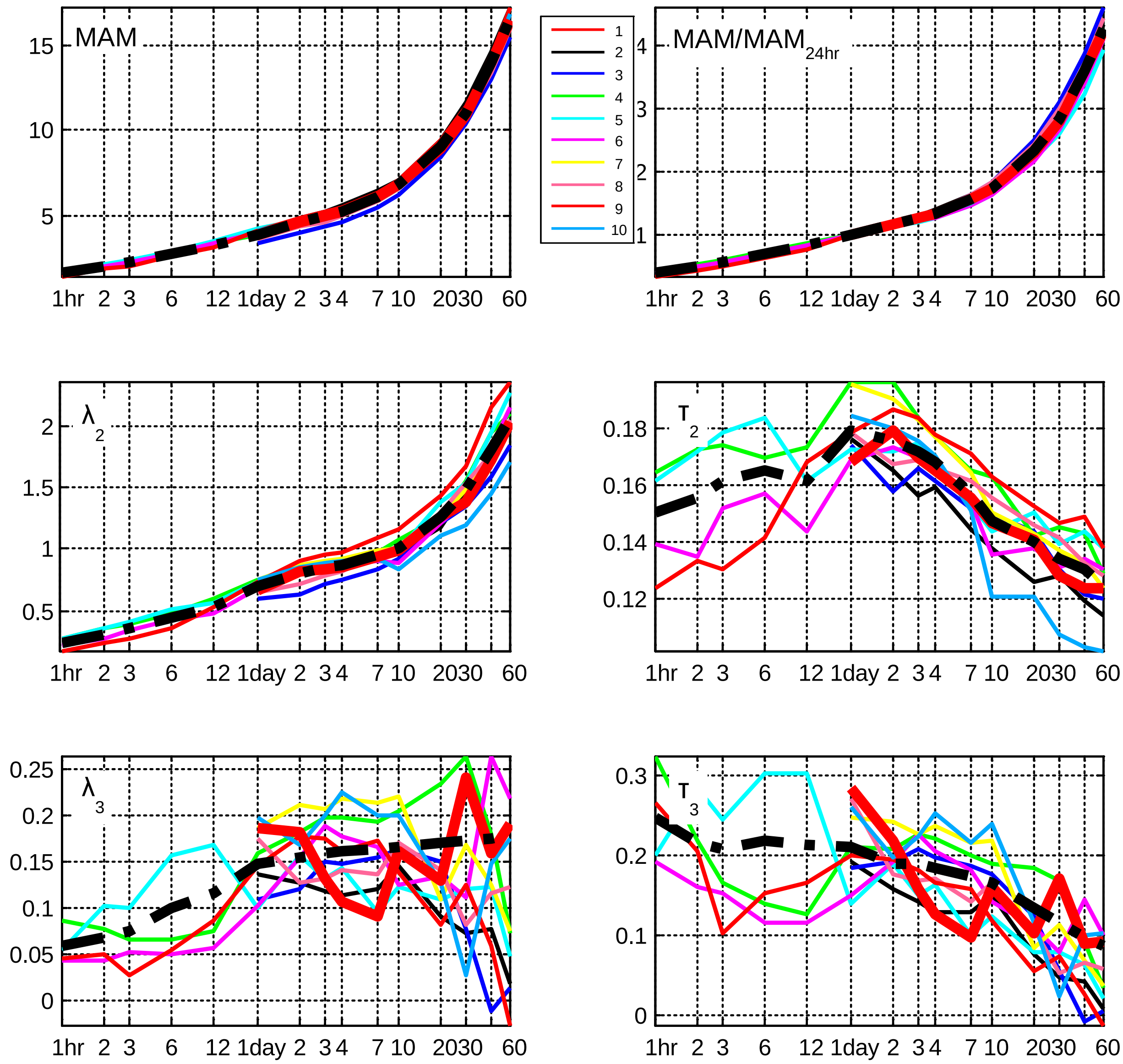


Figure 4.6.2. An example of plots of L-moments (left panels), MAM/MAM_{24hr} and L-moment ratios (right panels) across hourly and daily durations for a region. Thick red lines show statistics for the target station (daily station 01-2840); thin colored lines show statistics for other stations in the region; thick dashed black lines show corresponding regional estimates.

Station dependence. Since stations were selected based on geographic proximity to a target station, it was likely that some of the extracted annual maxima at nearby stations came from the same storm events. Dependence in AMS data for stations within a region was analyzed using a *t*-test for the significance of a correlation coefficient at the 5% level. Analysis indicated that cross-correlation among stations was often statistically significant in areas with a dense network of rain gauges and that the number of dependent station pairs increased with duration length. The impact of station dependence on precipitation frequency estimates is considered to be minimal (e.g., Hosking and Wallis, 1997), so it was not addressed in the calculation of precipitation frequency estimates.

However, it was accounted for during the construction of confidence intervals on estimates where it could have noticeable influence (see Section 4.6.5).

4.6.3. AMS-based estimates

Choice of distribution. A goodness-of-fit test based on L-moment statistics for 3-parameter distributions, as suggested by Hosking and Wallis (1997), was used to assess which of the five 3-parameter distributions listed in Section 4.6.1 provide acceptable fit to the AMS data. Results of χ^2- and Kolmogorov-Smirnov tests and visual inspection of probability plots for all seven distributions for 1-hour, 1-day and 10-day durations, like the one shown in Figure 4.6.3, were considered during distribution selection. The GEV distribution was adopted across all stations and for all durations for several reasons. GEV is a distribution generally recommended for analysis of extreme events. Based on the test results, the GEV distribution provided an acceptable fit to data more frequently than any other distribution. Finally, although it is not required to use the same type of distribution across all durations and/or regions, changes in distribution type for different durations or regions often lead to considerable discontinuities in frequency estimates across durations or between nearby locations, particularly at more rare frequencies.

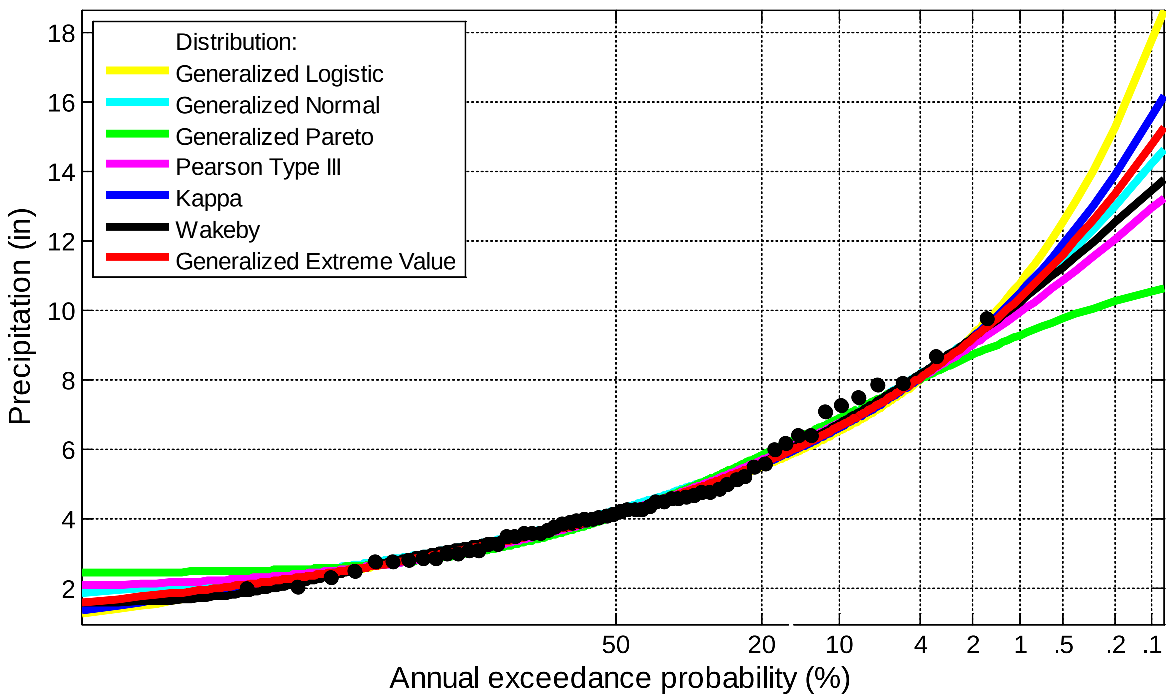


Figure 4.6.3. Probability plots for selected distributions for 1-day AMS at station Vero Beach 4 SE (08-9219) in Florida.

Frequency estimates for hourly and daily durations. For each station and for each hourly and daily duration, L-moment statistics were used to calculate the parameters of the GEV distribution and to produce precipitation frequency estimates for the following annual exceedance probabilities (AEPs): 1/2 (50%), 1/5, 1/10, 1/25, 1/50, 1/100, 1/200, 1/500 and 1/1000. This calculation was repeated for all durations and for all stations. Since L-moments, and consequently, precipitation frequency estimates, were calculated independently for each duration, the resulting depth-duration-frequency (DDF) curves did not always look smooth. Smoothing of quantiles by cubic spline functions improved the shape of DDF curves. Figure 4.6.4 illustrates precipitation depth-duration-frequency curves before and after smoothing for Augusta, AR (03-0326).

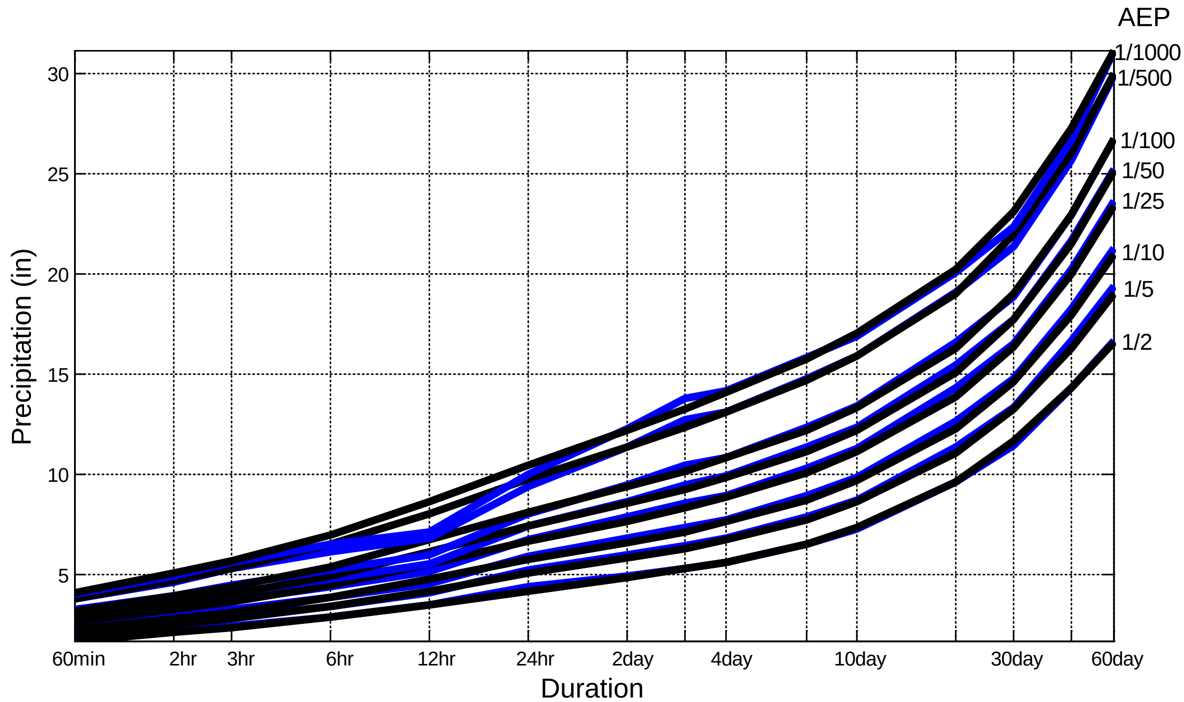


Figure 4.6.4. Precipitation frequency estimates for a range of durations for selected AEPs for station Augusta, AR (03-0326). Blue lines represent original estimates; black lines represent estimates obtained after quantiles were smoothed across durations.

Frequency estimates for sub-hourly durations. The shortest duration at which AMS data were extracted was 15 minutes. L-moments were calculated for the 15-minute and 30-minute durations at stations that had 15-minute AMS data available for at least one station assigned to their region. L-moments were then used to produce precipitation frequency estimates in the same manner as for hourly and daily durations. However, in a number of cases, it was observed that resulting precipitation frequency estimates were implausible, especially for AEPs of 1/100 (1%) or less. The primary cause of this was the sample size, as very few stations with measurements at sub-hourly durations were available, and when they were available, they typically had short periods of record. This resulted in unreliable moments (especially higher-order moments), and consequently, unreliable precipitation frequency estimates. λ_1 moments (i.e., mean annual maxima) were less sensitive to a sample size and were generally in line with corresponding estimates at nearby stations. λ_1 moments were also, for the most part, consistent with the expected progression across hourly and daily durations (see top left panel of Figure 4.6.2). For that reason, mean annual maxima at 15-minute and 30-minute durations were retained for derivation of MAM grids (see Section 4.8.1). At-station quantiles, which were assessed as unreliable, were not interpolated to create precipitation frequency grids; an alternative approach, described in Section 4.8.2 was used for that purpose.

Similarly, for the 5-minute and 10-minute durations, very few n-minute stations were available to compute precipitation frequency estimates using regional L-moments or to develop MAM grids. Therefore, an alternative approach described in Section 4.8.2 was used to develop these estimates, as well.

4.6.4. PDS-based estimates
PDS-based precipitation frequency estimates were calculated indirectly from Langbein's formula (Langbein, 1949) which transforms a PDS-based average recurrence interval (ARI) to an annual exceedance probability (AEP):

$$\text{AEP} = 1 - \exp\left(-\frac{1}{\text{ARI}}\right).$$

PDS-based frequency estimates were calculated for the same durations as AMS-based estimates for 1-, 2-, 5-, 10-, 25-, 50-, 100-, 200-, 500- and 1,000-year ARIs. Selected ARIs were first converted to AEPs using the above formula and then precipitation frequency estimates were calculated for those AEPs following the same approach that was used in the AMS analysis.

4.6.5. Confidence limits
A Monte Carlo simulation procedure that accounts for inter-station dependence, as described in Hosking and Wallis (1997), was used to construct 90% confidence intervals (i.e., 5% and 95% confidence limits) on both AMS-based and PDS-based precipitation frequency curves. It should be noted that confidence intervals constructed through this approach account for uncertainties in distribution parameters, but not for other sources of uncertainties (for example, distribution selection), that could also significantly impact the total error, particularly at more rare frequencies.

Since the station dependence analysis (Section 4.6.2) indicated that for regions with a more dense station network, AMS data from different stations could be dependent (especially for longer durations), the simulation algorithm that accounts for inter-station correlation was used. At each station, 1,000 simulated data sets per duration were used to generate precipitation quantiles. Estimates were sorted from smallest to largest and the 50th value was selected as the lower confidence limit and the 950th value was selected as the upper confidence limit.

Due to differences in record lengths across hourly and daily durations, confidence intervals for hourly durations were wider than corresponding intervals at daily durations for some stations; therefore, they were restricted by the corresponding values at 24-hour duration. Confidence limits for sub-hourly durations were calculated using similar approaches that were used to calculate frequency estimates. Since confidence limits were derived for each duration independently, like precipitation frequency estimates, confidence limits could fluctuate from duration to duration; they were smoothed across durations using cubic spline functions.

4.7. Rainfall frequency estimates with confidence limits at stations

4.7.1. Background
Precipitation frequency estimates from Section 4.6 represent precipitation magnitudes regardless of the type of precipitation. For some applications it may be important to know frequency estimates from liquid precipitation (i.e., rainfall) only. For example, rainfall is treated differently from snowfall in watershed modeling because of different runoff producing mechanisms. While the rainfall generates runoff almost immediately, snowfall generally goes into storage until it melts and produces runoff at a later time.

For some areas, particularly for high elevation areas, the contribution of snowfall to the total yearly precipitation amount is significant and may translate to its significant participation in precipitation annual maximum series (AMS). For areas where the snowfall contributes to the precipitation AMS, a separate rainfall frequency analysis was done for durations up to 24 hours, which are of most interest to design projects relying on peak flows. In the NOAA Atlas Volume 9 project area, due to geo-climatic conditions, the contribution of snowfall to AMS is trivial, so no separate rainfall frequency analysis was done. This section was retained for consistency with the documentation of Volume 8.

4.8. Derivation of grids

4.8.1. Mean annual maximum precipitation

Grids of mean annual maxima (MAM) served as the basis for deriving gridded precipitation frequency estimates at different frequencies and durations. The station mean annual maximum values for the 17 selected durations between 15 minutes and 60 days were spatially interpolated to produce corresponding mean annual maximum grids at 30 arc-seconds resolution using a hybrid statistical-geographic approach for mapping climate data named Parameter-elevation Regressions on Independent Slopes Model (PRISM) developed by Oregon State University's PRISM Climate Group (e.g., Daly et al., 2002). The MAM grids were developed at the same time for both Volume 8 and Volume 9.

Several iterations with the PRISM Climate Group were made to ensure satisfactory MAM patterns. In particular, gauged locations where interpolated MAMs for selected base durations (15-minute, 1-hour, 1-day, 10-day) were more than 10% different (determined by jackknife analysis) than the expected at-station MAMs were carefully re-examined. As a result of those reviews, some MAM estimates were adjusted. MAMs were also estimated for a couple of locations to better anchor the spatial interpolation in areas of varied terrain and/or where the lack of stations with sufficiently long records unduly influenced expected spatial patterns, particularly at hourly durations. Two notable changes to the MAM dataset to improve patterns were:

1) daily-only stations with less than 50 years of data in areas of flat terrain and/or areas with a high density of stations were excluded from the MAM interpolation to reduce a number of station-driven contours in MAM maps;
2) MAMs were estimated at sub-daily durations for two daily stations in Florida and Georgia and across all durations at several ungauged locations along the coast to anchor the interpolation and improve spatial patterns.

Appendix A.3 provides detailed information on the PRISM-based methodology for creating the mean annual maximum grids. In summary, a unique regression function was developed for each target grid cell to derive mean annual maximum values for each duration that accounted for the difference between an observing station's and the target cell's mean annual precipitation, topographic facet, coastal proximity, the distance of an observing station to the target cell, etc. Jacknife cross-validation indicated that overall bias for project areas in Volumes 8 and 9 combined was less than one percent for all durations except for 15-minute which had a bias of -1.8%. The mean absolute error was less than 5 percent across all durations.

4.8.2. Precipitation frequency estimates with confidence limits

Estimates for 60-minute through 60-day durations. The spatial interpolation technique used in this volume developed grids of AMS-based and PDS-based precipitation frequency estimates along the frequency dimension for a given duration. Hence, the evolution of frequency-dependent spatial patterns for a given duration was independent of other durations. The technique utilizes the inherently strong linear relationship that was found to exist between precipitation frequency estimates for consecutive frequencies, as well as mean annual maxima and 2-year precipitation frequency estimates. For example, Figure 4.8.1 shows the relationship between the 50-year and 100-year estimates for the 24-hour duration for this project area together with regression lines for a linear model and zero-intercept model. The R^2 values of 0.996 and 0.995, respectively, are very close to 1.0, which was common for all relationships. Another common occurrence was a negligible intercept coefficient in the linear model regression equations, so a zero-intercept model was adopted for all frequencies and durations. The slope coefficient of the zero-intercept model represents an average domain-wide ratio between consecutive quantiles; in this case, 1.1419 is an average ratio between 100-year and 50-year quantiles for the 24-hour duration for the whole project area. Although the correlation coefficients were very high, when plotted on a map, at-station ratios showed some regional features (as shown in Figure 4.8.2 for the same example); this finding was used in the grid generation process.

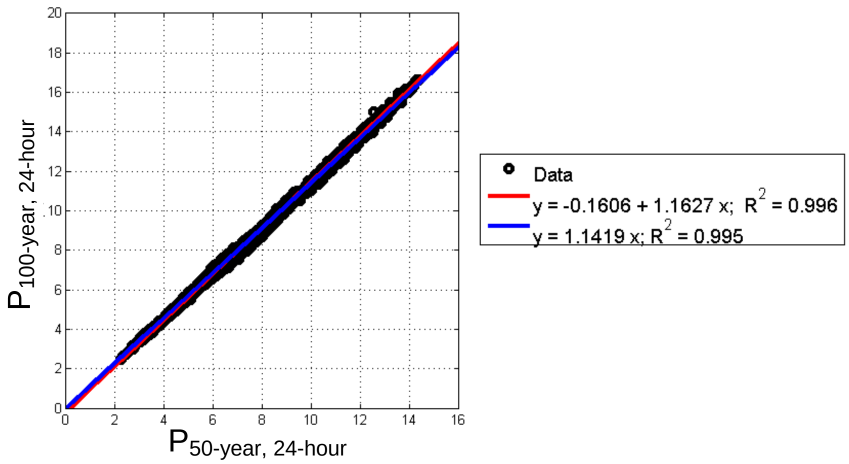


Figure 4.8.1. Scatter plot of 100-year versus 50-year precipitation frequency estimates based on 24-hour annual maximum series. Linear model and zero-intercept model regression lines are also shown.

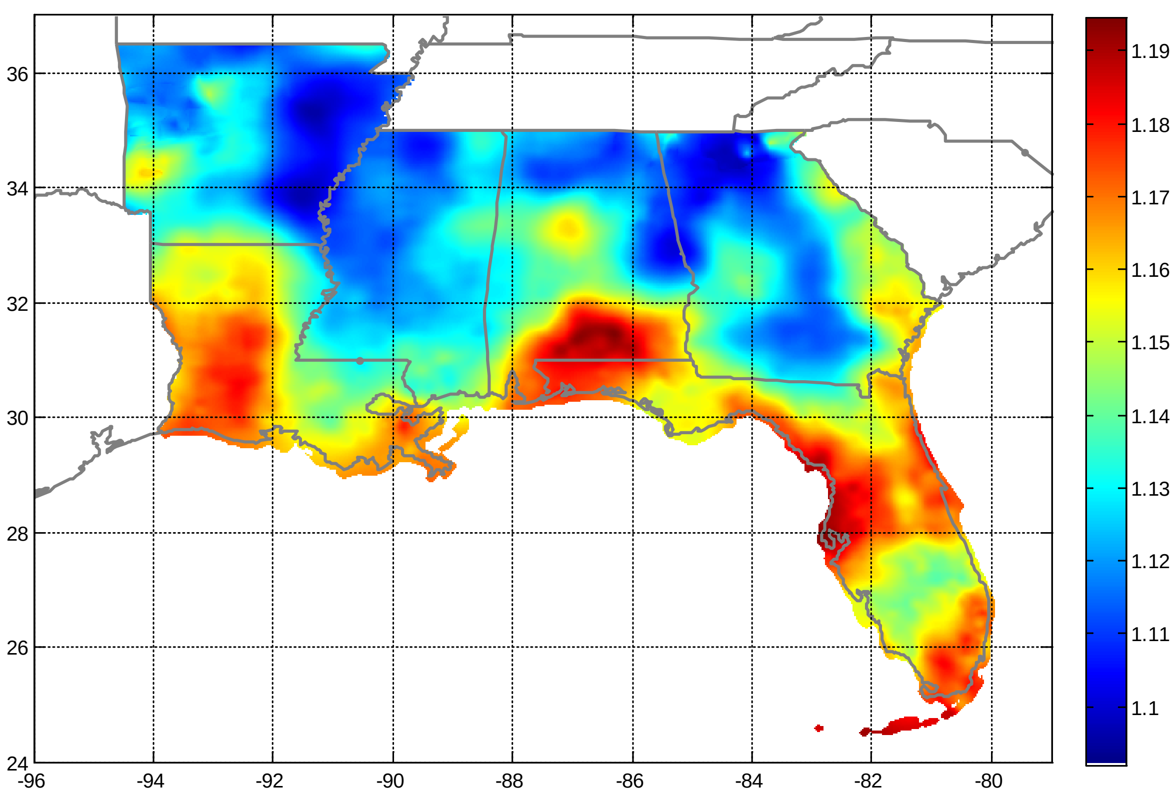


Figure 4.8.2. Spatially interpolated ratios used to calculate 24-hour 100-year precipitation frequency grid from the 24-hour 50-year grid.

For each duration, the calculation began with the PRISM-derived mean annual maximum (MAM) grid as the initial predictor grid and the grid of 2-year precipitation frequency estimates as the resulting subsequent grid. At-station ratios between the 2-year estimates and corresponding MAM estimates were spatially interpolated to a grid using a natural neighbor interpolation method, which is based on construction of Thiessen polygons from the Delauney triangulation of irregularly spaced gauged locations. The advantage of this method is that it remains true to the at-station estimates; the resulting function is continuous everywhere within the project area and also has a continuous first derivative everywhere except at the data points themselves. Gridded MAM estimates were then multiplied by corresponding gridded ratios to create a grid of 2-year precipitation frequency estimates. In the subsequent run, ratios between the 5-year and 2-year estimates were interpolated and used to calculate 5-year precipitation grid from the 2-year grid, and so forth. The grid of 2-year precipitation frequency estimates was also used to create a grid of 1-year estimates. The same process was repeated for all hourly and daily durations.

During the review process, station-driven contour lines that were showing up in cartographic maps in flat terrain areas. The majority of these was driven by small differences in MAM estimates at nearby stations and selected mapping contour intervals, but to reduce a number of station-driven contours in the final cartographic maps, a dynamic filter was applied to the precipitation frequency grids. Parameters of the filter, which controlled the amount of smoothing, were a function of elevation gradients and proximity to the coastline. Parameters were selected such that no smoothing was applied at the coastline or in the mountains, maximum smoothing was applied in flat terrain, and the transition from one to another was gradual. The resulting smoothed grid then served in the subsequent run as the basis for the derivation of the next grid.

To ensure consistency in grid cell values across all durations and frequencies (e.g., 24-hour estimate has to be at least equal to 12-hour estimate), duration-based internal consistency checks were conducted. For inconsistent cases, the longer duration grid cell value was adjusted by multiplying the shorter duration grid cell value by 1.01 to provide a 1% difference between the values. After grid cell consistency was ensured across durations, it was performed across frequencies to ensure that there were no frequency-based inconsistencies caused by the adjustment across durations.

A jacknife cross-validation technique (Shao and Tu, 1995) was used to evaluate the spatial interpolation technique's performance for interpolating precipitation frequency estimates. It was cost prohibitive to re-create the PRISM mean annual maximum grids for each cross-validation iteration. For this reason, the cross-validation results reflect the accuracy of the interpolation procedure based on the same mean annual maximum grids. Figure 4.8.3 shows validation results for 100-year estimates for the 1-hour and 24-hour durations as histograms showing the distribution of differences in estimates with and without each station (errors). Overall, the spatial interpolation technique adequately reproduced values. For the 1-hour duration, differences were less than ±5% at 97% of the stations; for the 24-hour duration, differences were less than ±5% at 99% of the stations.

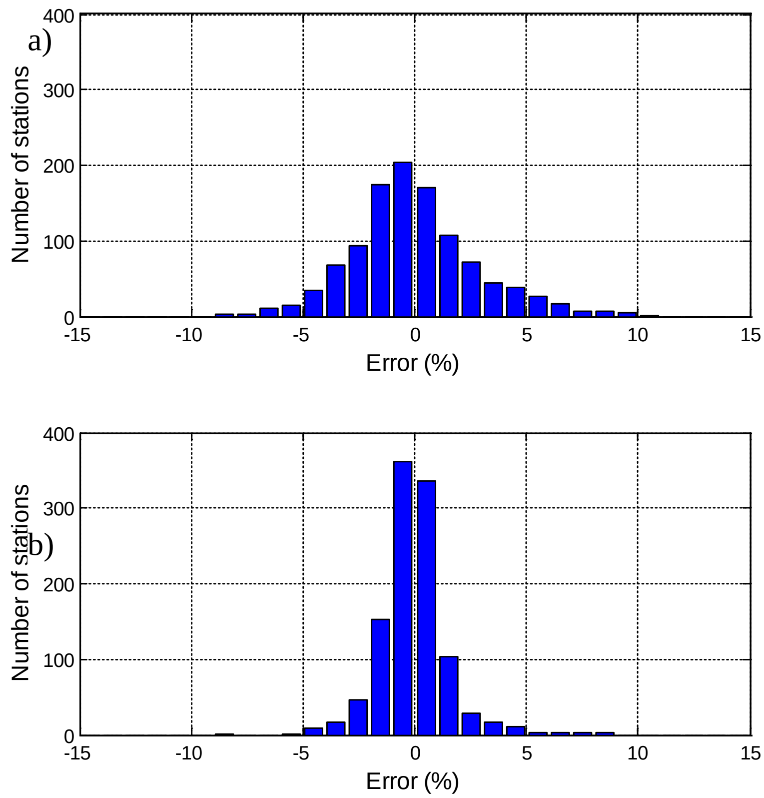


Figure 4.8.3. NOAA Atlas 14 Volume 9 jackknife cross-validation results for:
a) 100-year 1-hour estimates, and b) 100-year 24-hour estimates.

Estimates for 5-minute through 30-minute durations. A similar approach to the one used to derive grids of precipitation frequency estimates for hourly and daily durations was used to derive gridded estimates for the 15-minute and 30-minute durations. For 15-minute, a grid of 2-year precipitation frequency estimates was calculated by multiplying the 15-minute MAM grid with a grid of ratios between the 2-year estimates and corresponding MAM estimates. In the subsequent run, a grid of ratios between the 5-year and 2-year estimates was used to calculate 5-year grid from the 2-year grid, and so forth. The main difference is that, due to concerns about the soundness of at-station precipitation frequency estimates computed directly from AMS for sub-hourly durations, instead of interpolating gridded ratios from sub-hourly estimates, corresponding 60-minute ratio grids were assumed to characterize 15-minute ratio grids. The same process was used for 30-minute duration, as well.

Precipitation frequency grids for 5-minute and 10-minute durations were derived by multiplying the 15-minute precipitation frequency grids by scaling factors. Scaling factors were obtained from n-minute stations; they were calculated as average ratios of 5-minute and 10-minute annual maxima to corresponding 15-minute annual maxima. Given that relatively few n-minute stations were available and that at-station scaling factors varied little across the project area, they were assumed to be uniform for the whole area: 0.57 for 5-minute duration and 0.82 for 10-minute duration. The scaling factors were applied to the 15-minute precipitation frequency grids for all frequencies to create matching 5-minute and 10-minute grids.

Confidence limits. Grids of upper and lower limits of the 90% confidence interval for the precipitation frequency estimates between 5-minutes and 60-day durations were derived using same procedures that were used to create grids of precipitation frequency estimates.

5. Precipitation Frequency Data Server

NOAA Atlas 14 precipitation frequency estimates are delivered entirely in digital form in order to make the estimates more widely available and to provide them in various formats. The Precipitation Frequency Data Server - PFDS (http://hdsc.nws.noaa.gov/hdsc/pfds/) provides a point-and-click web portal for precipitation frequency estimates and associated information.

In early 2011a major redesign of the PFDS web interface was done to make PFDS pages interactive. Since then, PFDS pages were enhanced on several occasions to improve the usability and readability of PFDS website's content, to increase data download speeds and to provide additional information. In order to keep this section of the documentation up-to-date for all volumes, the PFDS section is offered as a separate document. This document is updated as needed and is available for download from here: http://www.nws.noaa.gov/oh/hdsc/PF_documents/NA14_Sec5_PFDS.pdf.

6. Peer review

A peer review of preliminary results for the NOAA Atlas 14 Volume 9 precipitation frequency project was carried out during a five week period starting on October 15, 2012. The request for review was sent via email to the members of the HDSC list-server from all over the United States and other interested parties. Potential reviewers were asked to evaluate the reasonableness of point precipitation frequency estimates as well as their spatial patterns. The review included the following items:

a. Metadata for stations whose data were used to prepare mean annual maximum precipitation maps and/or in precipitation frequency analysis. The table included information on station name, state, source of data, assigned station ID, latitude, longitude, elevation, and period of record. It also showed if the station was merged with another station, if the station was co-located with another station with a different ID, and if metadata at the station were changed. (Station IDs were assigned by HDSC and do not match station IDs assigned by the agency that provided the data, except for National Climatic Data Center.)
b. Metadata for stations whose data were collected, but not used in the analysis. The table contained metadata for stations that were examined, but not used, with brief comments on why the data were not used. Generally, stations were not used because there was another station with a longer period of record nearby, station data were assessed as not reliable for this specific purpose, or the station's period of record was not long enough and it was not a candidate for merging with any nearby station.
c. At-station depth-duration-frequency (DDF) curves for 60-minute to 10-day durations and for 2-year to 100-year ARIs.
d. Maps of spatially-interpolated estimates of mean annual maximum precipitation for 60-minute, 24-hour and 10-day durations.
e. Maps of spatially-interpolated precipitation frequency estimates for 60-minute, 24-hour and 10-day durations and for 2-year and 100-year average recurrence intervals.

Comments were received from eight individuals or offices and agencies including Water Management District Offices and Weather Forecast Offices. The reviews provided critical feedback that improved the estimates. The reviews provided critical feedback that improved the estimates. Reviewers' comments regarding station metadata, at-station precipitation frequency estimates and their spatial patterns, and supplemental information along with HDSC responses can be found in Appendix A.4.

7. Comparison with previous NOAA publications

The precipitation frequency estimates in NOAA Atlas 14 Volume 9 supersede the estimates published in the following publications:

a. NOAA Technical Memorandum NWS HYDRO-35, *Five- to 60-Minute Precipitation Frequency for the Eastern and Central United States* (Frederick et al., 1977) for 5-minute to 60-minute durations;
b. Weather Bureau Technical Paper No. 40, *Rainfall Frequency Atlas of the United States for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years* (Hershfield, 1961) for 2-hour to 24-hour durations;
c. Weather Bureau Technical Paper No. 49, *Two- to Ten-Day Precipitation for Return Periods of 2 to 100 Years in the Contiguous United States* (Miller, 1964) for 2-day to 10-day durations.

Precipitation frequency estimates at the 100-year average recurrence interval from NOAA Atlas 14 were examined in relation to corresponding estimates from NOAA Technical Memorandum NWS HYDRO-35 (HYDRO35) for the 60-minute duration and the Weather Bureau's Technical Paper No.

40 (TP40) for the 24-hour duration. Corresponding grids from HYDRO35 and TP40, which were used in the comparison, were obtained by interpolating digitized isopluvials from paper cartographic maps using the standard spatial interpolation tools available in ArcGIS.

The maps in Figures 7.1 and 7.2 illustrate the differences between NA14 and HYDRO35 100-year 60-minute estimates in inches and in percentages, respectively. The contour lines superimposed on the maps represent isopluvials from HYDRO35. On average, 100-year 60-minute precipitation frequency estimates across the project area decreased only 0.2 inches (less than 6%), but at specific locations estimates changed between -2.02 and 1.04 inches or from -45% to 22%. The maximum increase of 1.04 inches (22%) occurred in the extreme southeast Louisiana and the largest decrease of 2.02 inches (-45%) occurred in the mountains of northern Georgia. Increases in magnitudes between 0.5 and 1.0 inches were observed in central Louisiana, portions of the Ouachita mountains in Arkansas, along the Florida panhandle just south of Tallahassee, and along the southeast coast in Florida north from Miami.

The differences in estimates between the two publications are attributed to a number of factors. Firstly, differences in data quality control procedures and frequency analysis approaches (distribution selection, parameter estimation method, regional versus at-station methods) affect estimates, especially at higher ARIs. Section 4 of this document describes methods used in NA14 and their advantages. Secondly, differences in spatial interpolation techniques impact estimates at ungauged locations. Isopluvials in HYDRO35 were based solely on station data without incorporating topographic features; NA14 estimates were based on PRISM products that integrate topography (see Section 4.8 for more details). Finally, the increase in the amount of available data from HYDRO35 to NA14, both in the number of stations and their record lengths, has a considerable effect on estimates. HYDRO35 was published in 1977, so potentially more than 35 additional years of data at existing stations were available for the NA14 analyses. Also, many stations that were not suitable for frequency analysis in HYDRO35 due to short records could be included in NA14. A detailed comparison of the numbers of stations and record lengths available to each of the two projects could not be provided since the HYDRO35 project covered a significantly larger area and the necessary information was not available in the HYDRO35 document.

The maps in Figure 7.3 and 7.4 illustrate the differences between NA14 and TP40 100-year 24-hour estimates in inches and in percentages, respectively. The contour lines superimposed on the maps represent isopluvials from TP40. On average, for the whole project area estimates increased about 0.66 inches (6%); with differences ranging from -2.77 to 4.73 inches and from -29% to 46%. Some of the largest differences in precipitation frequency estimates are in areas where TP40 did not account for orographic influence, such as in the mountains of north Georgia, the Ouachita Mountains in Arkansas (southwest of Little Rock), as well as in the area that lies in the “rain shadow” of mountains north of the Arkansas River (northwest of Little Rock). Estimates decreased as much as 2.77 inches (-29%) in the mountains of north Georgia, increased as much as 2.85 inches (30%) in the Ouachita Mountains in Arkansas, and decreased up to 1.5 inches in the mountains north of the Arkansas River. Other locations with significant increases of up to 4.00 inches (on average around 30%) occurred in central and southwestern Louisiana, southern Alabama, and along Florida’s southeast coast from Miami to Palm Beach.

Differences in estimates can be attributed to similar factors as for the 60-minute duration: different data quality control techniques and frequency analysis approaches; different spatial interpolation techniques; and an increase in a number of available stations and record lengths for NA14 relative to TP40. Since TP40 was published in 1961, potentially more than 50 additional data years were available for the NA14 analyses. A more detailed comparison of the numbers of stations and their record lengths between two projects could not be provided since the necessary information was not available in the TP40 document.

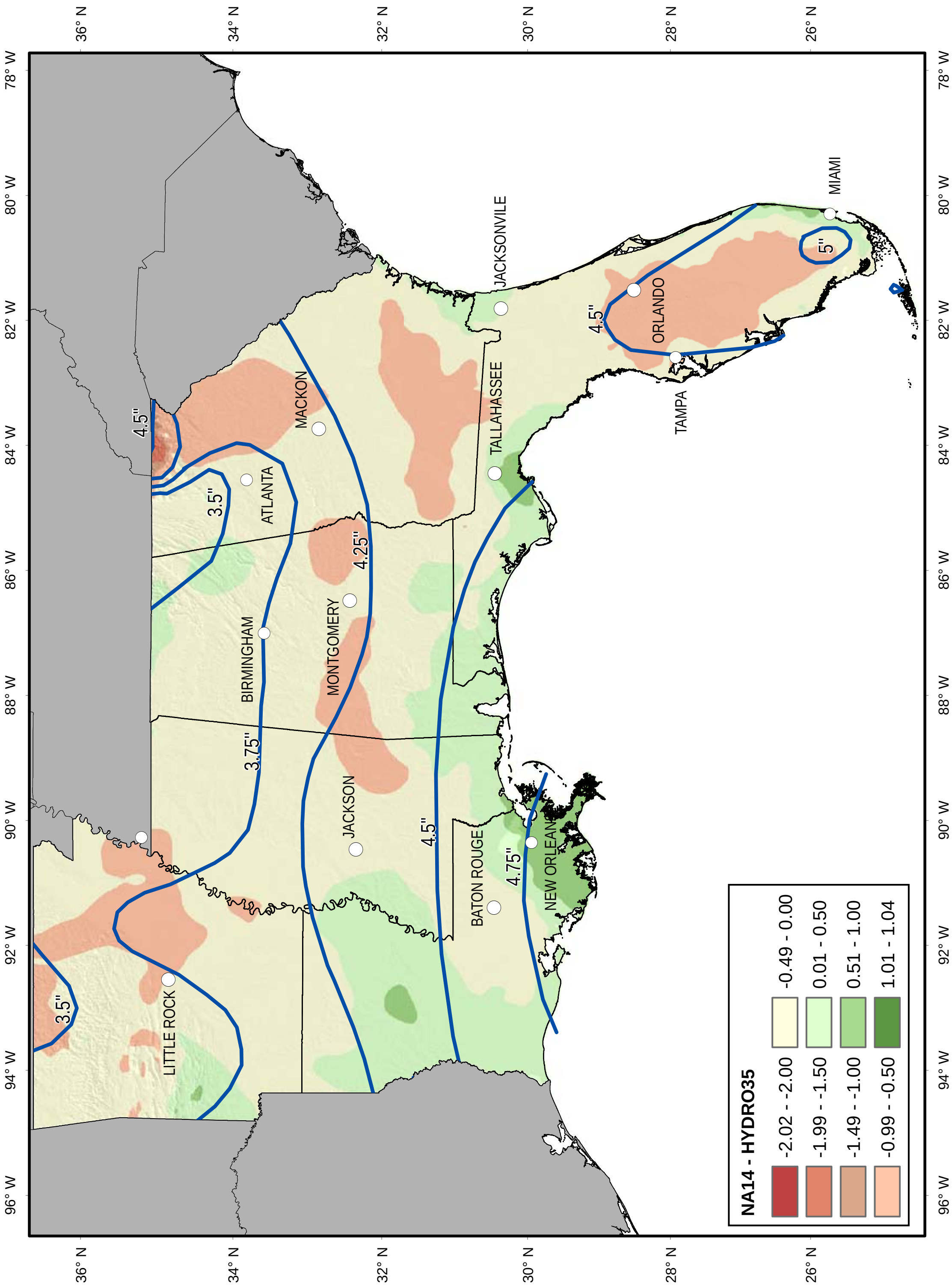


Figure 7.1. Map showing differences in 100-year 60-minute estimates (in inches) between NOAA Atlas 14 Volume 9 and HYDRO35. Superimposed on the map are isopluvials (blue lines) from HYDRO35.

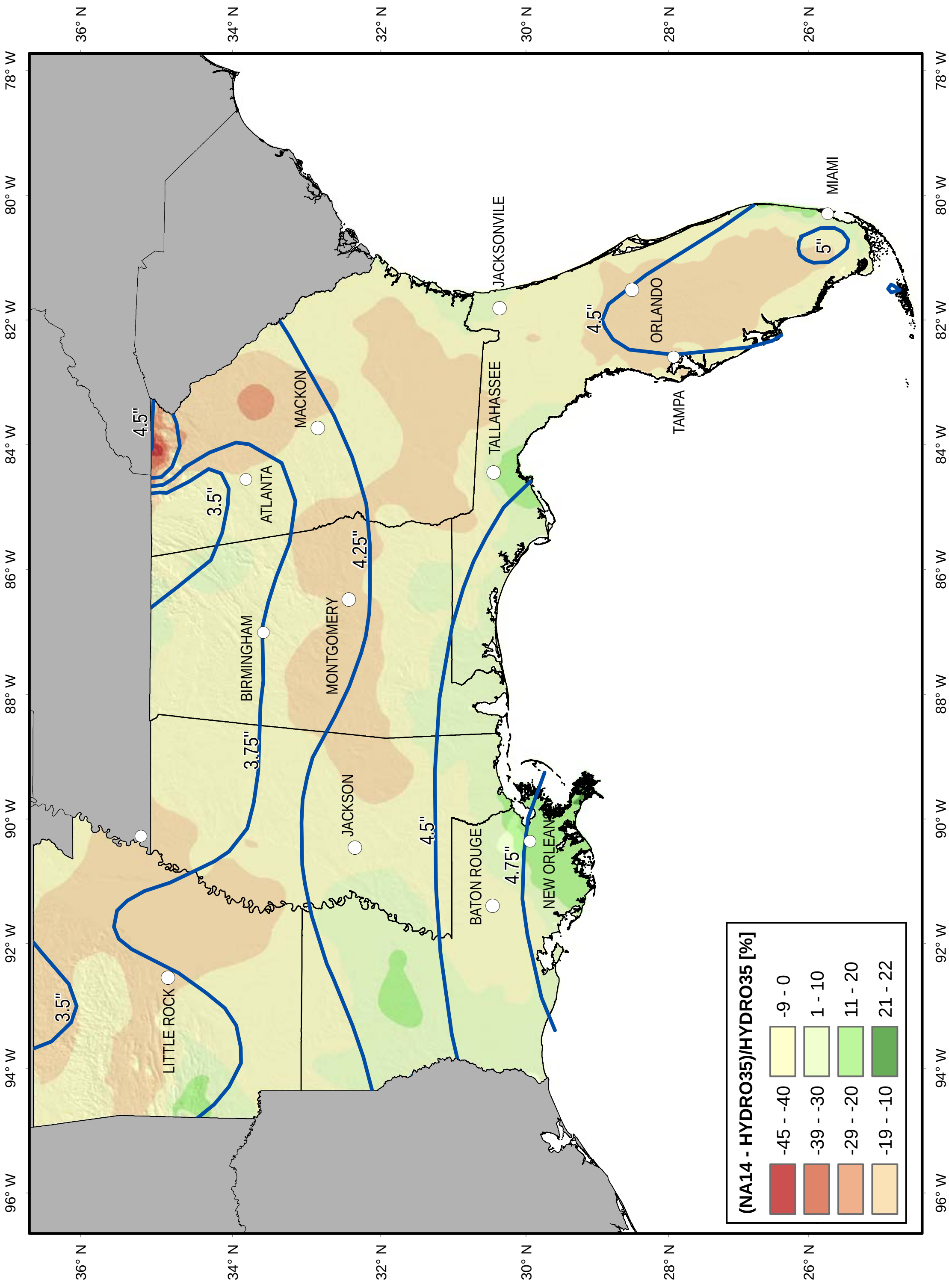


Figure 7.2. Map showing percent differences in 100-year 60-minute estimates between NOAA Atlas 14 Volume 9 and HYDRO35. Superimposed on the map are isopluvials (blue lines) from HYDRO35.

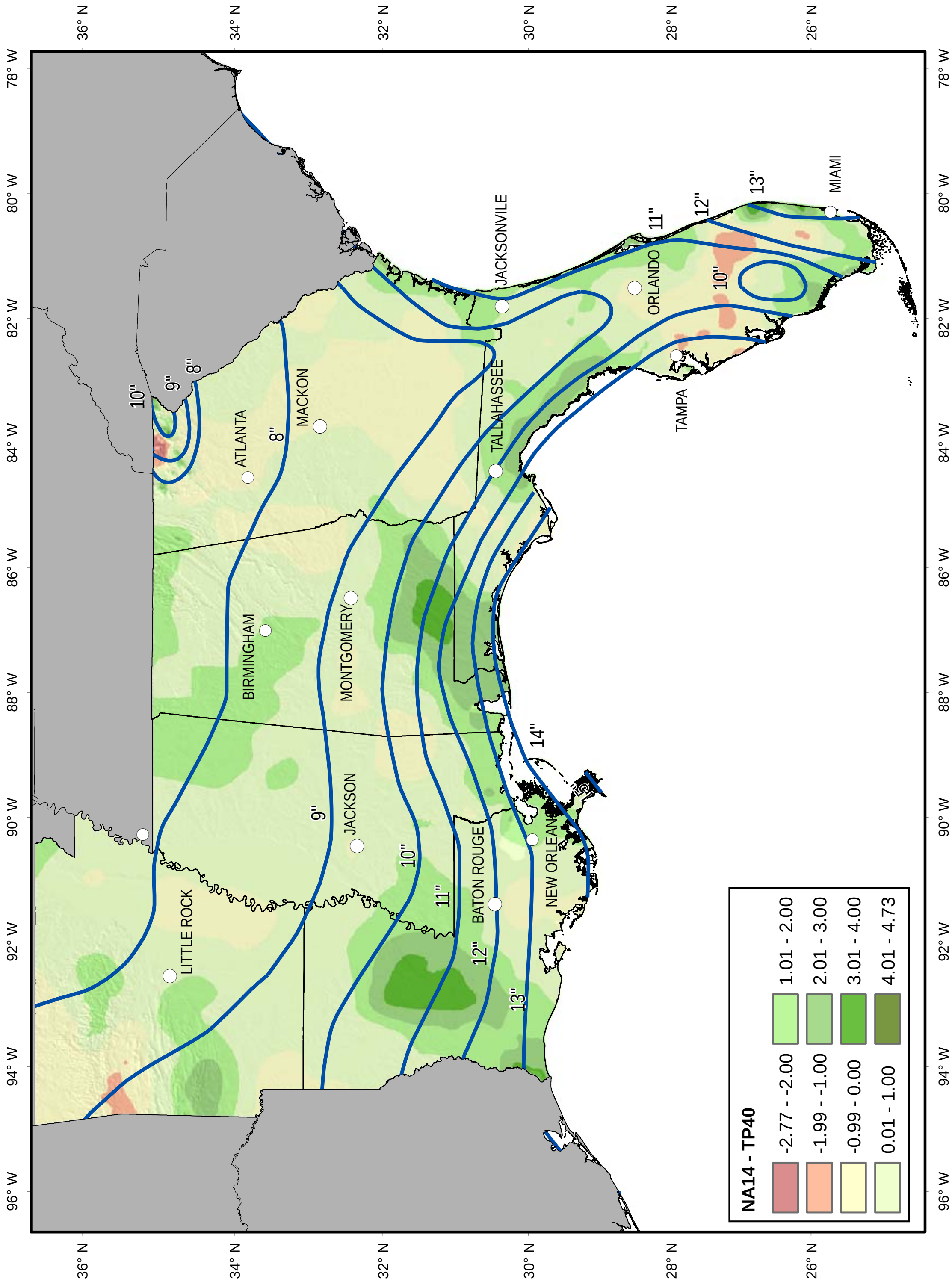


Figure 7.3. Map showing differences in 100-year 24-hour estimates (in inches) between NOAA Atlas 14 Volume 9 and TP40. Superimposed on the map are isopluvials (blue lines) from TP40.

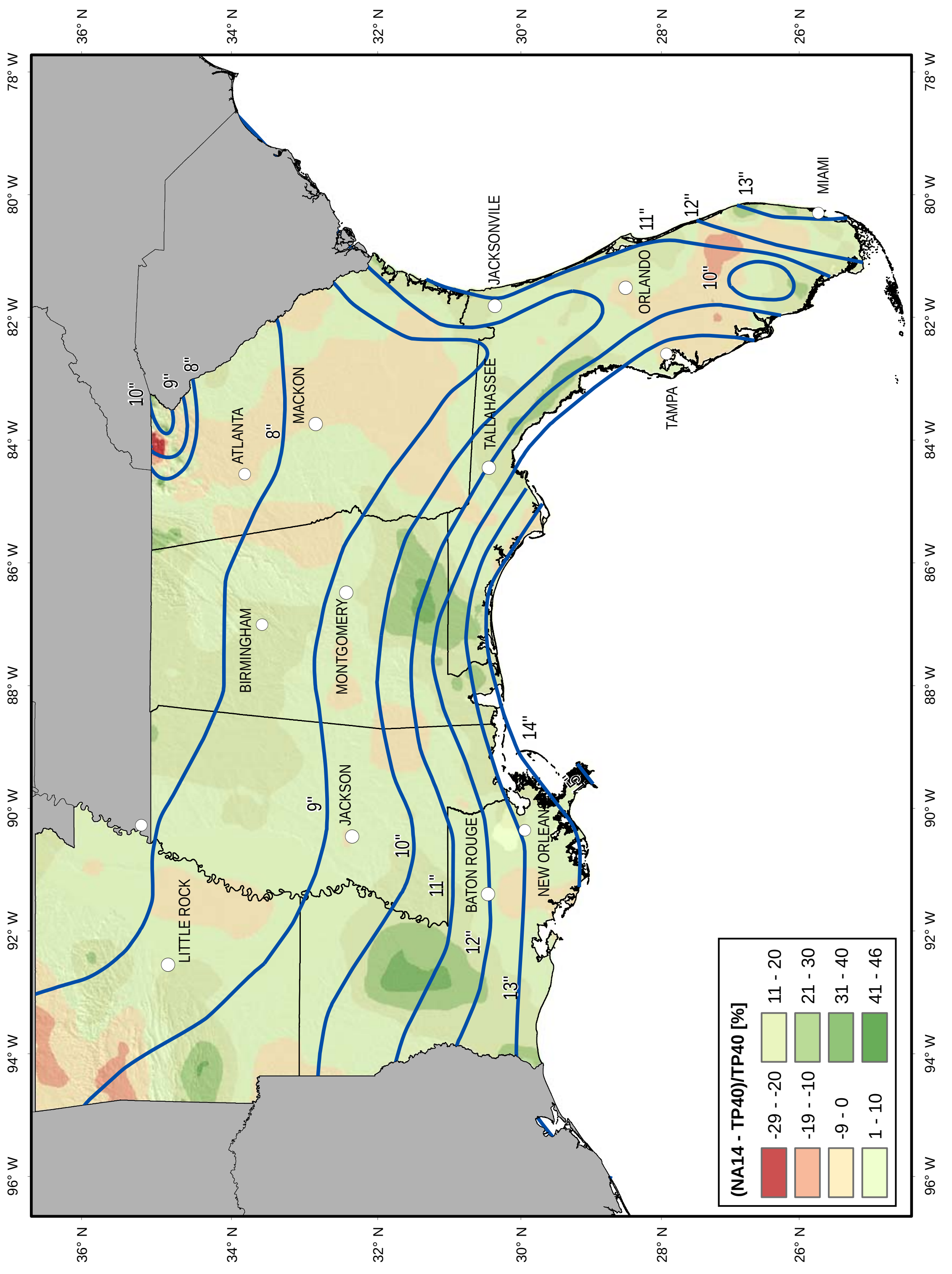


Figure 7.4. Map showing percent differences in 100-year 24-hour estimates between NOAA Atlas 14 Volume 9 and TP40. Superimposed on the map are isopluvials (blue lines) from TP40.

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Appendix A.1 List of stations used to prepare precipitation frequency estimates

Table A.1.1. List of stations in the states of Alabama, Arkansas, Florida, Georgia, Loiusiana, and Mississippi used in the analysis showing station name, station ID, post-merge station ID, co-located daily station ID, base duration, source of data, latitude, longitude, elevation, and period of record. Bold font in the latitude, longitude, and elevation fields indicates information that has been adjusted. Bold font in the 'Period of record' field indicates that the station data was extended using data from station that has the same ID in 'Post-merge station ID' column. For an hourly station co-located with a daily station with a different ID, the daily station's ID shown in the 'Co-located station ID' column should be used to locate the hourly station on the PFDS web page.

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
AL	ABBEVILLE	01-0008			1-day	NCDC	31.5703	-85.2483	456	7/1948-8/2010
AL	ABBEVILLE	01-0008		01-0008	1-hour	NCDC	31.5703	-85.2483	456	6/1948-12/2010
AL	ADDISON	01-0063			1-day	NCDC	34.2031	-87.1814	766	3/1938-10/2011
AL	ADDISON	01-0063			1-hour	NCDC	34.2031	-87.1814	766	6/1948-12/2010
AL	ADDISON	01-0063			15-min	NCDC	34.2031	-87.1814	766	10/1976-12/2010
AL	ALBERTA	01-0140			1-day	NCDC	32.2322	-87.4106	175	10/1940-10/2011
AL	ALBERTA	01-0140			1-hour	NCDC	32.2322	-87.4106	175	9/1963-12/2010
AL	ALBERTA	01-0140			15-min	NCDC	32.2322	-87.4106	175	5/1971-12/2010
AL	ALBERTVILLE 2 SE	01-0148	01-0957		1-day	NCDC	34.2333	-86.1667	1142	1/1908-3/1977
AL	ALICEVILLE	01-0178			1-day	NCDC	33.1272	-88.1550	195	3/1934-7/2011
AL	ALICEVILLE L&D	01-0184			1-day	NCDC	33.2100	-88.2878	165	**2/1940-8/2010**
AL	ANDALUSIA 3 W	01-0252			1-day	NCDC	31.3067	-86.5222	250	10/1912-8/2011
AL	ANDALUSIA 3 W	01-0252			1-hour	NCDC	31.3067	-86.5222	250	**6/1948-12/2010**
AL	ANDALUSIA 3 W	01-0252			15-min	NCDC	31.3067	-86.5222	250	3/1980-12/2010
AL	ANNISTON METRO AP	01-0272			1-day	NCDC	33.5872	-85.8556	594	3/1903-10/2010
AL	ARLEY 1 S	01-0338			1-day	NCDC	34.0667	-87.2333	745	3/1938-10/1983
AL	ASHLAND 3 ENE	01-0369			1-day	NCDC	33.2942	-85.7789	1022	3/1940-10/2011
AL	ASHLAND 3 ENE	01-0369			1-hour	NCDC	33.2942	-85.7789	1022	6/1948-12/2010
AL	ASHLAND 3 ENE	01-0369			15-min	NCDC	33.2942	-85.7789	1022	8/1972-12/2010
AL	ASHVILLE 4 W	01-0377			1-day	NCDC	33.8500	-86.3333	591	5/1895-2/1973
AL	ATHENS	01-0390			1-day	NCDC	34.7772	-86.9511	680	**5/1941-10/2011**
AL	ATHENS 2	01-0395	01-0390		1-day	NCDC	34.8000	-86.9833	720	10/1955-6/1991
AL	ATMORE	01-0402			1-day	NCDC	31.1819	-87.4389	300	3/1940-10/2011
AL	ATMORE	01-0402			1-hour	NCDC	31.1819	-87.4389	300	6/1948-12/2010

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
AL	ATMORE	01-0402			15-min	NCDC	31.1819	-87.4389	300	10/1983-12/2010
AL	AUBURN	01-0422	01-0430		1-day	NCDC	32.6000	-85.5000	732	1/1893-12/1970
AL	AUBURN #2	01-0425			1-day	NCDC	32.5992	-85.4653	545	**1/1893-10/2011**
AL	AUBURN #2	01-0425		01-0425	1-hour	NCDC	32.5992	-85.4653	545	**6/1948-12/2010**
AL	AUBURN AG RSCH STN 10	01-0427	01-0425		1-hour	NCDC	32.6000	-85.4833	702	6/1948-8/1962
AL	AUBURN AGRONOMY FARM	01-0430	01-0425		1-day	NCDC	32.6000	-85.5000	652	1/1976-4/1996
AL	AUBURN AGRONOMY FARM	01-0430	01-0425		1-hour	NCDC	32.6000	-85.5000	652	2/1979-6/1996
AL	AUTAUGAVILLE 3 N	01-0440			1-day	NCDC	32.4706	-86.6800	200	10/1940-9/2001
AL	BANKHEAD L&D	01-0505			1-day	NCDC	33.4528	-87.3572	280	**8/1930-10/2011**
AL	BANKHEAD L&D	01-4855	01-0505		1-day	NCDC	33.4500	-87.3500	280	8/1930-1/1957
AL	BARTON	01-0546			1-day	NCDC	34.7167	-87.8667	459	1/1949-4/1953
AL	BAY MINETTE	01-0583			1-day	NCDC	30.8839	-87.7853	271	11/1913-10/2011
AL	BEATRICE	01-0616			1-day	NCDC	31.7222	-87.2119	178	12/1941-11/2000
AL	BELLE MINA 2 N	01-0655			1-day	NCDC	34.6908	-86.8825	600	1/1950-10/2011
AL	BERRY 3 NW	01-0748			1-day	NCDC	33.6944	-87.6497	504	2/1940-10/2011
AL	BERRY 3 NW	01-0748		01-0748	1-hour	NCDC	33.6944	-87.6497	504	6/1948-12/2010
AL	BESSEMER 3 SSW	01-0757	01-0764		1-day	NCDC	33.3667	-87.0167	541	10/1954-1/1975
AL	BESSEMER 3 WSW	01-0764			1-day	NCDC	33.3953	-87.0078	445	**10/1954-10/2011**
AL	BILLINGSLEY 3 NE	01-0823			1-day	NCDC	32.6731	-86.6653	445	12/1938-10/2011
AL	BIRMINGHAM	01-0836	01-4996		1-day	NCDC	33.5333	-86.8333	702	4/1893-10/1953
AL	BIRMINGHAM AP ASOS	01-0831			1-day	NCDC	33.5656	-86.7450	615	1/1930-10/2010
AL	BIRMINGHAM AP ASOS	01-0831		01-0831	1-hour	NCDC	33.5656	-86.7450	615	6/1948-12/2010
AL	BIRMINGHAM WSFO	01-0829			1-day	NCDC	33.4667	-86.8333	744	**4/1893-12/1989**
AL	BOAZ	01-0957			1-day	NCDC	34.2008	-86.1633	1070	**1/1908-7/2011**
AL	BOAZ	01-0957		01-0957	1-hour	NCDC	34.2008	-86.1633	1070	6/1948-12/2010
AL	BRANTLEY	01-1069			1-day	NCDC	31.5833	-86.2667	269	7/1930-1/1982
AL	BREWTON 3 ENE	01-1080			1-day	NCDC	31.1408	-87.0483	160	4/1977-10/2011
AL	BREWTON 3 SSE	01-1084			1-day	NCDC	31.0581	-87.0547	85	2/1926-10/2011
AL	BRIDGEPORT 5 NW	01-1099			1-day	NCDC	34.9786	-85.8008	670	9/1896-10/2011
AL	BROOKWOOD	01-1143			1-day	NCDC	33.2536	-87.2936	515	6/1960-10/2010
AL	BRUNDIDGE	01-1178			1-day	NCDC	31.7056	-85.8369	455	7/1930-10/2011
AL	CALERA	01-1288			1-day	NCDC	33.1106	-86.7461	530	9/1900-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
AL	CAMDEN 3 NNW	01-1300	01-1301		1-day	NCDC	32.0333	-87.3167	112	6/1908-8/1961
AL	CAMDEN 3 NW	01-1301			1-day	NCDC	32.0289	-87.3167	235	**6/1908-12/2001**
AL	CAMP HILL 2NW	01-1324			1-day	NCDC	32.8236	-85.6561	680	12/1900-10/2011
AL	CARBON HILL	01-1377			1-day	NCDC	33.8925	-87.5283	430	3/1938-10/2011
AL	CENTREVILLE	01-1520			1-day	NCDC	32.9500	-87.1333	220	12/1916-9/1973
AL	CENTREVILLE 6 SW	01-1525			1-day	NCDC	32.8661	-87.2383	450	12/1974-8/2010
AL	CHATOM	01-1566			1-day	NCDC	31.4714	-88.2503	285	9/1949-8/2011
AL	CHILDERSBURG	01-1615	01-1620		1-day	NCDC	33.2833	-86.3667	479	1/1891-3/1968
AL	CHILDERSBURG WTR PL	01-1620			1-day	NCDC	33.2850	-86.3431	418	**1/1891-10/2011**
AL	CLAIBORNE L&D	01-1690			1-day	NCDC	**31.6147**	**-87.5503**	50	10/1952-10/2011
AL	CLANTON	01-1694			1-day	NCDC	32.8200	-86.6522	610	2/1893-10/2011
AL	CLAYTON	01-1725			1-day	NCDC	31.8844	-85.4789	500	11/1928-10/2011
AL	COCHRANE 2 E	01-1799	01-2141		1-day	NCDC	33.0833	-88.2333	151	11/1909-12/1956
AL	CODEN	01-1803			1-day	NCDC	30.3878	-88.2281	12	10/1956-10/2011
AL	COFFEE SPRINGS 2 NW	01-1807			1-day	NCDC	31.1833	-85.9333	250	9/1923-12/1983
AL	COLBERT STEAM PLT	01-1819			1-day	NCDC	34.7500	-87.8500	469	1/1949-12/1980
AL	COLBERT STEAM PLT	01-1819		01-1819	1-hour	NCDC	34.7500	-87.8500	469	11/1951-12/1980
AL	COLLINSVILLE	01-1849			1-day	NCDC	34.2500	-85.8833	751	3/1938-10/1977
AL	CORDOVA 2 ENE	01-1940			1-day	NCDC	33.7500	-87.1500	320	2/1901-7/1991
AL	CUBA	01-2079			1-day	NCDC	32.4333	-88.3833	220	2/1940-2/1983
AL	DADEVILLE	01-2119			1-day	NCDC	32.8167	-85.7500	650	7/1904-4/2010
AL	DADEVILLE 2	01-2124		01-2119	1-hour	NCDC	32.8622	-85.7358	733	6/1948-12/2010
AL	DADEVILLE 2	01-2124		01-2119	15-min	NCDC	32.8622	-85.7358	733	5/1971-12/2010
AL	DANCY 4 N	01-2141			1-day	NCDC	33.0667	-88.2833	210	2/1905-6/1965
AL	DAUPHIN ISLAND #2	01-2172			1-day	NCDC	30.2500	-88.0833	8	**6/1866-10/2011**
AL	DAUPHIN ISLAND #2	01-2172			1-hour	NCDC	**30.2505**	**-88.0775**	8	**6/1948-12/2010**
AL	DAUPHIN ISLAND #2	01-2172			15-min	NCDC	30.2500	-88.0833	8	8/1975-12/2010
AL	DAYTON 1 N	01-2188			1-day	NCDC	32.3667	-87.6500	230	1/1940-3/1982
AL	DECATUR	01-2207			1-day	NCDC	34.5833	-86.9667	581	2/1880-5/1969
AL	DEMOPOLIS L&D	01-2245			1-day	NCDC	32.5192	-87.8794	100	**11/1892-10/2011**
AL	DEMOPOLIS LOCK 4	01-2240	01-2245		1-day	NCDC	32.5167	-87.8500	102	11/1892-8/1954
AL	DORA	01-2350			1-day	NCDC	33.7386	-87.0792	358	**3/1938-10/2011**

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
AL	DOTHAN	01-2377			1-day	NCDC	31.1942	-85.3708	275	4/1952-10/2011
AL	DOTHAN	01-2377			1-hour	NCDC	31.1942	-85.3708	275	4/1952-12/2010
AL	DOTHAN	01-2377			15-min	NCDC	31.1942	-85.3708	275	5/1971-12/2010
AL	DOTHAN FAA AP	01-2372			1-day	NCDC	31.3167	-85.4500	371	4/1902-12/1969
AL	ELBA	01-2577			1-day	NCDC	31.4239	-86.0667	195	3/1893-12/2010
AL	ELROD	01-2632			1-day	NCDC	33.2569	-87.7972	252	2/1940-7/2000
AL	ENTERPRISE	01-2670	01-2675		1-day	NCDC	31.3167	-85.8500	381	1/1956-5/1966
AL	ENTERPRISE 2 W	01-2675			1-day	NCDC	31.3147	-85.8797	398	**1/1956-10/2011**
AL	ENTERPRISE 2 W	01-2675			1-hour	NCDC	31.3147	-85.8797	398	4/1971-12/2010
AL	ENTERPRISE 2 W	01-2675			15-min	NCDC	31.3147	-85.8797	398	5/1971-12/2010
AL	EUFAULA	01-2727			1-day	NCDC	31.8667	-85.1500	200	6/1892-2/1967
AL	EUFAULA WILDLIFE REF	01-2730			1-day	NCDC	32.0086	-85.0919	230	3/1967-9/2011
AL	EVERGREEN	01-2758			1-day	NCDC	**31.4449**	**-86.9532**	290	**10/1890-10/2011**
AL	EVERGREEN FAA AP	01-2763	01-2758		1-day	NCDC	31.4167	-87.0333	256	12/1949-7/1961
AL	FAIRHOPE 2 NE	01-2813			1-day	NCDC	30.5467	-87.8808	23	8/1917-10/2011
AL	FALKVILLE 1 E	01-2840			1-day	NCDC	34.3667	-86.8833	625	8/1938-6/1992
AL	FAYETTE	01-2883			1-day	NCDC	33.6847	-87.8219	365	3/1892-10/2011
AL	FLORENCE	01-2971			1-day	NCDC	34.8000	-87.6833	581	1/1893-4/1977
AL	FLORENCE AT LOCK	01-2976	01-5749		1-day	NCDC	34.7833	-87.6667	449	12/1890-11/1959
AL	FRISCO CITY 3 SSW	01-3105			1-day	NCDC	31.3894	-87.4203	275	7/1930-11/2000
AL	FT DEPOSIT	01-3024			1-day	NCDC	31.9833	-86.5833	502	11/1891-10/1969
AL	FT MORGAN	01-3035	01-2172		1-day	NCDC	30.2333	-88.0167	10	5/1940-7/1975
AL	FT MORGAN	01-3035	01-2172		1-hour	NCDC	30.2333	-88.0167	10	6/1948-7/1975
AL	FT PAYNE	01-3043			1-day	NCDC	34.4406	-85.7236	917	7/1935-10/2011
AL	FT PAYNE	01-3043		01-3043	1-hour	NCDC	34.4406	-85.7236	917	6/1948-12/2010
AL	GADSDEN	01-3151	01-3154		1-day	NCDC	34.0167	-86.0000	571	7/1893-3/1968
AL	GADSDEN	01-3154			1-day	NCDC	34.0219	-85.9878	565	**7/1893-10/2011**
AL	GAINESVILLE LOCK	01-3160			1-day	NCDC	32.8347	-88.1342	125	6/1948-10/2011
AL	GARDEN CITY	01-3200			1-day	NCDC	34.0167	-86.7500	502	3/1938-12/1983
AL	GARDEN CITY	01-3200	01-3655		1-hour	NCDC	34.0167	-86.7500	502	6/1948-3/1973
AL	GENEVA	01-3255	01-3251		1-day	NCDC	31.0386	-85.8700	106	1/1892-3/1976
AL	GENEVA #2	01-3251			1-day	NCDC	31.0383	-85.8708	145	**1/1892-10/2011**

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AL	GEORGIANA	01-3271			1-day	NCDC	31.6772	-86.8061	300	2/1956-7/2004
AL	GOODWATER	01-3399			1-day	NCDC	33.0667	-86.0500	1010	11/1895-6/1954
AL	GORGAS 2 ENE	01-3430			1-day	NCDC	33.6667	-87.1833	350	1/1937-10/1994
AL	GREENSBORO	01-3511			1-day	NCDC	32.7017	-87.5808	220	2/1890-7/2011
AL	GREENVILLE	01-3519			1-day	NCDC	**31.7901**	**-86.6087**	342	9/1900-10/2011
AL	GREENVILLE	01-3519			1-hour	NCDC	**31.7901**	**-86.6087**	342	**6/1948-12/2010**
AL	GREENVILLE	01-3519			15-min	NCDC	31.7947	-86.6147	342	9/1971-12/2010
AL	GREENVILLE 2	01-3524	01-3519		1-hour	NCDC	31.8333	-86.6333	420	6/1948-11/1966
AL	GUNTERSVILLE	01-3573			1-day	NCDC	34.3344	-86.3297	578	12/1904-10/2011
AL	HALEYVILLE	01-3620			1-day	NCDC	34.2311	-87.6347	920	11/1902-7/2011
AL	HALEYVILLE	01-3620			1-hour	NCDC	34.2311	-87.6347	920	6/1948-12/2010
AL	HALEYVILLE	01-3620			15-min	NCDC	34.2311	-87.6347	920	3/1977-12/2010
AL	HAMILTON	01-3644	01-3645		1-day	NCDC	34.1333	-87.9833	551	9/1930-12/1961
AL	HAMILTON 3 S	01-3645			1-day	NCDC	34.0967	-87.9914	435	**9/1930-10/2011**
AL	HAMILTON 3 S	01-3645		01-3645	1-hour	NCDC	34.0967	-87.9914	435	11/1967-12/2010
AL	HANCEVILLE	01-3655			1-day	NCDC	34.0675	-86.7917	592	6/1948-10/2011
AL	HANCEVILLE	01-3655			1-hour	NCDC	34.0675	-86.7917	592	**6/1948-11/2007**
AL	HANCEVILLE	01-3655			15-min	NCDC	34.0675	-86.7917	592	4/1973-11/2007
AL	HAYNEVILLE	01-3748			1-day	NCDC	32.1833	-86.5833	171	3/1938-6/1981
AL	HEADLAND	01-3761			1-day	NCDC	31.3625	-85.3397	370	4/1950-10/2011
AL	HEFLIN	01-3775			1-day	NCDC	33.6483	-85.6006	850	1/1956-10/2011
AL	HELENA	01-3781			1-day	NCDC	33.2725	-86.8336	480	**9/1900-10/2011**
AL	HELENA 1 S	01-3783	01-3781		1-day	NCDC	33.2833	-86.8500	416	9/1900-8/1951
AL	HIGHLAND HOME	01-3816			1-day	NCDC	**31.8814**	**-86.2503**	433	5/1892-10/2011
AL	HIGHTOWER	01-3842			1-day	NCDC	33.5172	-85.3781	1175	8/1941-10/2011
AL	HODGES	01-3899			1-day	NCDC	34.3606	-87.9283	840	3/1938-3/2000
AL	HUNTSVILLE 4 SSE	01-4068	01-4064		1-day	NCDC	34.7000	-86.5833	610	1/1937-7/1954
AL	HUNTSVILLE INTNL AP	01-4064			1-day	NCDC	34.6439	-86.7861	624	**1/1937-10/2010**
AL	HUNTSVILLE INTNL AP	01-4064		01-4064	1-hour	NCDC	34.6439	-86.7861	624	11/1958-12/2010
AL	JACKSON	01-4193			1-day	NCDC	31.5250	-87.9278	220	**1/1930-10/2011**
AL	JACKSON	01-4193			1-hour	NCDC	31.5250	-87.9278	220	10/1961-12/2010
AL	JACKSON	01-4193			15-min	NCDC	31.5250	-87.9278	220	4/1974-12/2010

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AL	JACKSON LOCK 1	01-4192	01-4193		1-day	NCDC	31.5500	-88.0167	10	1/1930-10/1960
AL	JACKSONVILLE	01-4209			1-day	NCDC	33.8164	-85.7661	688	7/1948-10/2011
AL	JACKSONVILLE	01-4209		01-4209	1-hour	NCDC	33.8164	-85.7661	688	6/1948-12/2010
AL	JASPER	01-4226			1-day	NCDC	33.9053	-87.3150	486	8/1960-10/2011
AL	JORDAN DAM	01-4306			1-day	NCDC	32.6167	-86.2500	290	1/1937-10/2011
AL	KINSTON	01-4431			1-day	NCDC	31.2403	-86.1947	270	6/1965-12/2006
AL	LAFAYETTE 2W	01-4502			1-day	NCDC	32.9069	-85.4336	740	11/1944-10/2011
AL	LAY DAM	01-4603			1-day	NCDC	32.9667	-86.5167	420	1/1937-10/2011
AL	LEEDS	01-4619			1-day	NCDC	33.5447	-86.5272	636	2/1917-10/2011
AL	LEESBURG	01-4627	01-8755		1-day	NCDC	34.1833	-85.7667	591	1/1900-10/1981
AL	LINCOLN LOCK 4	01-4845			1-day	NCDC	33.6333	-86.1833	512	12/1896-8/1949
AL	LIVINGSTON	01-4798			1-day	NCDC	32.5811	-88.1897	128	11/1891-10/2011
AL	MADISON	01-4976			1-day	NCDC	34.7000	-86.7500	581	2/1894-12/1974
AL	MAGELLA	01-4996	01-0829		1-day	NCDC	33.5000	-86.8500	650	1/1937-1/1977
AL	MARION 1 N	01-5108	01-5112		1-day	NCDC	32.6333	-87.3000	210	12/1893-11/1967
AL	MARION 7 NE	01-5112			1-day	NCDC	32.7028	-87.2681	172	**12/1893-11/2004**
AL	MARION 7 NE	01-5112			1-hour	NCDC	32.7028	-87.2681	172	11/1967-12/2004
AL	MARION 7 NE	01-5112			15-min	NCDC	32.7028	-87.2681	172	12/1971-12/2004
AL	MARION JUNCTION 2 E	01-5116			1-day	NCDC	32.4500	-87.1833	202	10/1938-10/2011
AL	MARION JUNCTION 2 NE	01-5121			1-day	NCDC	32.4714	-87.2306	200	2/1950-7/2011
AL	MARTIN DAM	01-5140	01-8653		1-day	NCDC	32.6667	-85.9167	340	1/1925-9/1992
AL	MATHEWS	01-5172			1-day	NCDC	32.2603	-86.0003	190	8/1956-10/2011
AL	MELVIN	01-5354			1-day	NCDC	31.9306	-88.4586	350	1/1940-10/2011
AL	MIDWAY	01-5397			1-hour	NCDC	32.0597	-85.4953	498	6/1948-12/2010
AL	MIDWAY	01-5397			15-min	NCDC	32.0597	-85.4953	498	5/1971-12/2010
AL	MILLERS FERRY	01-5417	01-5420		1-day	NCDC	32.1000	-87.3667	79	11/1930-10/1967
AL	MILLERS FERRY L&D	01-5420			1-day	NCDC	32.1000	-87.3981	115	**11/1930-10/2011**
AL	MILSTEAD	01-5439			1-day	NCDC	32.4419	-85.8889	215	9/1902-10/2011
AL	MITCHELL DAM	01-5465			1-day	NCDC	32.8000	-86.4500	350	1/1937-10/2011
AL	MOBILE	01-5483			1-day	NCDC	30.6833	-88.0333	10	1/1871-12/1965
AL	MOBILE POINT	62-5483	01-3035		1-day	FORTS	30.2278	-88.0242	6	6/1866-12/1892
AL	MOBILE RGNL AP	01-5478			1-day	NCDC	30.6883	-88.2456	215	3/1900-8/2010

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AL	MOBILE RGNL AP	01-5478		01-5478	1-hour	NCDC	30.6883	-88.2456	215	7/1948-12/2010
AL	MONTEVALLO	01-5537			1-day	NCDC	33.0981	-86.8667	410	12/1893-10/2011
AL	MONTGOMERY 6SW	01-5553			1-day	NCDC	32.2600	-86.2181	225	**12/1921-10/2011**
AL	MONTGOMERY AP ASOS	01-5550			1-day	NCDC	32.2997	-86.4075	202	1/1948-10/2010
AL	MONTGOMERY AP ASOS	01-5550		01-5550	1-hour	NCDC	32.2997	-86.4075	202	7/1948-12/2010
AL	MONTGOMERY WB CITY	01-5555			1-day	NCDC	32.3833	-86.3000	256	9/1872-9/1954
AL	MOULTON	01-5625	01-5635		1-day	NCDC	34.4667	-87.3000	630	7/1927-3/1962
AL	MOULTON	01-5625		01-5635	1-hour	NCDC	34.4667	-87.3000	630	7/1948-8/1977
AL	MOULTON 2	01-5635			1-day	NCDC	34.4883	-87.2989	622	**7/1927-10/2011**
AL	MOUNT VERNON BARRACKS	01-5685			1-day	NCDC	31.0881	-88.0258	172	10/1840-2/1892
AL	MUSCLE SHOALS AP	01-5749			1-day	NCDC	34.7442	-87.5997	540	**12/1890-10/2010**
AL	NATCHEZ	01-5785	01-0616		1-day	NCDC	31.7167	-87.2667	180	3/1951-6/1967
AL	NEW MARKET	01-5862	01-5867		1-day	NCDC	34.9000	-86.4333	761	2/1943-3/1962
AL	NEW MARKET 2	01-5867			1-day	NCDC	34.9167	-86.4500	732	**2/1943-2/1977**
AL	NEWTON	01-5875			1-day	NCDC	31.3458	-85.6228	139	12/1891-4/1981
AL	ONEONTA	01-6121			1-day	NCDC	33.9478	-86.4692	892	8/1894-10/2011
AL	OPELIKA	01-6129			1-day	NCDC	32.6592	-85.4492	640	3/1957-10/2011
AL	OPEN POND - FTS	60-0253			1-hour	RAWS	31.0944	-86.5486	275	6/1998-2/2011
AL	OZARK 6 NNW	01-6218			1-day	NCDC	31.5333	-85.6833	470	5/1902-3/1986
AL	PAINT ROCK 2 N	01-6226			1-day	NCDC	34.7000	-86.3333	640	11/1935-12/1980
AL	PAINT ROCK 2 N	01-6226		01-6226	1-hour	NCDC	34.7000	-86.3333	640	7/1948-12/1980
AL	PALMERDALE	01-6246			1-day	NCDC	33.7450	-86.6417	722	6/1948-10/2011
AL	PENNINGTON 2 NE	01-6334			1-day	NCDC	32.2258	-88.0281	85	**1/1932-6/1998**
AL	PERRYVILLE	01-6362			1-day	NCDC	32.6567	-87.0928	272	1/1940-10/2004
AL	PETERMAN	01-6370			1-hour	NCDC	31.5883	-87.2681	240	6/1948-12/2010
AL	PETERMAN	01-6370			15-min	NCDC	31.5883	-87.2681	240	6/1974-12/2010
AL	PICKENSVILLE	01-6414	01-0184		1-day	NCDC	33.2167	-88.2500	171	2/1940-4/1977
AL	PICKENSVILLE	01-6418	01-0184		1-day	NCDC	33.2333	-88.2833	180	7/1977-4/1980
AL	PINE APPLE	01-6436			1-day	NCDC	31.8817	-86.9861	265	10/1967-10/2011
AL	PINE LEVEL 4 ESE	01-6468			1-day	NCDC	32.0333	-85.9833	480	5/1941-6/1989
AL	PINSON	01-6478			1-day	NCDC	33.6906	-86.6847	608	2/1951-10/2011
AL	PLANTERSVILLE 2 SSE	01-6508			1-day	NCDC	32.6131	-86.9056	230	1/1940-10/2011

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AL	PRATTVILLE	01-6640			1-day	NCDC	32.4833	-86.4833	302	2/1902-9/1977
AL	PRIMROSE FARM	01-6684	01-5553		1-day	NCDC	32.3000	-86.2500	180	12/1921-12/1966
AL	PUSHMATAHA	01-6719			1-day	NCDC	32.2000	-88.3500	259	11/1891-12/1964
AL	REFORM	01-6847			1-day	NCDC	33.3753	-88.0200	238	3/1938-7/2011
AL	RIVER FALLS	01-6937			1-day	NCDC	31.3500	-86.5333	180	11/1928-12/1980
AL	RIVER FALLS 2 NE	01-6942	01-0252		1-hour	NCDC	31.3667	-86.5167	190	6/1948-12/1980
AL	RIVER FALLS 2 NE	01-6942			15-min	NCDC	31.3667	-86.5167	190	10/1972-12/1980
AL	ROBERTSDALE	01-6988			1-day	NCDC	30.5650	-87.7017	161	5/1912-10/2011
AL	ROCK MILLS	01-7025			1-day	NCDC	33.1581	-85.2911	750	6/1938-10/2011
AL	ROCKFORD 3 ESE	01-7020			1-day	NCDC	32.8711	-86.1758	600	7/1954-7/2011
AL	RUSSELLVILLE #2	01-7131			1-day	NCDC	34.5100	-87.7319	830	9/1953-10/2011
AL	SAINT BERNARD	01-7157			1-day	NCDC	34.1736	-86.8133	800	8/1907-2/2010
AL	SAND MT SUBSTN	01-7207			1-day	NCDC	34.2878	-85.9681	1190	1/1949-10/2011
AL	SAYRE 5 NW	01-7282	01-2350		1-day	NCDC	33.7500	-87.0500	304	3/1938-3/1992
AL	SCOTTSBORO	01-7304			1-day	NCDC	34.6736	-86.0536	615	12/1891-10/2011
AL	SEALE	01-7326			1-day	NCDC	32.3217	-85.1683	425	**3/1925-10/2011**
AL	SEALE	01-7328	01-7326		1-day	NCDC	32.3000	-85.1667	390	3/1925-2/1965
AL	SELMA	01-7366			1-day	NCDC	32.4100	-87.0153	147	2/1895-10/2011
AL	SHEFFIELD TVA NURSERY	01-7415	01-2971		1-day	NCDC	34.7667	-87.7000	512	3/1935-7/1954
AL	SPRING HILL	01-7733	01-5478		1-day	NCDC	30.7000	-88.1667	180	5/1904-6/1951
AL	SUTTLE	01-7963			1-day	NCDC	32.5411	-87.1783	145	10/1949-6/1980
AL	SYLACAUGA 2 W	01-7994	01-7999		1-day	NCDC	33.1667	-86.2833	551	1/1937-7/1959
AL	SYLACAUGA 4 NE	01-7999			1-day	NCDC	33.2053	-86.2114	490	**1/1937-10/2011**
AL	TALLADEGA	01-8024			1-day	NCDC	33.4164	-86.1350	448	2/1888-10/2011
AL	THOMASVILLE	01-8178			1-day	NCDC	**31.9172**	**-87.7347**	390	9/1891-10/2011
AL	THOMASVILLE	01-8178			1-hour	NCDC	**31.9172**	**-87.7347**	390	11/1967-12/2010
AL	THOMASVILLE	01-8178			15-min	NCDC	**31.9172**	**-87.7347**	390	5/1971-12/2010
AL	THORSBY 1 SW	01-8204	01-8209		1-hour	NCDC	32.9000	-86.7333	200	6/1948-3/1972
AL	THORSBY EXP STN	01-8209			1-day	NCDC	32.9206	-86.6708	680	6/1948-10/2011
AL	THORSBY EXP STN	01-8209			1-hour	NCDC	32.9206	-86.6708	680	**6/1948-12/2010**
AL	THORSBY EXP STN	01-8209			15-min	NCDC	32.9206	-86.6708	680	5/1971-12/2010
AL	THURLOW DAM	01-8215			1-day	NCDC	32.5333	-85.9000	288	1/1937-9/1992

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AL	TONEY	01-8259		01-8259	1-hour	NCDC	34.9000	-86.7333	830	7/1948-12/1980
AL	TRAFFORD	01-8285	01-8668		1-hour	NCDC	33.8167	-86.7333	469	6/1948-2/1967
AL	TROY	01-8323			1-day	NCDC	31.8075	-85.9722	542	6/1908-9/2010
AL	TROY	01-8323			1-hour	NCDC	31.8075	-85.9722	542	6/1948-12/2010
AL	TROY	01-8323			15-min	NCDC	31.8075	-85.9722	542	3/1972-12/2010
AL	TUSCALOOSA ACFD	01-8380			1-day	NCDC	33.2119	-87.6161	169	6/1948-10/2011
AL	TUSCALOOSA OLIVER DAM	01-8385			1-day	NCDC	33.2097	-87.5936	152	2/1900-10/2011
AL	TUSCALOOSA OLIVER DAM	01-8385		01-8385	1-hour	NCDC	33.2097	-87.5936	152	1/1958-12/2010
AL	TUSCUMBIA	01-8391			1-day	NCDC	34.7167	-87.7167	489	1/1892-2/1940
AL	TUSKEGEE	01-8398	01-8403		1-day	NCDC	32.4333	-85.7000	459	11/1899-6/1954
AL	TUSKEGEE 3 S	01-8403			1-day	NCDC	32.3833	-85.6500	420	**11/1899-10/1968**
AL	UNION SPRINGS 9 S	01-8438			1-day	NCDC	32.0142	-85.7464	440	5/1892-7/2011
AL	UNIONTOWN	01-8446			1-day	NCDC	32.4717	-87.5211	257	7/1893-10/2011
AL	VALLEY HEAD	01-8469			1-day	NCDC	34.5667	-85.6128	1062	1/1893-10/2011
AL	VERNON	01-8517			1-day	NCDC	33.7392	-88.1275	298	3/1938-10/2011
AL	VERNON	01-8517		01-8517	1-hour	NCDC	33.7392	-88.1275	298	6/1948-12/2010
AL	WADLEY	01-8605	01-8608		1-day	NCDC	33.1167	-85.5667	675	2/1933-10/1992
AL	WADLEY NR 2	01-8608			1-day	NCDC	33.1361	-85.5869	710	**2/1933-10/2011**
AL	WALLACE 2 E	01-8637			1-day	NCDC	31.2097	-87.1789	205	5/1941-10/2011
AL	WALNUT GROVE	01-8648			1-day	NCDC	34.0661	-86.3069	850	6/1941-10/2011
AL	WALNUT HILL 3 W	01-8653			1-day	NCDC	32.7028	-85.8936	410	**1/1925-10/2011**
AL	WARRIOR	01-8668	01-8670		1-hour	NCDC	33.8167	-86.8167	541	3/1967-4/1972
AL	WARRIOR	01-8670			1-hour	NCDC	33.7925	-86.8258	520	**6/1948-12/2010**
AL	WARRIOR	01-8670			15-min	NCDC	33.7925	-86.8258	520	10/1972-12/2010
AL	WARRIOR L&D	01-2742	01-8673		1-day	NCDC	32.7833	-87.8333	112	5/1938-11/1957
AL	WARRIOR L&D	01-8673			1-day	NCDC	32.7744	-87.8306	110	**5/1938-10/2011**
AL	WARRIOR L&D	01-2742	01-8673		1-hour	NCDC	32.7833	-87.8333	112	6/1948-12/1957
AL	WARRIOR L&D	01-8673			1-hour	NCDC	32.7744	-87.8306	110	**6/1948-12/2010**
AL	WARRIOR L&D	01-8673			15-min	NCDC	32.7744	-87.8306	110	5/1971-12/2010
AL	WATERLOO	01-8686	22-4455		1-day	NCDC	34.9167	-88.0667	459	7/1922-4/1975
AL	WEISS DAM	01-8755			1-day	NCDC	34.1333	-85.8000	590	**1/1900-10/2011**
AL	WEST BLOCTON	01-8809			1-day	NCDC	33.1194	-87.1239	500	3/1940-10/2011

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AL	WETUMPKA	01-8859			1-day	NCDC	32.5906	-86.2103	257	1/1893-7/2011
AL	WHATLEY	01-8867			1-day	NCDC	31.6508	-87.7097	170	1/1940-9/2007
AL	WHITFIELD LOCK 3	01-8925	01-6334		1-day	NCDC	32.2833	-88.0167	30	1/1932-12/1960
AL	WINFIELD 2 SW	01-8998			1-day	NCDC	33.9111	-87.8475	468	4/1923-10/2011
AL	YATES HYDRO PLT	01-9103			1-day	NCDC	32.5667	-85.9000	341	1/1892-1/1970
AR	ABBOTT	03-0006			1-day	NCDC	35.0764	-94.2025	624	7/1941-8/2011
AR	ALICIA	03-0064			1-day	NCDC	35.9000	-91.0833	256	5/1905-10/2011
AR	ALICIA 2NNE	03-0064		03-0064	1-hour	NCDC	35.9289	-91.0583	252	5/1948-12/2010
AR	ALUM FORK	03-0130			1-day	NCDC	34.7961	-92.8417	698	1/1937-8/2011
AR	ALUM FORK	03-0130			1-hour	NCDC	34.7961	-92.8417	698	5/1948-12/2010
AR	ALUM FORK	03-0130			15-min	NCDC	34.7961	-92.8417	698	5/1971-12/2010
AR	ALY	03-0136			1-day	NCDC	34.8000	-93.4667	899	3/1946-3/1982
AR	ALY	03-0136		03-0136	1-hour	NCDC	34.8000	-93.4667	899	5/1948-2/1984
AR	AMITY 1N	03-0150			1-day	NCDC	34.2808	-93.4614	460	9/1896-10/2011
AR	ANTOINE	03-0178			1-day	NCDC	34.0292	-93.4211	285	3/1940-10/2011
AR	ANTOINE	03-0178		03-0178	1-hour	NCDC	34.0292	-93.4211	285	8/1950-12/2010
AR	ARKADELPHIA 2 N	03-0220			1-day	NCDC	34.1433	-93.0589	196	1/1892-10/2011
AR	ARKADELPHIA 2 N	03-0220			1-hour	NCDC	34.1433	-93.0589	196	5/1948-12/2010
AR	ARKADELPHIA 2 N	03-0220			15-min	NCDC	34.1433	-93.0589	196	1/1972-12/2010
AR	ARKANSAS CITY	03-0234			1-day	NCDC	33.6061	-91.2186	145	12/1885-9/2011
AR	ARKANSAS POST	03-0240			1-day	NCDC	34.0250	-91.3444	194	9/1963-10/2011
AR	ASHDOWN 4 SSE	03-0286			1-day	NCDC	33.6192	-94.0997	320	4/1893-10/2011
AR	ATHENS	03-0300			1-day	NCDC	34.3253	-93.9811	960	6/1948-10/2011
AR	AUGUSTA	03-0326			1-day	NCDC	35.2956	-91.3936	195	12/1943-10/2011
AR	AUGUSTA	03-0326			1-hour	NCDC	35.2956	-91.3936	195	5/1948-12/2010
AR	AUGUSTA	03-0326			15-min	NCDC	35.2956	-91.3936	195	2/1976-12/2010
AR	BATESVILLE L&D 1	03-0460			1-day	NCDC	35.7500	-91.6333	277	7/1904-10/2011
AR	BATESVILLE L&D 1	03-0460		03-0460	1-hour	NCDC	35.7600	-91.6389	290	5/1948-2/1992
AR	BATESVILLE LIVESTOCK	03-0458			1-day	NCDC	35.8306	-91.7944	571	7/1941-10/2011
AR	BATESVILLE LIVESTOCK	03-0458			1-hour	NCDC	35.8306	-91.7944	571	8/1949-12/2010
AR	BATESVILLE LIVESTOCK	03-0458			15-min	NCDC	35.8306	-91.7944	571	1/1984-12/2010
AR	BEATY LAKE	03-0512	03-4528		1-day	NCDC	35.0833	-90.7167	400	11/1941-7/1960

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AR	BEE BRANCH	03-0528	03-1829		1-day	NCDC	35.4500	-92.4000	650	8/1892-4/1953
AR	BEEBE	03-0530			1-hour	NCDC	35.0644	-91.8961	250	5/1948-12/2010
AR	BEEBE	03-0530			15-min	NCDC	35.0644	-91.8961	250	5/1971-12/2010
AR	BEECH GROVE	03-0534			1-day	NCDC	36.1833	-90.6333	302	11/1941-4/1975
AR	BEEDEVILLE 4 NE	03-0536			1-day	NCDC	35.4583	-91.0561	240	3/1940-6/2011
AR	BENTON	03-0582			1-day	NCDC	34.5675	-92.6006	310	3/1907-8/2011
AR	BENTONVILLE	03-0586			1-day	NCDC	36.3667	-94.2167	1302	6/1943-2/2007
AR	BERRYVILLE 5 NW	03-0616			1-hour	NCDC	36.4294	-93.6256	1180	5/1948-12/2010
AR	BERRYVILLE 5 NW	03-0616			15-min	NCDC	36.4294	-93.6256	1180	1/1984-12/2010
AR	BERRYVILLE 5NW	03-0616			1-day	NCDC	36.3667	-93.5667	1255	1/1946-10/2011
AR	BIG FORK 1 SSE	03-0664			1-day	NCDC	34.4692	-93.9567	1200	5/1944-10/2011
AR	BISMARCK 2 SE	03-0724			1-day	NCDC	34.2872	-93.1444	500	10/1965-8/2011
AR	BLACK ROCK	03-0746			1-day	NCDC	36.1167	-91.1000	259	2/1892-10/2011
AR	BLAKELY MTN DAM	03-0764			1-day	NCDC	34.5697	-93.1947	426	5/1950-10/2011
AR	BLAKELY MTN DAM	03-0764			1-hour	NCDC	34.5697	-93.1947	426	5/1950-12/2010
AR	BLAKELY MTN DAM	03-0764			15-min	NCDC	34.5697	-93.1947	426	5/1971-12/2010
AR	BLUE MTN DAM	03-0798			1-day	NCDC	35.1161	-93.6506	426	9/1939-10/2011
AR	BLUE MTN DAM	03-0798			1-hour	NCDC	35.1161	-93.6506	426	5/1948-12/2010
AR	BLUE MTN DAM	03-0798			15-min	NCDC	35.1161	-93.6506	426	1/1984-12/2010
AR	BLUFF CITY 3 SW	03-0800			1-day	NCDC	33.6919	-93.1622	360	10/1941-8/2011
AR	BLYTHEVILLE	03-0806			1-day	NCDC	35.9333	-89.9333	252	3/1926-10/2011
AR	BONNERDALE 4 SW	03-0820			1-day	NCDC	34.3667	-93.4231	635	10/1965-10/2011
AR	BOONEVILLE	60-0500		60-0500	1-hour	RAWS	35.1428	-93.8950	343	8/1949-3/2011
AR	BOONEVILLE 3 SSE	03-0830	03-0832		1-day	NCDC	35.1500	-93.9167	512	1/1948-3/1977
AR	BOONEVILLE 3 SSE	03-0832			1-day	NCDC	35.0931	-93.9258	600	**4/1915-8/2010**
AR	BOONEVILLE 3 SSE	03-0830	60-0500		1-hour	NCDC	35.1500	-93.9167	512	8/1949-4/1977
AR	BOONEVILLE 3 SSE	03-0832			1-hour	NCDC	35.0931	-93.9258	600	4/1978-12/2010
AR	BOONEVILLE 3 SSE	03-0832			15-min	NCDC	35.0931	-93.9258	600	6/1979-12/2010
AR	BOONEVILLE 3 W	03-0828	03-0832		1-day	NCDC	35.1500	-93.9667	459	4/1915-4/1949
AR	BOTKINBURG 2 S	03-0842			1-day	NCDC	35.6667	-92.5000	1411	6/1939-8/2011
AR	BOTKINBURG 3 NE	03-0842		03-0842	1-hour	NCDC	35.7200	-92.4708	1295	5/1948-12/2010
AR	BOUGHTON	03-0848			1-day	NCDC	33.8667	-93.3333	249	11/1935-10/1982

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AR	BRIGGSVILLE	03-0900			1-hour	NCDC	34.9458	-93.4636	460	**5/1948-12/2010**
AR	BRIGGSVILLE	03-0900			15-min	NCDC	34.9458	-93.4636	460	**1/1984-12/2010**
AR	BRINKLEY	03-0936			1-day	NCDC	34.8822	-91.2153	185	2/1895-10/2011
AR	BRINKLEY	03-0936			1-hour	NCDC	34.8822	-91.2153	185	5/1948-12/2010
AR	BRINKLEY	03-0936			15-min	NCDC	34.8822	-91.2153	185	5/1971-12/2010
AR	BUFFALO TWR	03-1010			1-day	NCDC	35.8640	-93.4930	2578	10/1948-8/1987
AR	BULL SHOALS DAM	03-1020			1-hour	NCDC	36.3647	-92.5781	480	5/1948-12/2010
AR	BULL SHOALS DAM	03-1020			15-min	NCDC	36.3647	-92.5781	480	5/1971-12/2010
AR	CABOT	03-1102			1-day	NCDC	34.9817	-92.0064	300	4/1918-10/2011
AR	CALICO ROCK	03-1132			1-day	NCDC	36.1167	-92.1333	361	7/1904-10/2011
AR	CALION L&D	03-1140			1-day	NCDC	33.3111	-92.4850	100	5/1948-10/2011
AR	CALION L&D	03-1140		03-1140	1-hour	NCDC	33.3111	-92.4850	100	**5/1948-12/2010**
AR	CAMDEN 1	03-1152			1-day	NCDC	33.5900	-92.8236	116	1/1893-10/2011
AR	CAMDEN 1	03-1152		03-1152	1-hour	NCDC	33.5900	-92.8236	116	**5/1948-12/2010**
AR	CAMDEN 2	03-1154	03-1152		1-hour	NCDC	33.5833	-92.8500	161	5/1948-4/1966
AR	CLARENDON	03-1442			1-day	NCDC	34.6928	-91.2983	180	9/1904-10/2011
AR	CLARKSVILLE	03-1455	03-1457		1-day	NCDC	35.4833	-93.4500	454	7/1953-10/1993
AR	CLARKSVILLE 6 NE	03-1457			1-day	NCDC	35.5328	-93.4036	850	**7/1953-10/2011**
AR	CLARKSVILLE 6 NE	03-1457			1-hour	NCDC	35.5328	-93.4036	850	12/1961-12/2010
AR	CLARKSVILLE 6 NE	03-1457			15-min	NCDC	35.5328	-93.4036	850	6/1978-12/2010
AR	CLINTON	03-1492			1-day	NCDC	35.5833	-92.4667	512	10/1921-10/2011
AR	COMBS 3 SE	03-1574	03-6393		1-hour	NCDC	**35.8036**	**-93.7915**	1400	5/1948-10/1986
AR	COMPTON	03-1582		03-1582	1-hour	NCDC	36.0919	-93.3081	2166	5/1948-12/2010
AR	COMPTON 2 NE	03-1582			1-day	NCDC	36.0833	-93.3000	2198	6/1939-11/2010
AR	CONWAY	03-1596			1-day	NCDC	35.0842	-92.4289	315	8/1890-10/2011
AR	CORNING	03-1632			1-day	NCDC	36.4000	-90.5833	293	1/1893-10/2011
AR	CORNING	03-1632		03-1632	1-hour	NCDC	36.4197	-90.5858	300	5/1948-12/2010
AR	COVE	03-1666			1-day	NCDC	34.4314	-94.4175	1060	3/1946-10/2011
AR	CROOKED CREEK AT YELLVILL	53-0340			1-day	USGS	36.2231	-92.6797	**627**	12/1944-1/2008
AR	CROSSETT 2 SSE	03-1730			1-day	NCDC	33.1111	-91.9481	180	2/1915-10/2011
AR	CRYSTAL VALLEY	03-1750			1-day	NCDC	34.6886	-92.4500	355	12/1941-10/2011
AR	DAMASCUS 2 NNE	03-1829			1-day	NCDC	35.4047	-92.3833	680	**8/1892-10/2011**

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AR	DANVILLE	03-1834			1-day	NCDC	35.0386	-93.3944	375	6/1916-10/2011
AR	DANVILLE	03-1834	03-1835		1-hour	NCDC	35.0386	-93.3944	375	5/1948-7/1954
AR	DANVILLE SCS	03-1835		03-1834	1-hour	NCDC	35.0667	-93.4000	370	**5/1948-3/1991**
AR	DARDANELLE	03-1838			1-day	NCDC	35.2342	-93.1675	370	8/1909-10/2011
AR	DE QUEEN DAM	03-1952		03-1952	1-hour	NCDC	34.1003	-94.3725	557	5/1973-4/2008
AR	DEER	03-1900			1-day	NCDC	35.8272	-93.2044	2375	6/1975-10/2011
AR	DEQUEEN	03-1948			1-day	NCDC	34.0464	-94.3481	407	6/1902-10/2011
AR	DERMOTT	03-1960	03-1962		1-day	NCDC	33.5167	-91.4333	141	3/1940-1/1966
AR	DERMOTT 3 NE	03-1962			1-day	NCDC	33.5597	-91.3850	143	**3/1940-10/2011**
AR	DES ARC	03-1968			1-day	NCDC	34.9772	-91.4978	200	9/1903-10/2011
AR	DIERKS	03-2015			1-day	NCDC	34.1267	-94.0172	470	7/1959-10/2011
AR	DIERKS DAM	03-2020		03-2020	1-hour	NCDC	34.1475	-94.0889	686	5/1973-6/2005
AR	DUMAS	03-2148			1-day	NCDC	33.8847	-91.5317	163	5/1912-8/2011
AR	DUMAS	03-2148			1-hour	NCDC	33.8847	-91.5317	163	**5/1948-12/2010**
AR	DUMAS	03-2150	03-2148		1-hour	NCDC	33.8833	-91.5000	171	5/1948-1/1961
AR	DUMAS	03-2148			15-min	NCDC	33.8847	-91.5317	163	11/1971-12/2010
AR	EL DORADO GOODWIN FLD	03-2300			1-day	NCDC	33.2208	-92.8142	252	1/1892-4/2009
AR	EUDORA	03-2355			1-day	NCDC	33.1144	-91.2628	135	3/1962-10/2011
AR	EUREKA SPRINGS	03-2356			1-day	NCDC	36.4000	-93.7500	1470	4/1902-10/2011
AR	EUREKA SPRINGS 3 WNW	03-2356			1-hour	NCDC	36.4164	-93.7917	1420	7/1949-12/2010
AR	EUREKA SPRINGS 3 WNW	03-2356			15-min	NCDC	36.4164	-93.7917	1420	1/1984-12/2010
AR	EVENING SHADE	03-2366			1-day	NCDC	36.0833	-91.6167	489	1/1923-10/2011
AR	FAYETTEVILLE EXP STN	03-2444			1-day	NCDC	36.1006	-94.1744	1270	5/1890-10/2011
AR	FAYETTEVILLE EXP STN	03-2444			1-hour	NCDC	36.1006	-94.1744	1270	4/1966-12/2010
AR	FAYETTEVILLE EXP STN	03-2444			15-min	NCDC	36.1006	-94.1744	1270	5/1971-12/2010
AR	FERNDALE 6 E	03-2489			1-hour	NCDC	34.7594	-92.4553	492	5/1981-12/2009
AR	FERNDALE 6 E	03-2489			15-min	NCDC	34.7594	-92.4553	492	5/1981-12/2010
AR	FORDYCE	03-2540			1-day	NCDC	33.8228	-92.3989	230	4/1911-10/2011
AR	FOREMAN	03-2544			1-day	NCDC	33.7164	-94.3814	400	3/1917-10/2011
AR	FOREMAN	03-2544		03-2544	1-hour	NCDC	33.7164	-94.3814	400	5/1948-12/2010
AR	FORREST CITY	03-2564			1-day	NCDC	35.0333	-90.8000	249	1/1892-5/1979
AR	FORREST CITY	03-2564		03-2564	1-hour	NCDC	35.0333	-90.8000	249	5/1948-6/1979

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AR	FORT SMITH WATER PLANT	03-2578	03-5018		1-day	NCDC	35.6500	-94.1500	791	10/1938-8/1985
AR	FT SMITH	03-2580	03-2574		1-day	NCDC	35.3667	-94.4000	518	10/1900-9/1945
AR	FT SMITH RGNL AP	03-2574			1-day	NCDC	35.3331	-94.3625	449	**4/1879-10/2010**
AR	FT SMITH RGNL AP	03-2574		03-2574	1-hour	NCDC	35.3331	-94.3625	449	5/1948-12/2010
AR	FULTON	03-2670			1-day	NCDC	33.6128	-93.8136	260	1/1892-5/2004
AR	GEORGETOWN	03-2760			1-day	NCDC	35.1278	-91.4489	200	10/1912-10/2011
AR	GILBERT	03-2794			1-day	NCDC	35.9833	-92.7167	692	7/1924-10/2011
AR	GILBERT	03-2794			1-hour	NCDC	35.9914	-92.7147	620	5/1948-12/2010
AR	GILBERT	03-2794			15-min	NCDC	35.9914	-92.7147	620	1/1984-12/2010
AR	GILLHAM DAM	03-2810		03-2908	1-hour	NCDC	34.2056	-94.2464	520	6/1966-2/2002
AR	GILLHAM DAM	03-2810		03-2908	15-min	NCDC	34.2056	-94.2464	520	5/1971-3/2001
AR	GLENWOOD	03-2842			1-day	NCDC	34.3217	-93.5617	585	11/1935-10/2011
AR	GRANNIS	03-2908			1-day	NCDC	34.2500	-94.3333	922	5/1919-2/2002
AR	GRAVELLY 1 ESE	03-2922			1-day	NCDC	34.8758	-93.6761	461	5/1940-10/2011
AR	GRAVETTE	03-2930			1-day	NCDC	36.4000	-94.4667	1250	4/1898-10/2011
AR	GREEN FOREST	03-2946			1-day	NCDC	36.3333	-93.4333	1352	3/1940-10/2006
AR	GREENBRIER	03-2962			1-day	NCDC	35.2353	-92.3619	330	7/1940-5/2004
AR	GREENWOOD	03-2976			1-day	NCDC	35.2169	-94.2597	518	6/1939-10/2011
AR	GREERS FERRY DAM	03-2978			1-day	NCDC	35.5206	-91.9997	527	**11/1903-10/2011**
AR	GREERS FERRY DAM	03-2978			1-hour	NCDC	35.5206	-91.9997	527	**5/1948-12/2010**
AR	GREERS FERRY DAM	03-2978			15-min	NCDC	35.5206	-91.9997	527	2/1972-12/2010
AR	GURDON	03-3074			1-day	NCDC	33.9167	-93.1333	220	6/1948-7/1986
AR	HAMBURG	03-3088			1-day	NCDC	33.2278	-91.7939	180	4/1893-1/2004
AR	HARDY	03-3132		03-3132	1-hour	NCDC	36.2747	-91.5056	400	5/1948-12/2010
AR	HARDY 2 SW	03-3132			1-day	NCDC	36.3167	-91.4833	362	8/1897-10/2011
AR	HARRISON	03-3164			1-day	NCDC	36.2333	-93.1167	1130	**1/1892-8/2011**
AR	HARRISON BOONE CO AP	03-3165	03-3164		1-day	NCDC	36.2667	-93.1567	1374	9/1961-10/2010
AR	HEBER SPRINGS 3 NE	03-3228	03-2978		1-day	NCDC	35.5333	-92.0167	531	11/1903-9/1960
AR	HEBER SPRINGS 3 SSW	03-3230	03-2978		1-hour	NCDC	35.4667	-92.0500	879	5/1948-2/1965
AR	HECTOR 2 SSW	03-3235			1-day	NCDC	35.4333	-93.0000	640	2/1948-3/1988
AR	HELENA	03-3242			1-day	NCDC	34.5211	-90.5903	195	10/1892-7/2011
AR	HOPE 3 NE	03-3428			1-day	NCDC	33.7089	-93.5561	375	4/1892-10/2011

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AR	HORATIO	03-3442			1-day	NCDC	33.9350	-94.3586	337	3/1946-10/2011
AR	HOT SPRINGS 1 NNE	03-3466			1-day	NCDC	34.5144	-93.0522	680	8/1875-10/2011
AR	HUNTSVILLE	03-3540	03-3544		1-hour	NCDC	36.0833	-93.7333	1450	5/1948-2/1984
AR	HUNTSVILLE 1 SSW	03-3544			1-day	NCDC	36.0700	-93.7522	1783	5/1948-8/2011
AR	HUNTSVILLE 1 SSW	03-3544			1-hour	NCDC	36.0700	-93.7522	1783	**5/1948-12/2010**
AR	HUNTSVILLE 1 SSW	03-3544			15-min	NCDC	36.0700	-93.7522	1783	1/1984-12/2010
AR	HUTTIG LOCK	03-3556			1-day	NCDC	33.0333	-92.0833	59	1/1940-12/1976
AR	HUTTIG LOCK	03-3556		03-3556	1-hour	NCDC	33.0333	-92.0833	59	5/1948-5/1977
AR	JASPER	03-3600			1-day	NCDC	36.0006	-93.1883	840	2/1948-10/2011
AR	JESSIEVILLE	03-3704			1-day	NCDC	34.7522	-93.0256	820	1/1927-8/2011
AR	JONESBORO 2 NE	03-3734			1-day	NCDC	35.8489	-90.6589	310	1/1890-10/2011
AR	KEISER	03-3821			1-day	NCDC	35.6872	-90.0964	232	5/1959-10/2011
AR	KEO	03-3862			1-day	NCDC	34.6053	-92.0072	230	1/1948-10/2011
AR	LAKE CITY	03-3998			1-day	NCDC	35.8000	-90.4500	230	1/1948-2/1997
AR	LAKE MAUMELLE	03-4010			1-day	NCDC	34.8511	-92.4889	305	1/1957-8/2011
AR	LANGLEY	03-4060			1-day	NCDC	34.2647	-93.8153	820	**3/1940-10/2011**
AR	LEAD HILL	03-4106			1-day	NCDC	36.4194	-92.9158	830	12/1927-10/2011
AR	LEOLA	03-4134			1-day	NCDC	34.1742	-92.5947	255	9/1943-10/2011
AR	LEWISVILLE	03-4185			1-hour	NCDC	33.3614	-93.5678	340	**12/1969-12/2010**
AR	LEWISVILLE	03-4185			15-min	NCDC	33.3614	-93.5678	340	**5/1971-10/2010**
AR	LITTLE ROCK	62-4251	03-4250		1-day	FORTS	34.7481	-92.2689	285	10/1879-12/1892
AR	LITTLE ROCK ADAMS FLD	03-4248			1-day	NCDC	34.7272	-92.2389	258	**10/1879-10/2010**
AR	LITTLE ROCK ADAMS FLD	03-4248		03-4248	1-hour	NCDC	34.7272	-92.2389	258	5/1948-12/2010
AR	LITTLE ROCK FILT PLT	03-4250	03-4248		1-day	NCDC	34.7667	-92.3167	512	3/1948-3/1975
AR	LITTLE ROCK ST CAPITOL	03-4251	03-4250		1-day	NCDC	34.7500	-92.2833	341	1/1897-8/1942
AR	MADISON 1 NW	03-4528			1-day	NCDC	35.0264	-90.7347	300	**11/1941-10/2011**
AR	MAGNOLIA	03-4548			1-day	NCDC	33.2506	-93.2336	318	1/1948-10/2011
AR	MAGNOLIA	03-4548			1-hour	NCDC	33.2506	-93.2336	318	**5/1948-12/2010**
AR	MAGNOLIA	03-4548			15-min	NCDC	33.2506	-93.2336	318	**5/1971-10/2010**
AR	MAGNOLIA 2	03-4550	03-4548		1-hour	NCDC	33.2667	-93.2333	289	2/1951-1/1984
AR	MAGNOLIA 2	03-4550	03-4548		15-min	NCDC	33.2667	-93.2333	289	5/1971-1/1984
AR	MALVERN	03-4562			1-day	NCDC	34.3658	-92.8144	300	4/1883-10/2011

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AR	MAMMOTH SPRING	03-4572			1-day	NCDC	36.4833	-91.5333	600	4/1904-10/2011
AR	MARIANNA 2 S	03-4638			1-day	NCDC	34.7392	-90.7664	234	5/1893-10/2011
AR	MARIANNA 2 S	03-4638		03-4638	1-hour	NCDC	34.7392	-90.7664	234	5/1948-4/1974
AR	MARKED TREE	03-4654			1-day	NCDC	35.5333	-90.4167	230	1/1930-8/1973
AR	MARSHALL	03-4666			1-day	NCDC	35.9156	-92.6394	1013	1/1892-10/2011
AR	MAUMEE	03-4696		03-4696	1-hour	NCDC	36.0500	-92.6500	799	5/1948-1/1987
AR	MELBOURNE 5W	03-4746			1-day	NCDC	36.0822	-91.9822	500	1/1948-10/2011
AR	MENA	03-4756			1-day	NCDC	34.5731	-94.2494	1130	1/1892-10/2011
AR	MENA	03-4756		03-4756	1-hour	NCDC	34.5731	-94.2494	1130	5/1948-12/2010
AR	MILLWOOD DAM	03-4839			1-day	NCDC	33.6772	-93.9903	316	7/1963-10/2011
AR	MILLWOOD DAM	03-4839			1-hour	NCDC	33.6772	-93.9903	316	7/1963-12/2010
AR	MILLWOOD DAM	03-4839			15-min	NCDC	33.6772	-93.9903	316	1/1984-10/2010
AR	MONTICELLO MUNI AP	03-4900			1-day	NCDC	33.6361	-91.7556	290	2/1876-10/2010
AR	MONTICELLO MUNI AP	03-4900			1-hour	NCDC	33.6361	-91.7556	290	5/1948-5/2011
AR	MONTICELLO MUNI AP	03-0001	03-4900		15-min	NCDC	33.6361	-91.7556	290	3/2005-5/2011
AR	MONTICELLO MUNI AP	03-4900			15-min	NCDC	33.6361	-91.7556	290	**5/1971-5/2011**
AR	MOROBAY LOCK	03-4934			1-day	NCDC	33.3167	-92.4500	89	12/1940-8/1985
AR	MOROBAY LOCK	03-4934	03-1140		1-hour	NCDC	33.3167	-92.4500	89	5/1948-9/1985
AR	MORRILTON	03-4938			1-day	NCDC	35.1581	-92.7672	340	7/1919-10/2011
AR	MOUNTAIN VIEW	03-5046			1-day	NCDC	35.8667	-92.1000	768	6/1924-10/2011
AR	MOUNTAINBURG 2 NE	03-5018			1-day	NCDC	35.6494	-94.1542	793	**10/1938-10/2011**
AR	MT IDA 3 SE	03-4988			1-day	NCDC	34.5408	-93.5878	697	2/1872-1/2010
AR	MT IDA 3 SE	03-4988			1-hour	NCDC	34.5408	-93.5878	697	5/1948-6/2010
AR	MT IDA 3 SE	03-4988			15-min	NCDC	34.5408	-93.5878	697	5/1971-11/2009
AR	MTN HOME 1 NNW	03-5036			1-day	NCDC	36.3458	-92.3939	800	3/1902-10/2011
AR	MTN HOME 1 NNW	03-5036	03-5038		1-hour	NCDC	36.3458	-92.3939	800	5/1948-5/1953
AR	MTN HOME C OF ENG	03-5038		03-5036	1-hour	NCDC	36.3333	-92.3833	800	**5/1948-1/1985**
AR	MULBERRY	03-5072	53-0391		1-day	NCDC	35.5667	-94.0167	500	10/1939-3/1984
AR	MURFREESBORO 1 W	03-5079			1-day	NCDC	34.0783	-93.7019	460	8/1970-10/2011
AR	NARROWS DAM	03-5110			1-hour	NCDC	34.1453	-93.7139	435	5/1950-12/2010
AR	NARROWS DAM	03-5110			15-min	NCDC	34.1453	-93.7139	435	5/1971-12/2010
AR	NASHVILLE	03-5112			1-day	NCDC	33.9303	-93.8514	400	6/1899-10/2011

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AR	NASHVILLE	03-5112			1-hour	NCDC	33.9303	-93.8514	400	**5/1948-12/2010**
AR	NASHVILLE	03-5114	03-5112		1-hour	NCDC	33.9500	-93.8667	371	5/1948-2/1966
AR	NASHVILLE	03-5112			15-min	NCDC	33.9303	-93.8514	400	10/1975-8/2010
AR	NATHAN 4 WNW	03-5158	03-5177		1-day	NCDC	34.1167	-93.8667	541	6/1948-3/1985
AR	NATURAL DAM	03-5160			1-day	NCDC	35.5756	-94.3811	750	1/1963-10/2011
AR	NEWHOPE 3 E	03-5174	03-4060		1-day	NCDC	34.2333	-93.8333	850	3/1940-11/1983
AR	NEWHOPE 6 S	03-5177			1-day	NCDC	34.1469	-93.8936	630	**6/1948-10/2011**
AR	NEWPORT	03-5186			1-day	NCDC	35.6000	-91.2833	225	1/1892-10/2011
AR	NIMROD DAM	03-5200			1-day	NCDC	34.9553	-93.1594	480	10/1939-10/2011
AR	NIMROD DAM	03-5200		03-5200	1-hour	NCDC	34.9553	-93.1594	480	5/1948-12/2010
AR	NORFORK DAM	03-5228			1-hour	NCDC	36.2494	-92.2561	425	5/1948-12/2010
AR	NORFORK DAM	03-5228			15-min	NCDC	36.2494	-92.2561	425	5/1971-12/2010
AR	NORTH LITTLE ROCK WFO	03-5320		03-5320	1-hour	NCDC	34.8353	-92.2597	563	1/1976-12/2010
AR	ODELL	03-5354			1-day	NCDC	35.8000	-94.4000	1503	6/1939-7/2011
AR	ODEN 1 SE	03-5358			1-day	NCDC	34.6008	-93.7667	800	1/1927-8/2011
AR	OKAY	03-5376			1-day	NCDC	33.7667	-93.9167	300	5/1915-9/1992
AR	OSCEOLA	03-5480			1-day	NCDC	35.7167	-89.9667	249	1/1892-4/1975
AR	OWENSVILLE 3E	03-5498			1-day	NCDC	34.6133	-92.7742	580	4/1944-4/2007
AR	OZARK	03-5508	03-5512		1-day	NCDC	35.4833	-93.8167	390	1/1892-2/1994
AR	OZARK 2	03-5512			1-day	NCDC	35.5125	-93.8683	830	**1/1892-10/2011**
AR	OZONE	03-5514			1-day	NCDC	35.6333	-93.4333	1860	8/1890-10/2011
AR	PARAGOULD	03-5562	03-5563		1-day	NCDC	36.0500	-90.4667	279	1/1892-6/1979
AR	PARAGOULD 1S	03-5563			1-day	NCDC	36.0336	-90.4978	270	**1/1892-10/2011**
AR	PARKS	03-5591			1-day	NCDC	34.8186	-93.9606	608	4/1956-10/2011
AR	PARTHENON	03-5602		03-5602	1-hour	NCDC	35.9547	-93.2419	900	5/1948-12/2010
AR	PERRY	03-5691			1-day	NCDC	35.0442	-92.7956	300	**8/1902-10/2011**
AR	PERRYVILLE	03-5694	03-5691		1-day	NCDC	35.0000	-92.8167	331	8/1902-8/1964
AR	PINE BLUFF	03-5754			1-day	NCDC	34.2256	-92.0189	215	5/1884-10/2011
AR	PINE BLUFF	03-5754			1-hour	NCDC	34.2256	-92.0189	215	1/1953-12/2010
AR	PINE BLUFF	03-5754			15-min	NCDC	34.2256	-92.0189	215	4/1974-12/2010
AR	PINE RIDGE	03-5760			1-day	NCDC	34.5831	-93.9011	840	2/1925-10/2011
AR	PINEY GROVE	03-5770			1-day	NCDC	34.1728	-93.2050	380	2/1966-12/2002

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AR	POCAHONTAS 1	03-5820			1-day	NCDC	36.2667	-90.9833	331	4/1894-10/2011
AR	PORTLAND	03-5866			1-day	NCDC	33.2511	-91.5058	128	4/1909-10/2011
AR	PRESCOTT 2 NNW	03-5908			1-day	NCDC	33.8203	-93.3878	308	5/1890-10/2011
AR	PRESCOTT 2 NNW	03-5908			1-hour	NCDC	33.8203	-93.3878	308	**5/1948-12/2010**
AR	PRESCOTT 2 NNW	03-5908			15-min	NCDC	33.8203	-93.3878	308	1/1984-8/2010
AR	PRESCOTT SCS	03-5910	03-5908		1-hour	NCDC	33.8000	-93.3833	322	5/1948-7/1982
AR	RATCLIFF	03-6008			1-day	NCDC	35.3050	-93.8767	463	12/1944-10/2011
AR	RAVANA	03-6016		03-6016	1-hour	NCDC	33.0667	-94.0333	249	5/1948-3/1970
AR	RISON	03-6174			1-day	NCDC	33.9539	-92.2019	280	5/1893-8/2011
AR	ROGERS	03-6248			1-day	NCDC	36.3333	-94.1167	1391	1/1892-2/1975
AR	ROHWER 2 NNE	03-6253			1-day	NCDC	33.8100	-91.2703	150	1/1960-10/2011
AR	RUSSELLVILLE	03-6352			1-day	NCDC	35.2833	-93.1000	400	4/1892-11/1979
AR	SAINT CHARLES	03-6376			1-day	NCDC	34.3703	-91.1242	200	2/1930-10/2011
AR	SALEM	03-6403			1-day	NCDC	36.3561	-91.8036	680	4/1955-10/2011
AR	SEARCY	03-6506			1-day	NCDC	35.2683	-91.7164	230	9/1892-10/2011
AR	SHERIDAN	03-6562			1-day	NCDC	34.3019	-92.3914	250	3/1977-10/2011
AR	SHERIDAN TWR	03-6566			1-day	NCDC	34.4500	-92.3500	289	9/1941-2/1977
AR	SHIRLEY 3 SE	03-6586			1-day	NCDC	35.6333	-92.2833	912	6/1939-4/1988
AR	SILOAM SPRINGS	03-6624			1-day	NCDC	36.1833	-94.5500	1152	**5/1922-12/1987**
AR	SPARKMAN	03-6768			1-day	NCDC	33.9153	-92.8267	170	3/1940-10/2011
AR	ST FRANCIS	03-6380			1-day	NCDC	36.4500	-90.1500	300	4/1927-10/2011
AR	ST PAUL	03-6393			1-day	NCDC	35.8236	-93.7672	1390	5/1948-10/2011
AR	ST PAUL	03-6393		03-6393	1-hour	NCDC	35.8236	-93.7672	1390	**5/1948-12/2010**
AR	STAMPS	03-6804			1-day	NCDC	33.3667	-93.4833	270	4/1897-12/1987
AR	STAMPS	03-6804	03-4185		1-hour	NCDC	33.3667	-93.4833	270	12/1969-2/1990
AR	STAMPS	03-6804	03-4185		15-min	NCDC	33.3667	-93.4833	270	5/1971-2/1990
AR	STAR CITY	03-6823			1-day	NCDC	33.9333	-91.8333	250	**10/1943-1/1990**
AR	STAR CITY 2 S	03-6820	03-6823		1-day	NCDC	33.9000	-91.8500	390	10/1943-7/1964
AR	STORY	03-6890	03-7592		1-day	NCDC	34.7000	-93.5167	650	1/1925-2/1970
AR	STUTTGART	03-6918			1-day	NCDC	34.4978	-91.5578	214	1/1892-7/2011
AR	STUTTGART 9 ESE	03-6920			1-day	NCDC	34.4744	-91.4172	198	8/1890-10/2011
AR	STUTTGART 9 ESE	03-6920			1-hour	NCDC	34.4744	-91.4172	198	6/1948-12/2010

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AR	STUTTGART 9 ESE	03-6920			15-min	NCDC	34.4744	-91.4172	198	5/1971-12/2010
AR	SUBIACO	03-6928			1-day	NCDC	35.3028	-93.6369	500	9/1897-10/2011
AR	TAYLOR	03-7038			1-day	NCDC	33.0986	-93.4647	250	10/1943-5/2001
AR	TEXARKANA WEBB FLD	03-7048			1-day	NCDC	33.4536	-94.0075	361	3/1892-4/2009
AR	TEXARKANA WEBB FLD	03-7048	41-8942	03-7048	1-hour	NCDC	33.4536	-94.0075	361	5/1948-12/1982
AR	TURNPIKE	03-7262			1-day	NCDC	35.6641	-93.0881	2090	1/1925-6/1960
AR	WALDRON	03-7488			1-day	NCDC	34.8992	-94.1942	675	8/1919-10/2011
AR	WALDRON	03-7488			1-hour	NCDC	34.8992	-94.1942	675	5/1948-12/2010
AR	WALDRON	03-7488			15-min	NCDC	34.8992	-94.1942	675	5/1975-12/2010
AR	WARREN 2 WSW	03-7582			1-day	NCDC	33.6044	-92.0997	210	1/1893-2/2011
AR	WASHITA	03-7592			1-day	NCDC	34.6508	-93.5350	610	**1/1925-10/2011**
AR	WEST MEMPHIS	03-7712			1-day	NCDC	35.1242	-90.1806	215	3/1962-10/2011
AR	WHEELING 3 W	03-7744		03-7744	1-hour	NCDC	36.3167	-91.9000	775	5/1948-6/1987
AR	WHITE ROCK	03-7772			1-day	NCDC	35.6892	-93.9565	2290	7/1937-12/1969
AR	WING	03-7950	03-0900		1-hour	NCDC	34.9500	-93.4667	351	5/1948-10/1985
AR	WING	03-7950	03-0900		15-min	NCDC	34.9500	-93.4667	351	1/1984-10/1985
AR	WYNNE	03-8052			1-day	NCDC	35.2547	-90.7964	260	7/1908-10/2011
AR	YELLVILLE	03-8084	53-0340		1-day	NCDC	36.2167	-92.6833	902	12/1944-3/1993
FL	ALICO+R	90-0020			15-min	SFWMD FL	26.5128	-80.9819	13	11/1972-9/2009
FL	APALACHICOLA AP	08-0211			1-day	NCDC	29.7258	-85.0206	20	10/1903-8/2010
FL	APALACHICOLA AP	08-0211		08-0211	1-hour	NCDC	29.7258	-85.0206	20	1/1942-4/2011
FL	ARCADIA	08-0228			1-day	NCDC	27.2181	-81.8739	30	11/1899-7/2011
FL	ARCHBOLD BIO STN	08-0236			1-day	NCDC	27.1819	-81.3508	140	1/1969-10/2011
FL	AVON PARK 1 NW	08-0374	08-0369		1-hour	NCDC	27.6000	-81.5000	151	6/1948-7/1952
FL	AVON PARK 2 W	08-0369			1-day	NCDC	27.5944	-81.5253	154	4/1892-10/2011
FL	AVON PARK 2 W	08-0369		08-0369	1-hour	NCDC	27.5944	-81.5253	154	1/1942-6/1972
FL	AVONPK+R	90-0023			15-min	SFWMD FL	27.6317	-81.2647	125	2/1965-9/2009
FL	BABSON PARK 1 ENE	08-0390			1-day	NCDC	27.8500	-81.5167	125	2/1947-7/1992
FL	BARTOW	08-0478			1-day	NCDC	27.8986	-81.8433	125	1/1892-10/2011
FL	BASING+R	90-0024		08-0488	15-min	SFWMD FL	27.4036	-81.0114	39	2/1972-9/2009
FL	BASINGER	08-0488			1-day	NCDC	27.3833	-81.0333	39	2/1913-9/2009
FL	BELLE GLADE	08-0611			1-day	NCDC	26.6928	-80.6711	20	**1/1913-10/2005**

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FL	BELLE GLADE HRCN GT 4	08-0616		90-0240	1-hour	NCDC	26.7000	-80.7167	31	2/1942-5/1999
FL	BIG CORKSCREW	08-0735			1-day	NCDC	26.3650	-81.5478	26	**11/1959-8/2011**
FL	BITHLO	08-0758			1-day	NCDC	28.5500	-81.1167	65	7/1958-11/1987
FL	BITHLO	08-1565			1-day	NCDC	28.5500	-81.1000	69	7/1944-11/1987
FL	BLACK CK MIDDLEBURG	92-0038			1-day	SJRWMD FL	30.0602	-81.8488	128	11/1899-9/2009
FL	BLACKMAN	08-0765		08-0765	1-hour	NCDC	30.9833	-86.6500	220	11/1942-2/1990
FL	BLOUNTSTOWN 2 SE	08-0804			1-day	NCDC	30.4500	-85.0500	60	1/1899-8/1982
FL	BLUEG+R	90-0040			15-min	SFWMD FL	27.2197	-80.4650	26	5/1979-8/2009
FL	BOCA RATON	08-0845			1-hour	NCDC	26.3675	-80.1108	14	1/1942-12/2010
FL	BOCA RATON	08-0845			15-min	NCDC	26.3675	-80.1108	14	5/1971-12/2010
FL	BONIFAY	08-0875	08-1388		1-day	NCDC	30.7833	-85.6833	120	9/1901-2/1920
FL	BRADENTON 5 ESE	08-0945			1-day	NCDC	27.4467	-82.5014	20	**1/1911-10/2011**
FL	BRADENTON EXP STN	08-0940	08-0945		1-day	NCDC	27.4833	-82.5500	10	1/1911-8/1972
FL	BRANFORD	08-0975			1-hour	NCDC	29.9625	-82.9108	30	**8/1944-12/2010**
FL	BRANFORD	08-0975			15-min	NCDC	29.9625	-82.9108	30	**5/1971-12/2010**
FL	BRISTOL	08-1020			1-day	NCDC	30.4181	-84.9861	160	1/1942-8/2010
FL	BRISTOL	08-1020		08-1020	1-hour	NCDC	30.4181	-84.9861	160	1/1942-8/2003
FL	BRISTOL 2 S	08-1022			1-day	NCDC	30.3794	-84.9789	144	3/2001-8/2010
FL	BROOKSVILLE 7 SSW	08-1048			1-hour	NCDC	28.4811	-82.4353	67	1/1972-6/2012
FL	BROOKSVILLE 7 SSW	08-1048			15-min	NCDC	28.4811	-82.4353	67	7/1972-12/2010
FL	BROOKSVILLE CHIN HILL	08-1046			1-day	NCDC	28.6164	-82.3658	240	1/1892-10/2011
FL	BROOKSVILLE CHIN HILL	08-1046		08-1046	1-hour	NCDC	28.6164	-82.3658	240	6/1945-1/1972
FL	BUSHNELL 2 E	08-1163			1-day	NCDC	**28.6664**	**-82.0894**	75	4/1918-10/2011
FL	C24SE+R	90-0049			15-min	SFWMD FL	27.3306	-80.4631	26	11/1998-9/2009
FL	CANAL POINT USDA	08-1276			1-day	NCDC	26.8639	-80.6256	30	4/1941-10/2011
FL	CAPITAL CIRCLE OLD LANDF	91-0601		08-8758	15-min	NWFWMD FL	30.3833	-84.3128	32	4/1987-12/2009
FL	CARRABELLE 1 NNW	08-1356			1-day	NCDC	29.8667	**-84.6333**	10	1/1893-7/1974
FL	CARYVILLE	08-1388			1-day	NCDC	30.7667	-85.8167	50	**9/1901-4/1979**
FL	CEDAR KEY 1 WSW	08-1432			1-day	NCDC	29.1333	-83.0500	10	10/1907-6/1976
FL	CHIPLEY	08-1544			1-day	NCDC	30.7836	-85.4847	130	4/1939-10/2011
FL	CHOWKEEBIN NENE NEAR MAGN	91-0626			15-min	NWFWMD FL	30.4331	-84.2608	150	12/1989-12/2009
FL	CHRISTIAN HERITAGE CHURCH	91-0605			15-min	NWFWMD FL	30.5053	-84.3308	201	3/1987-12/2009

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
FL	CITY WELL @ LIMOGES DR.	91-0613			15-min	NWFWMD FL	30.4844	-84.1956	97	2/1987-12/2009
FL	CLEARWATER	08-1632			1-day	NCDC	27.9667	-82.7667	69	9/1931-3/1977
FL	CLERMONT 9 S	08-1641			1-day	NCDC	28.4553	-81.7233	130	7/1948-10/2011
FL	CLEWISTON	08-1654		90-0190	1-hour	NCDC	26.7422	-80.9400	20	7/1948-11/2007
FL	CLEWISTON	08-1654	90-0815		15-min	NCDC	26.7422	-80.9400	20	5/1971-5/2001
FL	COLGOV+R	90-0055			15-min	SFWMD FL	26.1297	-81.7625	7	4/1981-9/2009
FL	COMPASS LAKE	08-1775			1-day	NCDC	30.6000	-85.4000	210	1/1931-12/2009
FL	CORAL SPRINGS	08-1858			1-day	NCDC	26.2678	-80.2750	10	**3/1952-11/2004**
FL	CORNWELL 4 NW	08-1869	90-0404		1-day	NCDC	27.4000	-81.1667	39	4/1947-9/1975
FL	CRESCENT CITY	08-1978			1-day	NCDC	29.4292	-81.5158	53	3/1912-10/2011
FL	CRESTVIEW BOB SIKES AP	08-1986			1-day	NCDC	30.7797	-86.5225	190	**1/1942-10/2010**
FL	CRESTVIEW BOB SIKES AP	08-1986		08-1986	1-hour	NCDC	30.7797	-86.5225	190	**1/1942-12/2010**
FL	CRESTVIEW RADIO WJSB	08-1984	08-1986		1-day	NCDC	30.7667	-86.5833	240	2/1959-4/1973
FL	CRESTVIEW RADIO WJSB	08-1984	08-1986		1-hour	NCDC	30.7667	-86.5833	240	4/1959-12/1973
FL	CROSS CITY	08-2006	08-2008		1-hour	NCDC	29.6333	-83.1333	39	5/1952-6/1966
FL	CROSS CITY 1 E	08-2008			1-day	NCDC	29.6333	-83.1053	42	7/1948-10/2011
FL	CROSS CITY 1 E	08-2008			1-hour	NCDC	29.6333	-83.1053	42	**1/1942-12/2010**
FL	CROSS CITY 1 E	08-2008			15-min	NCDC	29.6333	-83.1053	42	5/1971-12/2010
FL	CROSS CITY FAA AP	08-2011	08-2006		1-hour	NCDC	29.6333	-83.1000	42	1/1942-4/1952
FL	DAYTONA BEACH	08-2150			1-day	NCDC	29.1894	-81.0139	29	2/1923-10/2011
FL	DAYTONA BEACH INTL AP	08-2158			1-day	NCDC	29.1828	-81.0483	31	1/1937-10/2010
FL	DAYTONA BEACH INTL AP	08-2158		08-2158	1-hour	NCDC	29.1828	-81.0483	31	1/1942-12/2010
FL	DE FUNIAK SPRINGS 1 E	08-2220			1-day	NCDC	30.7244	-86.0939	245	10/1896-8/2010
FL	DELAND 1 SSE	08-2229			1-day	NCDC	29.0181	-81.3106	25	2/1895-10/2011
FL	DESOTO CITY 8 SW	08-2288			1-day	NCDC	27.3697	-81.5136	85	10/1925-7/2011
FL	DEVILS GARDEN	08-2298			1-day	NCDC	26.6033	-81.1292	20	**6/1956-9/2011**
FL	DHQ	92-0023	08-6753		1-day	SJRWMD FL	29.6642	-81.6943	20	4/1988-9/2009
FL	DOWLING PARK 1 W	08-2391			1-hour	NCDC	30.2497	-83.2594	54	8/1944-12/2010
FL	DOWLING PARK 1 W	08-2391			15-min	NCDC	30.2497	-83.2594	54	7/1973-12/2010
FL	DRY TORTUGAS	08-2418			1-day	NCDC	24.6281	-82.8736	10	7/1950-10/2011
FL	EAA2+R	90-0071			15-min	SFWMD FL	26.5583	-80.7092	13	10/1991-9/2009
FL	ECONFINA CREEK @ US 231	91-0543			15-min	NWFWMD FL	30.5644	-85.3908	151	9/1998-12/2009

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FL	EUSTIS 2 S	08-2827	92-0052		1-day	NCDC	28.8500	-81.6833	69	1/1892-11/1958
FL	EVERGLADES	08-2850			1-day	NCDC	25.8489	-81.3897	5	2/1924-9/2011
FL	FEDERAL POINT	08-2915			1-day	NCDC	29.7550	-81.5389	5	1/1892-10/2011
FL	FELLSMERE 7 SSW	08-2936	92-0022		1-day	NCDC	27.6833	-80.6500	20	8/1911-4/1979
FL	FERNANDINA BEACH	08-2944			1-day	NCDC	30.6589	-81.4636	13	1/1892-5/2010
FL	FLAMINGO RS	08-1305	08-3020		1-day	NCDC	25.1500	-80.9333	3	1/1951-2/1962
FL	FLAMINGO RS	08-3020			1-day	NCDC	25.1422	-80.9144	3	**1/1951-8/2010**
FL	FT DRUM 3 NW	08-3137			1-day	NCDC	27.5303	-80.8167	68	9/1948-5/2011
FL	FT GREEN 12 WSW	08-3153			1-day	NCDC	27.5706	-82.1378	112	8/1948-10/2011
FL	FT LAUDERDALE	08-3163			1-day	NCDC	26.1019	-80.2011	16	11/1912-10/2011
FL	FT LAUDERDALE INTL AP	08-3165		08-3165	1-hour	NCDC	26.0719	-80.1536	11	12/1959-12/2010
FL	FT MYERS PAGE FLD AP	08-3186			1-day	NCDC	26.5850	-81.8614	15	1/1892-10/2010
FL	FT MYERS PAGE FLD AP	08-3186			1-hour	NCDC	26.5850	-81.8614	15	1/1960-12/2010
FL	FT MYERS PAGE FLD AP	08-3186			15-min	NCDC	26.5850	-81.8614	15	3/1976-8/2005
FL	FT PIERCE	08-3207			1-day	NCDC	27.4622	-80.3539	25	1/1901-10/2011
FL	G56-R	90-0106			1-day	SFWMD FL	26.3278	-80.1308	13	5/1957-9/2009
FL	G57-R	90-0107			1-day	SFWMD FL	26.2311	-80.1242	16	12/1940-9/2009
FL	GAINESVILLE 3 WSW	08-3321			1-day	NCDC	29.6333	-82.3667	96	**9/1890-12/1988**
FL	GAINESVILLE 3 WSW	08-3321		08-3321	1-hour	NCDC	29.6333	-82.3667	96	**6/1943-1/1989**
FL	GAINESVILLE RGNL AP	08-3326			1-day	NCDC	29.6919	-82.2756	123	5/1960-10/2010
FL	GAINESVILLE UNIV OF FL	08-3316	08-3321		1-day	NCDC	29.6500	-82.3500	171	1/1903-12/1963
FL	GAINESVILLE UNIV OF FL	08-3316	08-3321		1-hour	NCDC	29.6500	-82.3500	171	6/1943-5/1957
FL	GLEN ST MARY 1 W	08-3470			1-day	NCDC	30.2717	-82.1856	128	**12/1919-10/2011**
FL	GRACEVILLE 1 SW	08-3538			1-hour	NCDC	30.9575	-85.5331	160	1/1942-12/2010
FL	GRACEVILLE 1 SW	08-3538			15-min	NCDC	30.9575	-85.5331	160	5/1971-12/2010
FL	GRADY	08-3543	08-0975		1-hour	NCDC	29.9500	-82.9500	30	5/1958-5/1989
FL	GRADY	08-3543	08-0975		15-min	NCDC	29.9500	-82.9500	30	5/1971-5/1989
FL	GRAPE HAMMOCK	08-3571	08-4636		1-hour	NCDC	27.8000	-81.2000	47	1/1942-4/1960
FL	HART LAKE	08-3840			1-day	NCDC	28.3833	-81.1833	59	7/1942-7/1979
FL	HASTINGS 4NE	08-3874			1-day	NCDC	29.7517	-81.4669	10	1/1978-10/2011
FL	HERRON STEEL SITE SILVER	91-0602			15-min	NWFWMD FL	30.4383	-84.4111	157	1/1987-12/2009
FL	HIALEAH	08-3909			1-day	NCDC	25.8175	-80.2858	12	7/1940-10/2011

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FL	HIALEAH	08-3909		08-3909	1-hour	NCDC	25.8175	-80.2858	12	1/1942-12/1967
FL	HIGH SPRINGS	08-3956			1-day	NCDC	29.8286	-82.5972	65	10/1944-10/2011
FL	HILLIARD	08-3978			1-day	NCDC	30.7000	-81.9333	69	9/1908-8/1956
FL	HILLSBOROUGH RIVER SP	08-3986			1-day	NCDC	28.1428	-82.2269	53	8/1943-8/2011
FL	HOMESTEAD EXP STN	08-4091			1-day	NCDC	25.5000	-80.5000	11	7/1910-12/2007
FL	HOMESTEAD EXP STN	08-4091		08-4091	1-hour	NCDC	25.5000	-80.5000	11	1/1942-12/2007
FL	HYPOLUXO	08-4198			1-day	NCDC	26.5500	-80.0500	10	1/1892-7/1959
FL	IMMOKALEE	08-4210			1-day	NCDC	26.4217	-81.4100	35	**9/1959-10/2011**
FL	IMMOKALEE	96-0018			15-min	FAWN	26.4620	-81.4400	35	12/1997-12/2007
FL	INDIAN LAKE ESTATES	08-4242			1-day	NCDC	27.8000	-81.3333	100	2/1958-9/2009
FL	INDLK+R	90-0120			15-min	SFWMD FL	27.7878	-81.3267	15	1/2003-9/2009
FL	INGLIS 3 E	08-4273			1-hour	NCDC	29.0253	-82.6158	30	**1/1942-12/2010**
FL	INGLIS 3 E	08-4273			15-min	NCDC	29.0253	-82.6158	30	2/1972-12/2010
FL	INGLIS LOCK	98-0038	08-4273		1-hour	SRWMD FL	29.0191	-82.6151	**16**	4/1995-6/2005
FL	INVERNESS 3 SE	08-4289			1-day	NCDC	28.8031	-82.3125	40	2/1899-10/2011
FL	ISLEWORTH	08-4332			1-day	NCDC	28.4833	-81.5333	115	3/1916-3/1983
FL	JACKSONVILLE	62-4358	62-4371		1-day	FORTS	30.3278	-81.6542	20	8/1853-2/1872
FL	JACKSONVILLE	62-4371	08-4371		1-day	FORTS	30.3267	-81.6606	6	10/1871-12/1892
FL	JACKSONVILLE BEACH	08-4366			1-day	NCDC	30.2875	-81.3928	10	7/1944-10/2011
FL	JACKSONVILLE INTL AP	08-4358			1-day	NCDC	30.4950	-81.6936	26	**8/1853-8/2010**
FL	JACKSONVILLE INTL AP	08-4358		08-4358	1-hour	NCDC	30.4950	-81.6936	26	8/1948-12/2010
FL	JACKSONVILLE WB CITY	08-4371	08-4358		1-day	NCDC	30.3333	-81.6500	82	1/1921-5/1956
FL	JASPER	08-4394			1-day	NCDC	30.5228	-82.9447	147	**2/1898-10/2011**
FL	JASPER 5 WNW	08-4393	08-4394		1-day	NCDC	30.5333	-83.0167	151	2/1898-9/1952
FL	KENAN1+R	90-0126		96-0020	15-min	SFWMD FL	27.8889	-81.0181	66	2/1972-9/2009
FL	KENANSVILLE	96-0020	90-0126		15-min	FAWN	27.9630	-81.0500	69	1/2003-12/2007
FL	KENANSVILLE	96-0020			1-day	FAWN	27.9630	-81.0500	69	7/1942-9/2009
FL	KEY WEST	62-4570	62-4575		1-day	FORTS	24.5603	-81.7919	4	5/1843-12/1875
FL	KEY WEST	62-4575	63-4575		1-day	FORTS	24.5606	-81.8064	1	11/1871-12/1892
FL	KEY WEST	63-4575	08-4570		1-day	FORTS	24.5606	-81.8064	1	1/1890-12/1947
FL	KEY WEST	08-4575	08-4570		1-day	NCDC	24.5662	-81.7976	**7**	7/1948-2/1974
FL	KEY WEST	08-4575	08-4570		1-hour	NCDC	**24.5662**	**-81.7976**	**7**	1/1942-7/1958

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FL	KEY WEST INTL AIRPORT	08-4570			1-day	NCDC	24.5550	-81.7522	4	**5/1843-10/2010**
FL	KEY WEST INTL AIRPORT	08-4570		08-4570	1-hour	NCDC	24.5550	-81.7522	4	**1/1942-12/2010**
FL	KISSFS+R	90-0128		08-4625	15-min	SFWMD FL	28.2906	-81.4483	69	6/1972-9/2009
FL	KISSIMMEE	08-4620	08-4625		1-day	NCDC	28.3000	-81.4167	69	4/1892-3/1961
FL	KISSIMMEE 2	08-4625			1-day	NCDC	28.2764	-81.4239	60	**4/1892-10/2011**
FL	KISSIMMEE 2	08-4625		08-4625	1-hour	NCDC	28.2764	-81.4239	60	1/1942-9/2009
FL	KISSIMMEE RIVER	08-4636		90-0312	1-hour	NCDC	27.8000	-81.1833	48	**1/1942-9/2009**
FL	KRBN+R	90-0129			15-min	SFWMD FL	27.4611	-81.1711	43	5/1997-9/2009
FL	LA BELLE	08-4662			1-day	NCDC	26.7458	-81.4264	16	9/1929-10/2011
FL	LAKE ALFRED EXP STN	08-4707			1-day	NCDC	28.1042	-81.7144	138	5/1905-8/2000
FL	LAKE CITY 2 E	08-4731			1-day	NCDC	30.1853	-82.5942	195	11/1892-8/2012
FL	LAKE JACKSON FACILITY	91-0606			15-min	NWFWMD FL	30.4833	-84.2992	98	3/1987-12/2009
FL	LAKE KANTURK OUTFALL @ CE	91-0618			15-min	NWFWMD FL	30.5272	-84.1917	85	11/1989-12/2009
FL	LAKE PLACID 2 SW	08-4845			1-day	NCDC	27.2833	-81.3833	89	3/1933-11/2009
FL	LAKELAND	08-4797			1-hour	NCDC	28.0206	-81.9219	145	3/1943-4/2003
FL	LAKELAND	08-4797			15-min	NCDC	28.0206	-81.9219	145	1/1979-4/2003
FL	LAMONT 6 WNW	08-4892	08-5880		1-hour	NCDC	30.4167	-83.9167	210	1/1942-9/1971
FL	LEESBURG	08-4980	08-5076		1-hour	NCDC	28.8167	-81.8667	69	1/1942-12/1958
FL	LEHI+R	90-0140			15-min	SFWMD FL	26.6072	-81.6497	20	11/1992-9/2009
FL	LEON COUNTY LANDFILL US	91-0616			15-min	NWFWMD FL	30.4203	-84.1347	70	3/1987-12/2009
FL	LIGNUMVITAE KEY	08-5035		08-5035	1-hour	NCDC	**24.9027**	**-80.6960**	**9**	1/1942-10/1976
FL	LISBON	08-5076			1-day	NCDC	28.8728	-81.7844	68	1/1942-10/2011
FL	LISBON	08-5076			1-hour	NCDC	28.8728	-81.7844	68	**1/1942-12/2010**
FL	LISBON	08-5076			15-min	NCDC	28.8728	-81.7844	68	5/1971-12/2010
FL	LIVE OAK	08-5099			1-day	NCDC	30.2889	-82.9650	120	9/1898-10/2011
FL	LK JOANNA	92-0052			1-day	SJRWMD FL	28.8345	-81.6460	197	1/1892-9/2009
FL	LK_HARRIS_BAYOU	95-3150			15-min	TRMM FL	28.8256	-81.8245	**59**	6/2002-8/2009
FL	LOTELA+R	90-0142			15-min	SFWMD FL	27.5914	-81.4353	12	7/1972-9/2009
FL	LOXAHATCHEE	08-5182			1-day	NCDC	26.6833	-80.2667	14	7/1940-1/1988
FL	LOXAHATCHEE	08-5182		08-5182	1-hour	NCDC	26.6833	-80.2667	14	1/1942-10/1977
FL	LXWS+R	90-0143			15-min	SFWMD FL	26.4989	-80.2222	10	12/1959-9/2009
FL	LYNNE	08-5237			1-day	NCDC	29.2003	-81.9306	85	4/1914-4/2010

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FL	LYNNE	08-5237			1-hour	NCDC	29.2003	-81.9306	85	1/1942-12/2010
FL	LYNNE	08-5237			15-min	NCDC	29.2003	-81.9306	85	1/1984-12/2010
FL	MACCLENNY RN	92-0044	08-3470		1-day	SJRWMD FL	30.3209	-82.1706	141	12/1919-9/2009
FL	MADISON	08-5275			1-day	NCDC	30.4517	-83.4119	120	1/1892-8/2012
FL	MAMMOTH GROVE LAKE WALES	08-5315	08-5973		1-day	NCDC	27.9000	-81.5667	153	8/1921-3/1937
FL	MARIANNA SCH FOR BOYS	08-5372			1-day	NCDC	30.7667	-85.2667	171	5/1900-6/1968
FL	MARINELAND	08-5391			1-day	NCDC	29.6700	-81.2150	5	1/1942-8/2010
FL	MARINELAND	08-5391			1-hour	NCDC	29.6700	-81.2150	5	1/1942-12/2010
FL	MARINELAND	08-5391			15-min	NCDC	29.6700	-81.2150	5	5/1971-12/2010
FL	MAYO	08-5539			1-day	NCDC	30.0564	-83.1819	65	8/1949-8/2012
FL	MELBOURNE WFO	08-5612			1-day	NCDC	28.0958	-80.6308	35	8/1937-7/2011
FL	MELBOURNE WFO	08-5612			1-hour	NCDC	28.0958	-80.6308	35	1/1942-12/2010
FL	MELBOURNE WFO	08-5612			15-min	NCDC	28.0958	-80.6308	35	5/1971-12/2010
FL	MERRITT ISLAND	08-5643			1-day	NCDC	28.3500	-80.7000	30	1/1893-6/1956
FL	MIALCK+R	90-0153			1-day	SFWMD FL	26.6819	-80.8061	7	12/1940-9/2009
FL	MIALCK+R	90-0153			15-min	SFWMD FL	26.6819	-80.8061	7	1/1974-9/2009
FL	MIAMI	62-5668	08-5658		1-day	FORTS	25.7714	-80.1914	35	1/1855-11/1891
FL	MIAMI 12 SSW	08-1716	08-5678		1-day	NCDC	25.6500	-80.2833	10	1/1931-4/1958
FL	MIAMI 12 SSW	08-5678			1-day	NCDC	25.6500	-80.3000	10	**1/1931-5/1988**
FL	MIAMI BEACH	08-5658			1-day	NCDC	25.8064	-80.1336	1	**1/1855-10/2010**
FL	MIAMI BEACH	08-5658		08-5658	1-hour	NCDC	25.8064	-80.1336	1	6/1962-9/2009
FL	MIAMI INTL AP	08-5663			1-day	NCDC	25.7906	-80.3164	29	3/1937-10/2010
FL	MIAMI INTL AP	08-5663		08-5663	1-hour	NCDC	25.7906	-80.3164	29	8/1948-12/2010
FL	MIAMI WSO CITY	08-5668			1-day	NCDC	25.7167	-80.2833	15	6/1911-4/2002
FL	MIAMI WSO CITY	08-5668		08-5668	1-hour	NCDC	25.7167	-80.2833	15	1/1942-7/1983
FL	MICCO+R	90-0156		90-0225	15-min	SFWMD FL	27.4725	-81.1439	49	3/1972-8/2000
FL	MIDDLEBURG	08-5705	92-0038		1-day	NCDC	30.0603	-81.8475	82	11/1899-4/2006
FL	MILES CITY	60-0352		60-0352	1-hour	RAWS	26.2483	-81.2967	15	4/1987-3/2011
FL	MILES CITY TWR	08-5719	90-0474		1-day	NCDC	26.1833	-81.3500	151	7/1956-12/1969
FL	MILTON EXP STN	08-5793			1-day	NCDC	30.7794	-87.1414	217	9/1948-8/2008
FL	MONTICELLO 10 SW	08-5880		08-5880	1-hour	NCDC	30.4406	-83.9858	219	**1/1942-12/2010**
FL	MONTICELLO 5 SE	08-5879			1-day	NCDC	30.4922	-83.7833	98	2/1904-7/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
FL	MONTICELLO 5 SE	08-5879			1-hour	NCDC	30.4922	-83.7833	98	9/1971-6/2007
FL	MONTICELLO 5 SE	08-5879			15-min	NCDC	30.4922	-83.7833	98	9/1971-6/2007
FL	MOORE HAVEN LOCK 1	08-5895			1-day	NCDC	26.8400	-81.0872	35	4/1918-10/2011
FL	MOORE HAVEN LOCK 1	08-5895		08-5895	1-hour	NCDC	26.8400	-81.0872	35	1/1942-12/2010
FL	MRF101	90-0161	90-0263		1-day	SFWMD FL	26.3875	-80.2047	13	8/1955-6/2009
FL	MRF102	90-0162			1-day	SFWMD FL	26.3689	-80.1539	16	8/1955-6/2009
FL	MRF103C	90-0164	08-1858		1-day	SFWMD FL	26.2628	-80.3008	10	3/1952-12/1984
FL	MRF105	90-0166	95-1274		15-min	SFWMD FL	26.1733	-80.1783	13	12/1959-8/2002
FL	MRF106	90-0167	90-0001		15-min	SFWMD FL	26.1914	-80.4492	10	12/1959-7/1995
FL	MRF114	90-0176			1-day	SFWMD FL	26.0603	-80.2317	13	3/1957-1/2008
FL	MRF117	90-0179			1-day	SFWMD FL	25.8269	-80.3442	13	1/1965-3/1999
FL	MRF122	90-0185			15-min	SFWMD FL	25.4700	-80.3464	3	5/1968-2/2002
FL	MRF123	90-0186			15-min	SFWMD FL	25.3669	-80.3764	3	5/1968-3/2008
FL	MRF124	90-0187	90-0705		15-min	SFWMD FL	25.3306	-80.5250	10	3/1967-4/2000
FL	MRF125A	90-0189	90-0190		1-day	SFWMD FL	26.7386	-80.9344	16	4/1984-3/1999
FL	MRF125C	90-0190			1-day	SFWMD FL	26.7386	-80.9344	16	12/1928-11/2007
FL	MRF131	90-0200	90-0661		15-min	SFWMD FL	26.8122	-80.6100	13	1/1974-3/1996
FL	MRF133	90-0204			1-day	SFWMD FL	26.7489	-80.6836	10	12/1941-7/2009
FL	MRF137	90-0207			1-day	SFWMD FL	26.8131	-80.5636	13	3/1957-7/2009
FL	MRF138	90-0208			1-day	SFWMD FL	26.7839	-80.5253	13	3/1957-7/2009
FL	MRF141	90-0211	90-0106		1-day	SFWMD FL	26.3278	-80.1308	13	5/1957-10/1991
FL	MRF155	90-0221			15-min	SFWMD FL	27.7528	-81.0772	69	3/1972-5/2006
FL	MRF156	90-0222	90-0142		15-min	SFWMD FL	27.5914	-81.4353	12	7/1972-12/2004
FL	MRF157	90-0223	90-0023		15-min	SFWMD FL	27.6317	-81.2647	125	3/1972-7/2004
FL	MRF159	90-0225			1-day	SFWMD FL	27.4725	-81.1439	49	3/1972-9/2009
FL	MRF159	90-0225	90-0156		15-min	SFWMD FL	27.4725	-81.1439	49	3/1972-8/2000
FL	MRF160	90-0226	90-0024		15-min	SFWMD FL	27.4036	-81.0114	39	2/1972-11/2003
FL	MRF162	90-0228	90-0128		15-min	SFWMD FL	28.2906	-81.4483	69	6/1972-6/2002
FL	MRF168	90-0230	90-0126		15-min	SFWMD FL	27.8772	-81.0167	66	2/1972-4/1985
FL	MRF168A	90-0231	90-0126		15-min	SFWMD FL	27.8889	-81.0181	66	4/1985-6/2004
FL	MRF173	90-0233	90-0003		15-min	SFWMD FL	26.2664	-80.7794	10	6/1971-5/2000
FL	MRF175	90-0235	90-0004		15-min	SFWMD FL	26.0819	-80.6914	10	6/1971-4/1998

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FL	MRF18	90-0238			1-day	SFWMD FL	28.1403	-81.3519	36	2/1965-11/2008
FL	MRF182	90-0239	90-0020		15-min	SFWMD FL	26.5128	-80.9819	13	11/1972-6/1997
FL	MRF183	90-0240			1-day	SFWMD FL	26.7003	-80.7161	7	2/1942-1/2003
FL	MRF187	90-0243			15-min	SFWMD FL	27.4386	-81.2064	52	5/1974-5/2006
FL	MRF191	90-0248			15-min	SFWMD FL	27.7458	-81.2453	62	4/1974-12/2000
FL	MRF198	90-0249			1-day	SFWMD FL	26.7897	-80.9617	7	12/1928-7/2009
FL	MRF20	90-0250	90-0254		15-min	SFWMD FL	28.0994	-81.5286	62	2/1965-9/1996
FL	MRF202	90-0252	90-0007		15-min	SFWMD FL	25.9897	-80.8361	10	7/1975-2/1999
FL	MRF205	90-0254			15-min	SFWMD FL	28.0994	-81.5286	62	2/1965-5/2001
FL	MRF206	90-0255			1-day	SFWMD FL	26.6069	-81.6497	20	12/1959-9/2009
FL	MRF212	90-0262			1-day	SFWMD FL	26.4239	-80.1222	16	9/1974-6/2009
FL	MRF213	90-0263			1-day	SFWMD FL	26.4167	-80.2039	13	8/1955-6/2009
FL	MRF220	90-0265			1-day	SFWMD FL	26.6844	-80.3675	13	11/1956-11/2008
FL	MRF23	90-0274			15-min	SFWMD FL	28.0017	-81.1936	66	11/1968-1/2007
FL	MRF231	90-0276	90-0801		15-min	SFWMD FL	26.9233	-80.1925	13	11/1978-8/1990
FL	MRF24	90-0284	90-0803		15-min	SFWMD FL	27.9717	-81.4175	62	11/1966-7/2004
FL	MRF241	90-0286	90-0040		15-min	SFWMD FL	27.2197	-80.4650	26	5/1979-8/1998
FL	MRF242	90-0287	08-4210		1-day	SFWMD FL	26.4614	-81.4372	33	9/1959-2/1991
FL	MRF243	90-0288	08-0735		1-day	SFWMD FL	26.3836	-81.5831	20	11/1959-3/2007
FL	MRF250	90-0294			1-day	SFWMD FL	26.7125	-81.6297	13	1/1968-6/2009
FL	MRF27	90-0312			1-day	SFWMD FL	27.8031	-81.1981	46	1/1942-7/2009
FL	MRF279	90-0317	90-0577		1-day	SFWMD FL	26.7169	-80.8997	13	6/1929-1/1955
FL	MRF28	90-0318	90-0120		15-min	SFWMD FL	27.7878	-81.3267	105	11/1968-10/2002
FL	MRF282C	90-0321	90-0657		15-min	SFWMD FL	26.6056	-80.9494	16	9/1982-6/1997
FL	MRF300	90-0335			1-day	SFWMD FL	26.7281	-80.8533	13	1/1938-7/2009
FL	MRF301	90-0336			1-day	SFWMD FL	26.7150	-80.0622	16	8/1929-7/2009
FL	MRF309	90-0342	90-0728		15-min	SFWMD FL	25.4217	-80.5897	10	4/1981-10/2002
FL	MRF311	90-0344	90-0055		15-min	SFWMD FL	26.1272	-81.7497	7	4/1981-2/1999
FL	MRF32	90-0354			1-day	SFWMD FL	27.6600	-81.1342	46	6/1965-11/2008
FL	MRF34	90-0368	90-0023		15-min	SFWMD FL	27.6311	-81.2592	128	2/1965-1/1972
FL	MRF38	90-0404			1-day	SFWMD FL	27.4014	-81.1147	30	4/1947-7/2009
FL	MRF384	90-0408	90-0255		1-day	SFWMD FL	26.6072	-81.6497	20	3/1984-9/1990

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FL	MRF39	90-0411			1-day	SFWMD FL	27.3733	-80.4506	26	10/1960-4/2008
FL	MRF4	90-0422	90-0808		15-min	SFWMD FL	28.4361	-81.3714	92	11/1968-7/2004
FL	MRF40	90-0423			1-day	SFWMD FL	27.3325	-80.4967	26	4/1971-9/2009
FL	MRF43	90-0454	90-0765		15-min	SFWMD FL	27.3144	-81.0228	30	2/1965-5/1995
FL	MRF45	90-0458			1-day	SFWMD FL	27.2253	-80.9625	26	11/1964-6/1998
FL	MRF47	90-0460	90-0686		1-day	SFWMD FL	27.2072	-80.7958	7	1/1938-12/1993
FL	MRF48	90-0461	90-0774		15-min	SFWMD FL	27.1186	-81.1572	26	6/1965-3/1998
FL	MRF49	90-0462	08-7859		1-day	SFWMD FL	27.1111	-80.2847	16	12/1957-12/1993
FL	MRF50	90-0464			1-day	SFWMD FL	27.0653	-80.9778	10	5/1956-12/1993
FL	MRF5002	90-0466	08-2298		1-day	SFWMD FL	26.6028	-81.1283	23	10/1969-8/2009
FL	MRF5005	90-0469			1-day	SFWMD FL	26.4072	-81.4164	30	12/1962-9/2003
FL	MRF5006	90-0470			1-day	SFWMD FL	26.5956	-81.3353	26	10/1969-8/2009
FL	MRF5010	90-0474			1-day	SFWMD FL	26.1844	-81.3464	16	7/1956-6/2003
FL	MRF5022	90-0480			1-day	SFWMD FL	26.9244	-81.3139	33	1/1963-9/2009
FL	MRF5029	90-0485			1-day	SFWMD FL	27.6081	-80.4314	23	11/1969-8/2009
FL	MRF5034	90-0489			1-day	SFWMD FL	27.2903	-80.8269	30	1/1918-8/2009
FL	MRF5053	90-0507			1-day	SFWMD FL	27.4103	-80.3369	10	10/1969-8/2009
FL	MRF52	90-0511	90-0684		15-min	SFWMD FL	26.9792	-81.0900	16	6/1965-9/1999
FL	MRF54	90-0513			1-day	SFWMD FL	26.9044	-80.3039	13	4/1957-8/2009
FL	MRF57	90-0516			1-day	SFWMD FL	26.8419	-80.6022	13	3/1957-7/2009
FL	MRF60	90-0519			1-day	SFWMD FL	26.8083	-81.0467	16	12/1928-12/1973
FL	MRF61	90-0567	90-0249		1-day	SFWMD FL	26.8053	-80.9847	10	12/1928-12/1973
FL	MRF6125	90-0573	08-1305		1-day	SFWMD FL	25.1417	-80.9144	3	1/1983-1/1994
FL	MRF63	90-0577			1-day	SFWMD FL	26.7350	-80.8953	13	6/1929-7/2009
FL	MRF65	90-0579			1-day	SFWMD FL	26.7744	-80.6175	13	7/1929-9/2009
FL	MRF67	90-0581	90-0204		1-day	SFWMD FL	26.7333	-80.6744	10	12/1941-12/1973
FL	MRF68	90-0582	90-0335		1-day	SFWMD FL	26.7178	-80.8456	3	1/1938-12/1973
FL	MRF69	90-0584			1-day	SFWMD FL	26.6989	-80.8072	13	6/1967-3/2003
FL	MRF71	90-0603	90-0153		15-min	SFWMD FL	26.6819	-80.8061	7	1/1974-12/1996
FL	MRF71C	90-0606	90-0584		1-day	SFWMD FL	26.6819	-80.8061	7	12/1940-12/1973
FL	MRF73	90-0608	90-0795		15-min	SFWMD FL	26.6650	-80.7011	10	2/1959-9/1994
FL	MRF73C	90-0609			1-day	SFWMD FL	26.6650	-80.7011	10	3/1929-9/2009

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FL	MRF76	90-0612	90-0750		15-min	SFWMD FL	26.6844	-80.3675	13	1/1960-11/1996
FL	MRF78	90-0614			1-day	SFWMD FL	26.6189	-80.1264	16	4/1942-6/2009
FL	MRF80	90-0617			1-day	SFWMD FL	26.6244	-80.9483	16	10/1957-5/2008
FL	MRF81	90-0618			1-day	SFWMD FL	26.6122	-80.2050	13	8/1955-6/2009
FL	MRF84	90-0621			1-day	SFWMD FL	26.5208	-80.1239	16	8/1955-6/2009
FL	MRF85	90-0622			1-day	SFWMD FL	26.5283	-80.1703	16	8/1955-6/2009
FL	MRF89	90-0626	90-0143		15-min	SFWMD FL	26.4989	-80.2222	10	12/1959-8/1993
FL	MRF99	90-0649	90-0782		15-min	SFWMD FL	26.3358	-80.5367	13	12/1972-12/1997
FL	MT PLEASANT 2 W	08-5990			1-day	NCDC	30.6667	-84.7000	302	4/1905-7/1959
FL	MTN LAKE	08-5973			1-day	NCDC	27.9347	-81.5928	125	**8/1921-10/2011**
FL	MYAKKA RIVER SP	08-6065			1-day	NCDC	27.2417	-82.3161	20	8/1943-7/2011
FL	NAPLES	08-6078			1-day	NCDC	26.1686	-81.7158	5	3/1942-10/2011
FL	NEW SMYRNA BEACH	08-6210			1-day	NCDC	29.0500	-80.9500	10	12/1892-7/1959
FL	NICEVILLE	08-6240			1-day	NCDC	**30.5316**	**-86.4928**	60	2/1927-10/2011
FL	NICEVILLE	08-6240			1-hour	NCDC	**30.5316**	**-86.4928**	60	**1/1942-12/2010**
FL	NICEVILLE	08-6240			15-min	NCDC	30.5314	-86.4919	60	**9/1973-12/2010**
FL	NITTAW 1 S	08-6251			1-day	NCDC	27.9333	-81.0000	69	7/1942-6/1972
FL	NORTH NEW RVR CANAL 1	08-6318		08-6318	1-hour	NCDC	26.5667	-80.7500	20	1/1942-9/2009
FL	NORTH NEW RVR CANAL 2	08-6323			1-hour	NCDC	26.3336	-80.5372	16	1/1942-12/2010
FL	NORTH NEW RVR CANAL 2	08-6323			15-min	NCDC	26.3336	-80.5372	16	**12/1972-12/2010**
FL	OASIS RS	08-6406			1-day	NCDC	25.8581	-81.0319	8	6/1978-10/2011
FL	OCALA	08-6414			1-day	NCDC	29.0803	-82.0778	75	1/1892-10/2011
FL	OCHOPEE	60-0353		60-0353	1-hour	RAWS	25.9167	-81.2833	7	4/1987-3/2011
FL	OKEECHOBEE	08-6485			1-day	NCDC	27.1508	-80.8653	18	3/1940-12/2010
FL	OKEECHOBEE	08-6485		08-6485	1-hour	NCDC	27.1508	-80.8653	18	1/1942-10/1971
FL	OKEECHOBEE 9 W	08-6480	90-0458		1-day	NCDC	27.2333	-80.9667	20	12/1940-10/1974
FL	OKEECHOBEE NEAR	08-6478	90-0489		1-day	NCDC	27.2500	-80.8667	23	1/1918-5/1945
FL	ORANGE CITY	08-6584			1-day	NCDC	28.9333	-81.3000	52	1/1892-8/2009
FL	ORANGE CITY	08-6584		08-6584	1-hour	NCDC	28.9333	-81.3000	52	7/1944-8/2009
FL	ORLANDO INTL AP	08-6628			1-day	NCDC	28.4339	-81.3250	90	5/1952-10/2010
FL	ORLANDO INTL AP	08-6628		08-6628	1-hour	NCDC	28.4339	-81.3250	90	5/1974-12/2010
FL	ORLANDO WSO AP	08-6638			1-day	NCDC	28.5500	-81.3333	120	1/1892-3/2012

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FL	ORLANDO WSO AP	08-6638		08-6638	1-hour	NCDC	28.5500	-81.3333	120	1/1942-1/1984
FL	ORTONA LOCK 2	08-6657			1-day	NCDC	26.7897	-81.3044	20	3/1940-10/2011
FL	ORTONA LOCK 2	08-6657		08-6657	1-hour	NCDC	26.7897	-81.3044	20	1/1942-9/2009
FL	ORTONA LOCK 2	08-6657	90-0781		15-min	NCDC	26.7897	-81.3044	20	1/1984-6/2000
FL	PAIGE+R	90-0657		90-0617	15-min	SFWMD FL	26.6056	-80.9494	16	9/1982-5/2008
FL	PALATKA	08-6753			1-day	NCDC	29.6439	-81.6606	70	**12/1922-9/2009**
FL	PALM COAST 6NE	08-6767			1-day	NCDC	29.6347	-81.2061	5	10/1999-8/2010
FL	PALM+R	90-0658			15-min	SFWMD FL	26.9244	-81.3139	33	4/1992-9/2009
FL	PANACEA 1 S	08-6828			1-day	NCDC	29.9989	-84.4850	6	4/1940-6/2012
FL	PANACEA 1 S	08-6828		08-6828	1-hour	NCDC	29.9989	-84.4850	6	1/1942-10/1991
FL	PANAMA CITY	08-6836	08-6841		1-day	NCDC	30.1667	-85.7000	10	7/1913-1/1956
FL	PANAMA CITY 2	08-6841	08-6842		1-day	NCDC	30.1667	-85.7000	10	7/1948-12/1971
FL	PANAMA CITY 2	08-6841	08-6842		1-hour	NCDC	30.1667	-85.7000	10	1/1942-12/1971
FL	PANAMA CITY 5 N	08-6842			1-day	NCDC	30.2492	-85.6606	5	**7/1913-9/2011**
FL	PANAMA CITY 5 N	08-6842			1-hour	NCDC	30.2492	-85.6606	5	**1/1942-12/2010**
FL	PANAMA CITY 5 N	08-6842			15-min	NCDC	30.2492	-85.6606	5	12/1971-12/2010
FL	PARRISH	08-6880			1-day	NCDC	27.6089	-82.3478	60	8/1944-7/2011
FL	PARRISH	08-6880			1-hour	NCDC	27.6089	-82.3478	60	8/1944-12/2010
FL	PARRISH	08-6880			15-min	NCDC	27.6089	-82.3478	60	5/1971-12/2010
FL	PEL23+R	90-0661		90-0579	15-min	SFWMD FL	26.8122	-80.6100	13	1/1974-9/2009
FL	PENNSUCO 5 WNW	08-6988		08-6988	1-hour	NCDC	25.9297	-80.4539	10	1/1942-8/2003
FL	PENNSUCO 5 WNW	08-6988	90-0721		15-min	NCDC	25.9297	-80.4539	10	4/1972-8/2003
FL	PENSACOLA RGNL AP	08-6997			1-day	NCDC	30.4781	-87.1869	112	**8/1849-10/2010**
FL	PENSACOLA RGNL AP	08-6997		08-6997	1-hour	NCDC	30.4781	-87.1869	112	**1/1942-12/2010**
FL	PENSACOLA WB CITY	62-7002	08-6997		1-day	FORTS	30.4167	-87.2167	52	7/1948-9/1963
FL	PENSACOLA WB CITY	08-7002	08-6997		1-hour	NCDC	30.4167	-87.2167	52	1/1942-2/1964
FL	PERRINE 4W	08-7020			1-day	NCDC	25.5819	-80.4361	10	12/1958-10/2011
FL	PERRY	08-7025			1-day	NCDC	30.0986	-83.5742	45	8/1897-10/2011
FL	PLANT CITY	08-7205			1-day	NCDC	28.0236	-82.1422	120	1/1893-10/2011
FL	POMPANO BEACH	08-7254	90-0107		1-day	NCDC	26.2333	-80.1406	15	12/1940-11/2001
FL	PORT MAYACA S L CANAL	08-7293		08-7293	1-hour	NCDC	26.9833	-80.6167	39	1/1942-9/2009
FL	PUNTA GORDA	08-7395	08-7397		1-day	NCDC	26.9333	-82.0500	10	5/1914-10/1965

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
FL	PUNTA GORDA 4 ESE	08-7397			1-day	NCDC	26.9164	-81.9983	20	**5/1914-10/2011**
FL	QUINCY	54-0033	08-7429		1-day	NADP	30.5486	-84.6004	197	3/1984-4/2009
FL	QUINCY 3 SSW	08-7429			1-day	NCDC	30.6000	-84.5500	245	**5/1896-8/2010**
FL	QUINCY EXP STN	08-7424	08-7429		1-day	NCDC	30.5833	-84.5833	249	5/1896-12/1967
FL	RAIFORD STATE PRISON	08-7440			1-day	NCDC	30.0678	-82.1928	120	6/1902-4/2010
FL	RAIFORD STATE PRISON	08-7440			1-hour	NCDC	30.0678	-82.1928	120	3/1949-12/2010
FL	RAIFORD STATE PRISON	08-7440			15-min	NCDC	30.0678	-82.1928	120	6/1972-12/2010
FL	RITTA	08-7600	08-0611		1-day	NCDC	26.6833	-80.6667	18	1/1913-8/1932
FL	ROMP 28X LAKE PLACID	98-0027			15-min	SRWMD FL	27.2664	-81.3395	**105**	6/2005-11/2009
FL	ROYAL PALM RANGER STA	08-7760			1-day	NCDC	25.3867	-80.5936	7	5/1949-8/2011
FL	S131+R	90-0684			15-min	SFWMD FL	26.9792	-81.0900	16	6/1965-9/1999
FL	S133-R	90-0686			1-day	SFWMD FL	27.2061	-80.8008	7	1/1938-9/2009
FL	S-157	92-0007			1-day	SJRWMD FL	27.8304	-80.5397	39	5/1897-9/2009
FL	S-164	92-0008			1-day	SJRWMD FL	28.3406	-80.9333	43	4/1976-9/2009
FL	S18C-R	90-0705			15-min	SFWMD FL	25.3306	-80.5250	10	3/1967-9/2009
FL	S-252D	92-0022			1-day	SJRWMD FL	27.6389	-80.6789	23	8/1911-9/2009
FL	S26-R	95-1265			15-min	TRMM FL	25.8082	-80.2609	**13**	1/2002-6/2009
FL	S27-R	90-0716			15-min	SFWMD FL	25.8486	-80.1889	13	3/1997-9/2009
FL	S30-R	90-0721		08-6988	15-min	SFWMD FL	25.9567	-80.4314	10	4/1972-8/2003
FL	S332-R	90-0728			15-min	SFWMD FL	25.4217	-80.5897	10	4/1981-9/2009
FL	S36-R	95-1274			15-min	TRMM FL	26.1734	-80.1784	**13**	12/1959-8/2002
FL	S5A+R	90-0750		90-0265	15-min	SFWMD FL	26.6844	-80.3675	13	1/1960-11/2008
FL	S65D+R	90-0764	90-0765		15-min	SFWMD FL	27.3144	-81.0228	30	2/1995-4/2002
FL	S65DW+R	90-0765			15-min	SFWMD FL	27.3142	-81.0219	30	2/1965-9/2009
FL	S65E+R	90-0766			1-day	SFWMD FL	27.2253	-80.9625	30	12/1940-6/2008
FL	S65GW+R	90-0767			15-min	SFWMD FL	27.8031	-81.1981	36	2/2003-9/2009
FL	S70+R	90-0774			15-min	SFWMD FL	27.1186	-81.1572	26	6/1965-6/2008
FL	S78W+R	90-0781		08-6657	15-min	SFWMD FL	26.7897	-81.3028	16	1/1984-9/2009
FL	S7WX+R	90-0782	08-6323		15-min	SFWMD FL	26.3358	-80.5367	13	1/1998-3/2009
FL	SAINT LEO	08-7851			1-day	NCDC	28.3378	-82.2600	190	3/1895-10/2011
FL	SAINT LEO	08-7851			1-hour	NCDC	28.3378	-82.2600	190	8/1944-12/2010
FL	SAINT LEO	08-7851			15-min	NCDC	28.3378	-82.2600	190	5/1972-12/2010

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FL	SAN LUIS CITY PARK	91-0623			15-min	NWFWMD FL	30.4586	-84.3211	86	10/1989-12/2009
FL	SANFORD	08-7982			1-day	NCDC	28.8147	-81.2778	12	**10/1899-10/2011**
FL	SANFORD EXP STN	08-7977	08-7982		1-day	NCDC	28.8167	-81.2500	10	10/1899-5/1956
FL	SARASOTA	08-8021			1-day	NCDC	27.3500	-82.5333	30	**1/1930-8/1976**
FL	SARASOTA 5 E	08-8024	08-8021		1-day	NCDC	27.3333	-82.4667	30	1/1930-10/1950
FL	SBAY+R	90-0795		90-0609	15-min	SFWMD FL	26.6650	-80.7011	10	2/1959-9/2009
FL	SCOTTO+R	90-0796			15-min	SFWMD FL	27.3742	-80.4508	26	5/1998-4/2008
FL	SEBASTIAN	08-8082	92-0007		1-day	NCDC	27.8167	-80.4833	36	5/1897-8/1901
FL	SHADY OAKS FISH CAMP	08-8165	08-3571		1-hour	NCDC	27.8167	-81.2167	60	12/1960-1/1967
FL	SIRG+R	90-0801			15-min	SFWMD FL	26.9072	-80.1917	13	11/1978-9/2009
FL	SNIVLY+R	90-0803			15-min	SFWMD FL	27.9717	-81.4175	62	11/1966-8/2009
FL	ST AUGUSTINE	08-7812	08-7826		1-day	NCDC	29.8833	-81.3333	20	7/1892-3/1973
FL	ST AUGUSTINE LH	08-7826			1-day	NCDC	29.8875	-81.2917	12	**7/1892-10/2011**
FL	ST LUCIE NEW LOCK 1	08-7859			1-day	NCDC	27.1167	-80.2833	21	**3/1940-7/1995**
FL	ST LUCIE NEW LOCK 1	08-7859		08-7859	1-hour	NCDC	27.1167	-80.2833	21	1/1942-7/1995
FL	ST MARKS 5 SSE	08-7867			1-day	NCDC	30.1000	-84.1667	10	11/1907-6/2012
FL	ST PETERSBURG	08-7886			1-day	NCDC	27.7631	-82.6272	8	1/1893-8/2010
FL	ST PETERSBURG	08-7886			1-hour	NCDC	27.7631	-82.6272	8	2/1946-12/2010
FL	ST PETERSBURG	08-7886			15-min	NCDC	27.7631	-82.6272	8	5/1971-12/2010
FL	STARKE	08-8527	08-8529		1-day	NCDC	29.9333	-82.1000	162	2/1958-4/1985
FL	STARKE	08-8529			1-day	NCDC	29.9381	-82.1164	174	**2/1958-10/2011**
FL	STEINHATCHEE 6 ENE	08-8565			1-day	NCDC	29.7236	-83.3061	35	2/1958-10/2001
FL	STUART	08-8620			1-day	NCDC	27.2000	-80.1639	10	9/1935-10/2011
FL	TAFT+R	90-0808			15-min	SFWMD FL	28.4361	-81.3714	92	11/1968-7/2004
FL	TALLAHASSEE	08-8754	08-8758		1-day	NCDC	30.4333	-84.2833	192	5/1892-12/1947
FL	TALLAHASSEE WSO AP	08-8758			1-day	NCDC	30.3931	-84.3533	55	**5/1892-8/2010**
FL	TALLAHASSEE WSO AP	08-8758		08-8758	1-hour	NCDC	30.3931	-84.3533	55	8/1948-12/2010
FL	TAMIAMI CANAL	08-8775	08-9010		1-hour	NCDC	25.7667	-80.4500	10	8/1942-12/1966
FL	TAMIAMI TRL 40 MI BEND	08-8780			1-day	NCDC	25.7608	-80.8242	15	6/1940-6/2006
FL	TAMIAMI TRL 40 MI BEND	08-8780		08-8780	1-hour	NCDC	25.7608	-80.8242	15	1/1942-12/2010
FL	TAMPA	08-8786	08-8788		1-day	NCDC	27.9500	-82.4500	16	4/1890-4/1941
FL	TAMPA WSCMO AP	08-8788			1-day	NCDC	27.9614	-82.5403	19	3/1840-10/2010

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FL	TAMPA WSCMO AP	08-8788		08-8788	1-hour	NCDC	27.9614	-82.5403	19	6/1948-12/2010
FL	TARPON SPGS SEWAGE PL	08-8824			1-day	NCDC	28.1586	-82.7644	8	1/1892-10/2011
FL	TAVERNIER	08-8841			1-day	NCDC	25.0069	-80.5211	7	6/1936-5/2009
FL	TITUSVILLE	08-8942			1-day	NCDC	28.6242	-80.8158	5	1/1901-10/2011
FL	TOWNSI+R	90-0815		90-0190	15-min	SFWMD FL	26.7386	-80.9344	16	5/1971-11/2007
FL	TRAIL GLADE RANGES	08-9010		08-9010	1-hour	NCDC	25.7647	-80.4775	13	**8/1942-12/2010**
FL	TUCK PROPERTY N. CENTERV	91-0610			15-min	NWFWMD FL	30.5592	-84.1500	141	1/1987-12/2009
FL	TURKEY HAMMOCK	08-9048	08-4636		1-hour	NCDC	27.8000	-81.1833	60	8/1954-7/1955
FL	USHER TWR	08-9120			1-day	NCDC	29.4083	-82.8186	33	6/1956-10/2011
FL	VALPARAISO CITY HALL	91-0633	08-6240		15-min	NWFWMD FL	30.5094	-86.4989	57	2/1999-12/2009
FL	VALPARAISO EGLIN AFB	08-2659	08-6240		1-hour	NCDC	30.4833	-86.5167	59	1/1942-7/1950
FL	VENICE	08-9176			1-day	NCDC	27.1006	-82.4364	8	2/1927-10/2011
FL	VENICE	08-9176			1-hour	NCDC	27.1006	-82.4364	8	1/1942-12/2010
FL	VENICE	08-9176			15-min	NCDC	27.1006	-82.4364	8	5/1971-12/2010
FL	VENUS	08-9184			1-day	NCDC	27.1350	-81.3303	161	6/1928-4/2010
FL	VENUS	08-9184		08-9184	1-hour	NCDC	27.1350	-81.3303	161	1/1942-12/2010
FL	VERNON	08-9206	08-9417		1-day	NCDC	30.6167	-85.7167	49	2/1924-9/1951
FL	VERNON	08-9206	08-9415		1-hour	NCDC	30.6167	-85.7167	49	1/1942-7/1965
FL	VERO BEACH 4SE	08-9219			1-day	NCDC	27.6528	-80.4031	20	**12/1923-10/2011**
FL	VERO BEACH 4SE	08-9219			1-hour	NCDC	27.6528	-80.4031	20	**1/1942-12/2010**
FL	VERO BEACH 4SE	08-9219			15-min	NCDC	27.6528	-80.4031	20	5/1971-12/2010
FL	VERO BEACH INTL AP	08-9214	08-9219		1-day	NCDC	**27.6546**	**-80.4150**	19	12/1923-10/2010
FL	VERO BEACH INTL AP	08-9214	08-9219		1-hour	NCDC	**27.6546**	**-80.4150**	**19**	1/1942-3/2009
FL	WAUCHULA	08-9401			1-day	NCDC	27.5478	-81.7994	60	1/1933-10/2011
FL	WAUSAU	08-9417			1-day	NCDC	30.6333	-85.5833	250	**8/1897-12/1980**
FL	WAUSAU	08-9415		08-9417	1-hour	NCDC	30.6533	-85.5883	150	**1/1942-12/1980**
FL	WEMBLEY WAY EASTGATE NEI	91-0628			15-min	NWFWMD FL	30.4931	-84.2392	109	10/1989-12/2009
FL	WEST PALM BCH INTL AP	08-9525			1-day	NCDC	26.6847	-80.0994	19	7/1938-10/2010
FL	WEST PALM BCH INTL AP	08-9525		08-9525	1-hour	NCDC	26.6847	-80.0994	19	1/1942-12/2010
FL	WEST PALM BEACH	08-9520	90-0336		1-day	NCDC	26.7167	-80.0500	20	8/1929-9/1960
FL	WEWAHITCHKA	08-9566			1-day	NCDC	30.1192	-85.2042	42	3/1901-8/2011
FL	WINTER HAVEN	08-9707			1-day	NCDC	28.0153	-81.7331	145	2/1941-2/2008

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FL	WOODRUFF DAM	08-9795			1-hour	NCDC	30.7219	-84.8742	107	**1/1953-12/2010**
FL	WOODRUFF DAM	08-9795			15-min	NCDC	30.7219	-84.8742	107	5/1971-12/2010
FL	3A-36+R	90-0001			15-min	SFWMD FL	26.1915	-80.4492	10	12/1959-11/2007
FL	3ANW+R	90-0003			15-min	SFWMD FL	26.2665	-80.7795	10	6/1971-9/2009
FL	3AS+R	90-0004			15-min	SFWMD FL	26.0821	-80.6915	10	6/1971-9/2009
FL	3ASW+R	90-0007			15-min	SFWMD FL	25.9898	-80.8362	10	7/1975-9/2009
GA	ABBEVILLE 4S	09-0010			1-day	NCDC	31.9381	-83.3078	240	8/1903-2/2011
GA	ABBEVILLE 4S	09-0010		09-0010	1-hour	NCDC	31.9381	-83.3078	240	6/1948-8/2008
GA	ADAIRSVILLE	09-0041			1-day	NCDC	34.3667	-84.9333	700	2/1892-8/1986
GA	ADAIRSVILLE	09-0041		09-0041	1-hour	NCDC	34.3667	-84.9333	700	6/1948-9/1986
GA	ADAIRSVILLE 5 SE	09-0044			1-day	NCDC	34.3417	-84.8389	956	10/1986-10/2011
GA	ADAIRSVILLE 5 SE	09-0044			1-hour	NCDC	34.3417	-84.8389	956	9/1986-12/2010
GA	ADAIRSVILLE 5 SE	09-0044			15-min	NCDC	34.3417	-84.8389	956	9/1986-12/2010
GA	ADEL	97-0001			1-hour	GA FORESTRY	31.1097	-83.4269	154	1/1994-8/2009
GA	ADEL 2 S	09-0053			1-day	NCDC	31.1167	-83.4167	240	9/1941-4/1975
GA	AILEY	09-0090			1-day	NCDC	32.1833	-82.5667	235	6/1947-1/1994
GA	ALAPAHA EXP STN	09-0131			1-day	NCDC	31.3500	-83.2167	289	10/1892-12/1974
GA	ALBANY 3 SE	09-0140			1-day	NCDC	31.5339	-84.1489	180	7/1892-10/2011
GA	ALLATOONA DAM	09-0180	09-0181		1-hour	NCDC	34.1667	-84.7333	741	6/1948-3/1952
GA	ALLATOONA DAM 2	09-0181			1-day	NCDC	34.1650	-84.7300	975	6/1948-10/2011
GA	ALLATOONA DAM 2	09-0181			1-hour	NCDC	34.1650	-84.7300	975	**6/1948-3/2009**
GA	ALLATOONA DAM 2	09-0181			15-min	NCDC	34.1650	-84.7300	975	5/1971-3/2009
GA	ALLENTOWN	09-0190	09-2532		1-day	NCDC	32.5833	-83.2333	430	3/1896-8/1902
GA	ALMA BACON CO AP	09-0211			1-day	NCDC	31.5358	-82.5067	193	7/1948-10/2010
GA	ALPHARETTA 2 NNW	09-0221		09-0219	1-hour	NCDC	34.1167	-84.3000	1102	**6/1948-1/1985**
GA	ALPHARETTA 4 SSW	09-0219			1-day	NCDC	**34.0661**	-84.3233	1138	10/1901-7/2011
GA	AMERICUS	09-0253			1-day	NCDC	32.0603	-84.2322	490	5/1876-10/2011
GA	AMERICUS	97-0002		09-0253	1-hour	GA FORESTRY	32.1106	-84.1841	400	6/1948-8/2009
GA	AMERICUS EXP STN NRSY	09-0258	97-0002		1-hour	NCDC	32.1025	-84.2667	450	6/1948-5/2004
GA	APPLING	09-0310	09-0311		1-day	NCDC	33.5333	-82.3167	240	10/1957-1/1961
GA	APPLING 2 NW	09-0311			1-day	NCDC	33.5619	-82.3389	370	**10/1957-10/2011**
GA	ASHBURN 3 ENE	09-0406			1-day	NCDC	31.7003	-83.6231	435	1/1957-10/2011

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GA	ATHENS	09-0430			1-day	NCDC	33.9667	-83.3833	666	3/1857-2/1971
GA	ATHENS BEN EPPS AP	09-0435			1-day	NCDC	33.9481	-83.3275	785	6/1944-10/2010
GA	ATHENS BEN EPPS AP	09-0435		09-0435	1-hour	NCDC	33.9481	-83.3275	785	8/1948-12/2010
GA	ATLANTA 9NW	09-0444			1-day	NCDC	33.8264	-84.4961	907	**6/1899-10/2011**
GA	ATLANTA HARTSFIELD AP	09-0451			1-day	NCDC	33.6300	-84.4417	1010	1/1930-10/2010
GA	ATLANTA HARTSFIELD AP	09-0451		09-0451	1-hour	NCDC	33.6300	-84.4417	1010	6/1948-12/2010
GA	ATLANTA WB CITY	63-0456	09-0456		1-day	FORTS	33.7500	-84.3833	1138	7/1948-4/1954
GA	ATLANTA WB CITY	09-0456			1-day	NCDC	33.7500	-84.3833	1138	**1/1874-4/1954**
GA	AUGUSTA	62-0500	09-0495		1-day	FORTS	33.4667	-81.9667	131	7/1891-12/1960
GA	AUGUSTA	09-0500			1-day	NCDC	33.4667	-81.9667	131	7/1891-12/1960
GA	AUGUSTA BUSH FLD AP	09-0495			1-day	NCDC	33.3644	-81.9633	132	**7/1854-10/2010**
GA	AUGUSTA BUSH FLD AP	09-0495		09-0495	1-hour	NCDC	33.3644	-81.9633	132	8/1948-12/2010
GA	BAINBRIDGE	09-0581			1-day	NCDC	30.9167	-84.5833	121	6/1892-1/1977
GA	BAINBRIDGE	09-0581		09-0581	1-hour	NCDC	30.9167	-84.5833	121	7/1948-11/1977
GA	BAINBRIDGE INTL PAPER	09-0586			1-day	NCDC	30.8228	-84.6175	190	10/1977-7/2011
GA	BAINBRIDGE INTL PAPER	09-0586			1-hour	NCDC	30.8228	-84.6175	190	6/1948-3/2010
GA	BAINBRIDGE INTL PAPER	09-0586			15-min	NCDC	30.8228	-84.6175	190	10/1977-3/2010
GA	BALL GROUND	09-0603			1-day	NCDC	34.3297	-84.4708	1270	3/1947-10/2011
GA	BARNESVILLE #2	09-0661	09-3303		1-day	NCDC	32.9847	-84.0881	745	6/2001-11/2002
GA	BEAVERDALE 1 E	09-0746			1-day	NCDC	34.9194	-84.8322	740	6/1940-9/1999
GA	BELLVILLE	09-0787	09-1973		1-hour	NCDC	32.1500	-81.9667	190	6/1948-2/1980
GA	BLAIRSVILLE EXP STN	09-0969			1-day	NCDC	34.8544	-83.9444	1949	6/1892-10/2011
GA	BLAKELY	09-0979			1-day	NCDC	31.3811	-84.9508	268	9/1889-10/2011
GA	BLUE RIDGE 3 SW	09-1024			1-day	NCDC	34.8667	-84.3167	1840	**5/1914-11/1996**
GA	BLUE RIDGE RESVR DAM	09-1029	09-1024		1-day	NCDC	34.8833	-84.2833	1562	5/1914-3/1962
GA	BOWMAN	09-1132			1-day	NCDC	34.2000	-83.0333	785	1/1952-8/1997
GA	BRASSTOWN #1	60-0453		60-0453	1-hour	RAWS	34.8028	-83.7100	3280	8/1948-2/2011
GA	BROOKLET 1 W	09-1266			1-day	NCDC	32.3750	-81.6731	180	1/1925-10/2011
GA	BRUNSWICK	09-1340			1-day	NCDC	31.1681	-81.5022	13	2/1895-10/2011
GA	BRUNSWICK MCKINNON AP	09-1345			1-day	NCDC	31.1522	-81.3908	16	9/1948-10/2010
GA	BRUNSWICK MCKINNON AP	09-1345		09-1345	1-hour	NCDC	31.1522	-81.3908	16	6/1948-12/2010
GA	BUENA VISTA	09-1372			1-day	NCDC	32.3178	-84.5203	646	1/1944-10/2011

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GA	BUENA VISTA	09-1372		09-1372	1-hour	NCDC	32.3178	-84.5203	646	6/1948-10/1974
GA	BURTON DAM	09-1413		09-1413	1-hour	NCDC	**34.7927**	**-83.5397**	1772	6/1948-11/1978
GA	BUTLER	09-1425			1-day	NCDC	32.6525	-84.1858	446	3/1902-3/2004
GA	CAIRO 3NW	09-1463			1-day	NCDC	30.9014	-84.2242	255	1/1927-10/2011
GA	CALHOUN EXP STN	09-1474			1-day	NCDC	34.4833	-84.9667	655	3/1953-2/1997
GA	CALHOUN EXP STN	09-1474			1-hour	NCDC	34.4833	-84.9667	655	1/1970-4/1997
GA	CALHOUN EXP STN	09-1474			15-min	NCDC	34.4833	-84.9667	655	5/1971-4/1997
GA	CAMAK	09-1488	09-9141		1-day	NCDC	33.4500	-82.6500	590	10/1892-3/1914
GA	CAMILLA	97-0008			1-hour	GA FORESTRY	31.2466	-82.4014	37	1/2002-8/2009
GA	CAMILLA 3 SE	09-1500			1-day	NCDC	31.1903	-84.2036	175	10/1889-10/2011
GA	CAMP MERRILL	60-0457		60-0457	1-hour	RAWS	34.6300	-84.0975	1743	6/1948-2/2011
GA	CANTON	09-1585			1-day	NCDC	34.2072	-84.5039	1135	8/1891-10/2011
GA	CANTON	09-1585			1-hour	NCDC	34.2072	-84.5039	1135	6/1948-9/2008
GA	CANTON	09-1585			15-min	NCDC	34.2072	-84.5039	1135	5/1971-9/2008
GA	CARLTON BRG	09-1601			1-day	NCDC	34.0667	-82.9833	449	3/1899-4/1962
GA	CARNESVILLE 4 N	09-1619			1-day	NCDC	34.4300	-83.2478	866	6/1948-10/2011
GA	CARNESVILLE 4 N	09-1619		09-1619	1-hour	NCDC	34.4300	-83.2478	866	6/1948-12/2010
GA	CARROLLTON	09-1640			1-day	NCDC	33.5972	-85.0806	995	5/1904-10/2011
GA	CARROLLTON	09-1640			1-hour	NCDC	33.5972	-85.0806	995	6/1948-2/2009
GA	CARROLLTON	09-1640			15-min	NCDC	33.5972	-85.0806	995	5/1971-2/2009
GA	CARTERS 1 WSW	09-1657			1-day	NCDC	34.6061	-84.7194	740	3/1947-8/1998
GA	CARTERSVILLE #2	09-1670			1-day	NCDC	34.1825	-84.7958	770	5/1937-10/2011
GA	CAVE SPRINGS 4 SSW	09-1715		09-1715	1-hour	NCDC	34.0500	-85.3500	801	2/1949-3/1980
GA	CEDARTOWN	09-1732			1-day	NCDC	34.0589	-85.2339	785	9/1896-10/2011
GA	CHATSWORTH	09-1856	09-1863		1-day	NCDC	34.7667	-84.7833	771	6/1937-1/1979
GA	CHATSWORTH	60-0458		09-1863	1-hour	RAWS	**34.7589**	**-84.7664**	**724**	6/1948-2/2011
GA	CHATSWORTH	97-0009	09-1856		1-hour	GA FORESTRY	34.7664	-84.7589	748	8/1993-8/2009
GA	CHATSWORTH	09-1856	60-0458		1-hour	NCDC	34.7667	-84.7833	771	6/1948-2/1979
GA	CHATSWORTH 2	09-1863			1-day	NCDC	34.7589	-84.7650	709	**6/1937-10/2011**
GA	CHATSWORTH 2	09-1863	09-1856		1-hour	NCDC	34.7589	-84.7650	709	3/1979-3/2009
GA	CHATSWORTH 2	09-1863		09-1863	15-min	NCDC	34.7589	-84.7650	709	3/1979-12/2010
GA	CHICKAMAUGA PARK	09-1906	09-1908		1-day	NCDC	34.9000	-85.2717	740	1/1949-7/2007

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
GA	CHICKAMAUGA PK LARC	09-1908			1-day	NCDC	34.9033	-85.2714	775	**1/1949-10/2011**
GA	CHICKAMAUGA PK LARC	09-1908			1-hour	NCDC	34.9033	-85.2714	775	11/1979-12/2010
GA	CHICKAMAUGA PK LARC	09-1908			15-min	NCDC	34.9033	-85.2714	775	11/1979-12/2010
GA	CLAXTON	09-1973		09-1973	1-hour	NCDC	32.1678	-81.9008	188	**6/1948-7/2007**
GA	CLAYTON 1 SSW	09-1982			1-day	NCDC	34.8619	-83.4064	1915	10/1893-10/2011
GA	CLERMONT 4 WSW	09-1998		09-1998	1-hour	NCDC	34.4503	-83.8550	1281	6/1948-4/2007
GA	CLEVELAND	09-2006			1-day	NCDC	34.5858	-83.7658	1567	4/1943-10/2011
GA	COLQUITT 2 W	09-2153			1-day	NCDC	31.1681	-84.7664	153	3/1956-10/2011
GA	COLUMBUS DARDC	09-2161			1-day	NCDC	32.4500	-84.9833	185	5/1880-9/1965
GA	COLUMBUS METO AP	09-2166		09-2166	1-hour	NCDC	32.5161	-84.9422	392	6/1948-12/2010
GA	COMMERCE 4 NNW	09-2180			1-day	NCDC	34.2633	-83.4858	750	7/1957-10/2011
GA	CONCORD	09-2198			1-day	NCDC	33.1000	-84.4333	830	6/1912-4/1975
GA	COOLIDGE	09-2238		09-2238	1-hour	NCDC	31.0167	-83.8667	250	6/1948-1/1991
GA	COOPER GAP	09-2246	60-0457		1-hour	NCDC	**34.6328**	**-84.0599**	1903	6/1948-5/1970
GA	CORDELE	09-2266			1-day	NCDC	31.9847	-83.7758	308	11/1892-10/2011
GA	CORNELIA	09-2283			1-day	NCDC	34.5181	-83.5286	1470	5/1919-10/2011
GA	COVINGTON	09-2318			1-day	NCDC	33.5950	-83.9142	690	7/1893-10/2011
GA	CRISP CO PWR DAM	09-2361			1-day	NCDC	31.8536	-83.9592	245	7/1978-10/2011
GA	CUMMING 2N	09-2408			1-day	NCDC	34.2214	-84.1222	1145	6/1937-10/2011
GA	CURRYVILLE 3 W	09-2429			1-day	NCDC	34.4397	-85.1033	617	2/1947-10/2011
GA	CUTHBERT	09-2450			1-day	NCDC	31.7672	-84.7931	461	11/1904-5/2011
GA	DAHLONEGA 1 W	09-2475			1-day	NCDC	34.5286	-84.0047	1260	4/1874-4/2011
GA	DALLAS 7 NE	09-2485			1-day	NCDC	33.9881	-84.7475	1100	2/1947-10/2011
GA	DALLAS 7 NE	09-2485			1-hour	NCDC	33.9881	-84.7475	1100	6/1948-12/2010
GA	DALLAS 7 NE	09-2485			15-min	NCDC	33.9881	-84.7475	1100	9/1975-12/2010
GA	DALTON	09-2493			1-day	NCDC	34.7700	-84.8872	799	10/1935-1/2005
GA	DANVILLE	09-2532			1-day	NCDC	32.6000	-83.2500	450	**3/1896-4/1997**
GA	DAWSON	09-2570			1-day	NCDC	31.7819	-84.4497	355	3/1903-2/2010
GA	DAWSONVILLE	09-2578			1-day	NCDC	34.4206	-84.1039	1343	4/1947-10/2003
GA	DAWSONVILLE	97-0011		97-0011	1-hour	GA FORESTRY	34.3763	-84.0599	1213	6/1948-8/2009
GA	DAWSONVILLE	09-2578	97-0011		1-hour	NCDC	34.4206	-84.1039	1343	6/1948-10/2003
GA	DAWSONVILLE	09-2578			15-min	NCDC	34.4206	-84.1039	1343	5/1971-10/2003

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GA	DOCTORTOWN 1 WSW	09-2716			1-day	NCDC	31.6500	-81.8500	80	**7/1936-9/1996**
GA	DOLES	09-2728		09-2728	1-hour	NCDC	31.7000	-83.8833	256	6/1948-10/2000
GA	DONALSONVILLE	09-2738			1-day	NCDC	31.0286	-84.8911	150	**7/1941-10/2011**
GA	DONALSONVILLE 1 S	09-2736	09-2738		1-day	NCDC	31.0167	-84.8833	135	7/1941-1/1987
GA	DOUGLAS	09-2783			1-day	NCDC	31.4889	-82.8206	233	2/1902-10/2011
GA	DOUGLASVILLE 4 S	09-2791			1-day	NCDC	33.7006	-84.7303	1002	6/1940-10/2009
GA	DOVER	09-2799			1-day	NCDC	32.5997	-81.7078	103	7/1930-10/2011
GA	DUBLIN	09-2839			1-day	NCDC	32.5575	-82.9036	230	10/1892-4/2010
GA	DUBLIN 2	09-2844		09-2839	1-hour	NCDC	32.5569	-82.8997	200	6/1948-12/2010
GA	DUBLIN 2	09-2844		09-2839	15-min	NCDC	32.5569	-82.8997	200	3/1978-12/2010
GA	EASTMAN 1 W	09-2966			1-day	NCDC	32.2003	-83.2058	400	10/1892-10/2011
GA	EDISON	09-3028			1-day	NCDC	31.5664	-84.7339	294	3/1940-10/2011
GA	EDISON	09-3028			1-hour	NCDC	31.5664	-84.7339	294	6/1948-12/2010
GA	EDISON	09-3028			15-min	NCDC	31.5664	-84.7339	294	5/1971-12/2010
GA	ELBERTON 2 N	09-3060			1-day	NCDC	34.1406	-82.8550	540	11/1891-10/2011
GA	ELLIJAY	09-3115			1-day	NCDC	34.6947	-84.4836	1287	6/1937-10/2011
GA	EMBRY	09-3147			1-day	NCDC	33.8750	-85.0008	1273	6/1940-8/2011
GA	EXPERIMENT	09-3271			1-day	NCDC	33.2631	-84.2842	934	**8/1883-6/2004**
GA	FAIRMOUNT	09-3295			1-day	NCDC	34.4364	-84.7000	743	6/1937-7/2002
GA	FAIRVIEW	09-3303	09-8657		1-day	NCDC	33.0000	-84.1000	732	3/1915-5/1953
GA	FARGO	09-3312			1-day	NCDC	30.6908	-82.5633	115	3/1928-4/2010
GA	FARGO	09-3312			1-hour	NCDC	30.6908	-82.5633	115	6/1948-12/2010
GA	FARGO	09-3312			15-min	NCDC	30.6908	-82.5633	115	5/1971-12/2010
GA	FIELDS CROSS ROADS	09-3363	09-0221		1-hour	NCDC	34.1167	-84.3167	1050	6/1948-4/1970
GA	FITZGERALD	09-3386			1-day	NCDC	31.7108	-83.2517	370	3/1898-1/2006
GA	FLEMING	09-3409			1-day	NCDC	31.8833	-81.4167	20	1/1893-5/1978
GA	FLEMING	09-3409		09-3409	1-hour	NCDC	31.8833	-81.4167	20	6/1950-3/1980
GA	FOLKSTON 3 SW	09-3460			1-day	NCDC	30.7986	-82.0181	30	7/1948-5/2010
GA	FOLKSTON 3 SW	09-3460			1-hour	NCDC	30.7986	-82.0181	30	7/1948-12/2010
GA	FOLKSTON 3 SW	09-3460			15-min	NCDC	30.7986	-82.0181	30	5/1971-12/2010
GA	FOLKSTON 9 SW	09-3465			1-day	NCDC	30.7400	-82.1278	120	**11/1905-7/2011**
GA	FRANKLIN	09-3567	09-3570		1-day	NCDC	33.2833	-85.1000	669	4/1897-8/1972

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GA	FRANKLIN	09-3570			1-day	NCDC	33.2758	-85.0992	790	**4/1897-6/2005**
GA	FT GAINES	09-3516			1-day	NCDC	31.6000	-85.0500	341	10/1892-8/1984
GA	FT STEWART	09-1544	09-3538		1-day	NCDC	31.8667	-81.6167	89	5/1941-7/1964
GA	FT STEWART	09-3538			1-day	NCDC	31.8717	-81.6289	92	**5/1941-8/2011**
GA	FT VALLEY 2 E	09-3544	09-5550		1-day	NCDC	32.5667	-83.8667	489	7/1919-6/1975
GA	GAINESVILLE	09-3621			1-day	NCDC	34.3006	-83.8600	1170	10/1892-10/2011
GA	GIBSON	09-3695			1-day	NCDC	33.2261	-82.5950	416	12/1955-10/2011
GA	GILLSVILLE	09-3712	09-5633		1-day	NCDC	34.3167	-83.6500	951	10/1892-5/1941
GA	GLENNVILLE 3NW	09-3754			1-day	NCDC	31.9881	-81.9522	200	11/1904-8/2011
GA	GOAT ROCK	09-3782	09-6148		1-day	NCDC	32.6000	-85.0833	449	4/1913-11/1969
GA	GREENSBORO	09-3899			1-day	NCDC	33.5667	-83.2167	630	4/1902-8/1960
GA	GRIFFIN	09-3936	09-3271		1-day	NCDC	33.2500	-84.2667	981	10/1892-2/1969
GA	HAMILTON 4 W	09-4033			1-day	NCDC	32.7500	-84.9333	660	6/1948-5/1992
GA	HAMILTON 4 W	09-4033		09-4033	1-hour	NCDC	32.7500	-84.9333	660	6/1948-5/1992
GA	HARALSON	09-4070			1-day	NCDC	33.2333	-84.5500	820	6/1940-4/1997
GA	HARALSON	09-4070		09-4070	1-hour	NCDC	33.2333	-84.5500	820	6/1948-4/1997
GA	HARTWELL	09-4133			1-day	NCDC	34.3519	-82.9300	690	3/1908-10/2011
GA	HAWKINSVILLE	09-4170			1-day	NCDC	**32.2842**	-83.4681	245	11/1892-10/2011
GA	HAZLEHURST	09-4204			1-day	NCDC	31.8878	-82.5808	250	7/1918-10/2011
GA	HAZLEHURST	09-4204			1-hour	NCDC	31.8878	-82.5808	250	6/1948-12/2010
GA	HAZLEHURST	09-4204			15-min	NCDC	31.8878	-82.5808	250	5/1972-12/2010
GA	HELEN	09-4230			1-day	NCDC	34.6997	-83.7261	1493	4/1956-10/2011
GA	HOMERVILLE 5 N	09-4429			1-day	NCDC	31.0767	-82.8003	187	10/1956-10/2011
GA	ICHAWAYNOCHAWAY CREEK AT	53-1103	09-6038		1-day	USGS	**30.5839**	**-88.5700**	**25**	6/2003-2/2006
GA	IRWINTON 4 WNW	09-4594			1-day	NCDC	32.8294	-83.2389	515	9/1956-4/2011
GA	JACKSON DAM	09-4623			1-hour	NCDC	33.3200	-83.8436	430	6/1948-12/2010
GA	JACKSON DAM	09-4623			15-min	NCDC	33.3200	-83.8436	430	5/1971-12/2010
GA	JASPER	09-4651		09-4651	1-hour	NCDC	34.4556	-84.4564	1550	**7/1948-8/2002**
GA	JASPER 1 NNW	09-4648			1-day	NCDC	34.4958	-84.4592	1465	6/1937-10/2011
GA	JASPER 1 NNW	09-4648	09-4651		1-hour	NCDC	34.4958	-84.4592	1465	7/1948-6/1963
GA	JESUP	09-4671			1-day	NCDC	31.6081	-81.8797	100	12/1896-4/2010
GA	JESUP	09-4671			1-hour	NCDC	31.6081	-81.8797	100	6/1948-12/2010

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GA	JESUP	09-4671			15-min	NCDC	31.6081	-81.8797	100	5/1971-12/2010
GA	JESUP 4 NE	09-4674	09-2716		1-day	NCDC	31.6500	-81.8333	80	9/1950-9/1996
GA	JESUP 8 S	09-4676			1-day	NCDC	31.5075	-81.8628	100	12/1956-8/2011
GA	JOHNTOWN	09-4688		09-4688	1-hour	NCDC	**34.5470**	**-84.2636**	1310	6/1948-4/1997
GA	JONESBORO	09-4700			1-day	NCDC	33.5311	-84.3544	930	6/1940-10/2011
GA	JULIETTE	09-4728			1-day	NCDC	33.1139	-83.7881	450	1/1958-10/2011
GA	KINGSTON	09-4854			1-day	NCDC	34.2333	-84.9453	702	2/1947-4/2004
GA	LA GRANGE	09-4949			1-day	NCDC	33.0650	-85.0294	715	3/1887-10/2011
GA	LA GRANGE	09-4949			1-hour	NCDC	33.0650	-85.0294	715	6/1951-6/2002
GA	LA GRANGE	09-4949			15-min	NCDC	33.0650	-85.0294	715	5/1971-5/2002
GA	LAFAYETTE 3SW	09-4941			1-day	NCDC	34.6639	-85.3203	898	11/1892-10/2011
GA	LAFAYETTE 3SW	09-4941		09-4941	1-hour	NCDC	34.6639	-85.3203	898	6/1948-12/2010
GA	LEXINGTON	09-5165			1-day	NCDC	33.8706	-83.1136	726	1/1952-10/2011
GA	LEXINGTON	09-5165		09-5165	1-hour	NCDC	33.8706	-83.1136	726	1/1952-12/2010
GA	LIME BRANCH	09-5192		09-5192	1-hour	NCDC	33.9333	-85.2667	840	2/1949-10/1970
GA	LINCOLNTON	09-5204			1-day	NCDC	33.8000	-82.4667	480	1/1893-6/2004
GA	LOUISVILLE 1 E	09-5314			1-day	NCDC	33.0125	-82.3914	322	1/1893-10/2011
GA	LOUISVILLE 1 E	09-5314			1-hour	NCDC	33.0125	-82.3914	322	6/1948-12/2010
GA	LOUISVILLE 1 E	09-5314			15-min	NCDC	33.0125	-82.3914	322	5/1971-12/2010
GA	LUMBER CITY	09-5386			1-day	NCDC	31.9297	-82.6792	120	8/1909-12/1994
GA	LUMPKIN 2 SE	09-5394			1-day	NCDC	32.0306	-84.7753	485	10/1892-11/2008
GA	LUMPKIN 2 SE	09-5394		09-5394	1-hour	NCDC	32.0306	-84.7753	485	6/1948-11/2008
GA	MACON	09-5438			1-day	NCDC	32.8386	-83.6203	270	10/1892-12/1984
GA	MACON MIDDLE GA AP	09-5443		09-5443	1-hour	NCDC	32.6847	-83.6528	343	1/1949-12/2010
GA	MARSHALLVILLE	09-5550			1-day	NCDC	32.4567	-83.9400	489	**10/1892-8/1998**
GA	MARSHALLVILLE 6 S	09-5555	09-5550		1-day	NCDC	32.3667	-83.9333	351	10/1892-11/1936
GA	MAUZY	09-5585	09-6087		1-day	NCDC	31.1167	-83.7667	300	5/1898-11/1910
GA	MAYSVILLE	09-5633			1-day	NCDC	34.2647	-83.5581	910	**10/1892-8/1998**
GA	METTER	09-5811			1-day	NCDC	32.3972	-82.0819	120	10/1955-8/2011
GA	METTER	60-0469			1-hour	RAWS	32.3911	-82.0372	99	2/2003-2/2011
GA	MIDVILLE	09-5858			1-day	NCDC	32.8089	-82.2372	175	7/1930-12/1998
GA	MIDVILLE EXP STN	09-5863			1-day	NCDC	32.8753	-82.2156	280	6/1957-10/2011

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GA	MILLEDGEVILLE	09-5874			1-day	NCDC	33.0831	-83.2497	368	10/1892-10/2011
GA	MILLEDGEVILLE DARDC	09-5876		09-5874	1-hour	NCDC	33.0864	-83.2197	300	2/1981-12/2010
GA	MILLEDGEVILLE DARDC	09-5876		09-5874	15-min	NCDC	33.0864	-83.2197	300	2/1981-12/2010
GA	MILLEN 4 N	09-5882			1-day	NCDC	32.8703	-81.9672	195	10/1892-12/1998
GA	MONROE	09-5971			1-day	NCDC	33.7833	-83.7167	879	7/1956-4/2010
GA	MONROE DARDC	09-5974		09-5971	1-hour	NCDC	33.8019	-83.7156	910	1/1980-12/2010
GA	MONROE DARDC	09-5974		09-5971	15-min	NCDC	33.8019	-83.7156	910	1/1980-12/2010
GA	MONTEZUMA	09-5979			1-day	NCDC	32.2903	-84.0314	327	10/1904-10/2011
GA	MONTICELLO	09-5988			1-day	NCDC	33.3328	-83.6975	518	10/1892-10/2011
GA	MORGAN 1 W	09-6038			1-day	NCDC	31.5333	-84.6167	270	**10/1892-2/2006**
GA	MORGAN 5 NW	09-6043			1-day	NCDC	31.6061	-84.6453	273	5/1959-3/2011
GA	MOULTRIE 2 ESE	09-6087			1-day	NCDC	31.1769	-83.7492	340	**5/1898-10/2011**
GA	MT VERNON	09-6126			1-day	NCDC	32.1739	-82.5956	229	12/1892-10/2011
GA	MTN CITY 2 N	09-6091		09-6091	1-hour	NCDC	**34.9329**	**-83.3920**	2155	**1/1981-2/2011**
GA	MULBERRY GROVE	09-6148			1-day	NCDC	32.6089	-85.0756	501	**4/1913-10/2011**
GA	NAHUNTA 6NE	09-6219			1-day	NCDC	31.2739	-81.9197	68	9/1956-10/2011
GA	NEWINGTON	09-6323			1-day	NCDC	32.5953	-81.4997	209	9/1956-2/2003
GA	NEWNAN 5N	09-6335			1-day	NCDC	33.4544	-84.8178	894	11/1892-10/2011
GA	NORCROSS	09-6407			1-day	NCDC	33.9483	-84.2219	1005	5/1910-11/2005
GA	OAKDALE	09-6600	09-0444		1-day	NCDC	33.8167	-84.4833	810	6/1899-4/1910
GA	PATTERSON	09-6838			1-day	NCDC	31.3781	-82.1292	105	12/1956-10/2011
GA	PEARSON	09-6879			1-hour	NCDC	31.2928	-82.8422	205	6/1948-12/2010
GA	PEARSON	09-6879			15-min	NCDC	31.2928	-82.8422	205	5/1971-12/2010
GA	PLAINS SW GA EXP STN	09-7087			1-day	NCDC	32.0467	-84.3711	500	1/1956-10/2011
GA	PRESTON	09-7201			1-day	NCDC	32.0547	-84.5239	405	2/1956-8/2011
GA	QUITMAN 2 NW	09-7276			1-day	NCDC	30.7836	-83.5692	185	10/1892-12/2010
GA	RESACA	09-7430			1-day	NCDC	34.5911	-84.9589	650	8/1891-4/2003
GA	RINGGOLD 2 SE	09-7489			1-day	NCDC	34.9003	-85.0667	770	8/1952-7/2007
GA	ROME	09-7600			1-day	NCDC	34.2453	-85.1514	659	1/1893-8/2010
GA	ROME 8 SW	09-7605			1-hour	NCDC	34.1650	-85.2583	700	6/1948-12/2010
GA	ROME 8 SW	09-7605			15-min	NCDC	34.1650	-85.2583	700	5/1971-12/2010
GA	ROME WSO AP	09-7610		09-7610	1-hour	NCDC	34.3500	-85.1667	640	6/1948-10/1980

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GA	SAINT GEORGE	09-7720	09-3465		1-day	NCDC	30.5167	-82.0333	78	11/1905-5/1929
GA	SANDERSVILLE	09-7777			1-day	NCDC	32.9744	-82.8044	451	6/1914-10/2011
GA	SAPELO ISLAND	09-7808			1-day	NCDC	31.3972	-81.2811	10	5/1957-10/2011
GA	SAVANNAH BEACH	09-7860			1-day	NCDC	32.0000	-80.8500	10	**10/1938-1/1998**
GA	SAVANNAH INTL AP	63-7847	09-7847		1-day	FORTS	32.1300	-81.2100	46	1/1937-10/2010
GA	SAVANNAH INTL AP	09-7847			1-day	NCDC	32.1300	-81.2100	46	**8/1851-10/2010**
GA	SAVANNAH INTL AP	09-7847		09-7847	1-hour	NCDC	32.1300	-81.2100	46	6/1948-12/2010
GA	SAVANNAH USDA PLT GD	09-7842			1-day	NCDC	32.0000	-81.2667	20	3/1928-3/1977
GA	SILOAM 3N	09-8064			1-day	NCDC	33.5636	-83.0767	695	**7/1887-10/2011**
GA	SPARTA	09-8223			1-day	NCDC	33.2725	-82.9669	570	1/1897-2/1999
GA	SPARTA	09-8223		09-8223	1-hour	NCDC	33.2725	-82.9669	570	6/1951-7/1999
GA	STILLMORE	09-8351			1-day	NCDC	32.4414	-82.2181	260	4/1901-1/2002
GA	SUMMERVILLE	09-8436			1-day	NCDC	34.4547	-85.3900	639	6/1937-10/2011
GA	SURRENCY	09-8476			1-day	NCDC	31.7078	-82.1969	200	9/1956-11/2003
GA	SWAINSBORO	09-8496			1-day	NCDC	32.5806	-82.3822	320	2/1905-3/2000
GA	SWEET GUM	09-8504		09-8504	1-hour	NCDC	34.9667	-84.2167	1801	8/1948-12/1980
GA	SYLVANIA 2 SSE	09-8517			1-day	NCDC	32.7322	-81.6178	250	6/1948-9/2008
GA	SYLVANIA 2 SSE	09-8517			1-hour	NCDC	32.7322	-81.6178	250	6/1948-9/2008
GA	SYLVANIA 2 SSE	09-8517			15-min	NCDC	32.7322	-81.6178	250	11/1971-9/2008
GA	TALBOTTON	09-8535			1-day	NCDC	32.6875	-84.5197	640	2/1893-10/2011
GA	TALLAPOOSA 2 N	09-8547			1-day	NCDC	33.7667	-85.3000	981	11/1896-12/1974
GA	TALLULAH #1	60-0478	09-6091		1-hour	RAWS	34.9058	-83.3344	2728	8/2001-2/2011
GA	TAYLORSVILLE	09-8600			1-day	NCDC	34.0861	-84.9828	721	6/1937-10/2011
GA	THE ROCK	09-8657			1-day	NCDC	32.9639	-84.2417	789	**3/1915-7/2011**
GA	THE ROCK	09-8657			1-hour	NCDC	32.9639	-84.2417	789	6/1948-12/2010
GA	THE ROCK	09-8657			15-min	NCDC	32.9639	-84.2417	789	5/1971-12/2010
GA	THOMASTON 2 S	09-8661			1-day	NCDC	32.8667	-84.3175	672	8/1955-9/2011
GA	THOMASVILLE 3 NE	09-8666			1-day	NCDC	30.8672	-83.9319	260	10/1892-10/2011
GA	TIFTON	09-8703			1-day	NCDC	31.4461	-83.4767	380	2/1911-10/2011
GA	TOCCOA	09-8740			1-day	NCDC	34.5792	-83.3303	1012	10/1892-10/2011
GA	TRAY MTN	09-8806	60-0453		1-hour	NCDC	34.8000	-83.7000	3904	8/1948-5/1979
GA	TYBEE ISLAND	09-8931	09-7860		1-day	NCDC	32.0167	-80.8500	8	8/1994-1/1998

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GA	U OF GA PLT SCI	09-8950			1-day	NCDC	33.8722	-83.5358	840	6/1971-10/2011
GA	UNICOI SP	09-8935		09-4230	1-hour	NCDC	34.7206	-83.7219	1594	12/1978-12/2010
GA	UNICOI SP	09-8935		09-4230	15-min	NCDC	34.7206	-83.7219	1594	1/1979-12/2010
GA	UNION POINT	09-8942	09-8064		1-day	NCDC	33.6167	-83.0833	660	10/1892-11/1901
GA	VALDOSTA	09-8964	09-8974		1-hour	NCDC	30.8333	-83.3000	230	8/1948-9/1954
GA	VALDOSTA 2 S	09-8974			1-day	NCDC	30.8056	-83.2736	265	3/1905-10/2011
GA	VALDOSTA 2 S	09-8974			1-hour	NCDC	30.8056	-83.2736	265	**8/1948-12/2010**
GA	VALDOSTA 2 S	09-8974			15-min	NCDC	30.8056	-83.2736	265	5/1971-12/2010
GA	WALESKA	09-9077			1-day	NCDC	34.3108	-84.5375	1196	3/1947-6/2004
GA	WARRENTON	09-9141			1-day	NCDC	33.4067	-82.6344	490	**10/1892-10/2011**
GA	WASHINGTON 2 ESE	09-9157			1-day	NCDC	33.7264	-82.7058	620	1/1893-10/2011
GA	WATKINSVILLE ARS	09-9169		09-9169	1-hour	NCDC	33.8731	-83.4361	750	6/1948-1/2009
GA	WAYCROSS	97-0020			1-hour	GA FORESTRY	31.2466	-82.4014	37	1/1994-8/2009
GA	WAYCROSS 4 NE	09-9186			1-day	NCDC	31.2514	-82.3128	145	10/1892-10/2011
GA	WAYNESBORO 2 S	09-9194			1-day	NCDC	33.0725	-82.0061	270	10/1892-10/2011
GA	WEST POINT	09-9291			1-day	NCDC	32.8694	-85.1892	575	10/1892-10/2011
GA	WINDER 4S	09-9466			1-day	NCDC	33.9275	-83.7261	889	10/1940-5/2006
GA	WOODBURY	09-9506			1-day	NCDC	32.9839	-84.5889	790	8/1900-10/2011
GA	WOODRUFF DAM	09-9519	08-9795		1-hour	NCDC	30.7167	-84.8667	230	1/1953-3/1956
GA	WOODSTOCK	09-9524			1-day	NCDC	34.1097	-84.5150	1052	6/1937-5/2002
LA	ABBEVILLE	16-0007			1-day	NCDC	29.9689	-92.1169	10	2/1891-10/2011
LA	ABITA SPRINGS 1 SW	16-0016			1-hour	NCDC	30.4714	-90.0436	25	10/1947-11/1965
LA	ABITA SPRINGS FIRE TWR	16-0021			1-day	NCDC	30.4397	-90.0464	30	10/1947-7/2011
LA	ALEXANDRIA	16-0098			1-day	NCDC	31.3206	-92.4611	87	5/1884-10/2011
LA	ALEXANDRIA	16-0098			1-hour	NCDC	31.3206	-92.4611	87	**8/1948-4/2011**
LA	ALEXANDRIA	16-0098			15-min	NCDC	31.3206	-92.4611	87	5/1971-1/1996
LA	ALEXANDRIA FCWOS	16-0104	16-0098		1-hour	NCDC	31.3953	-92.2908	118	3/1960-5/2007
LA	AMITE	16-0205			1-day	NCDC	30.7094	-90.5250	170	12/1892-5/2011
LA	ANGOLA	16-0244			1-day	NCDC	30.9500	-91.5833	39	9/1913-1/1965
LA	ANTIOCH FIRE TWR	16-0253			1-day	NCDC	32.8833	-93.0000	348	1/1912-1/1984
LA	ARCADIA	16-0277			1-day	NCDC	32.5511	-92.9186	400	7/1929-10/2011
LA	ASHLAND	16-0349			1-day	NCDC	32.1633	-93.1331	240	11/1943-10/2011

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LA	ATCHAFALAYA	16-0367	16-1365		1-day	NCDC	30.3500	-91.7167	30	1/1931-7/1969
LA	BASTROP	16-0537			1-day	NCDC	32.7689	-92.0056	150	12/1893-10/2011
LA	BATON ROUGE	62-0549	16-0555		1-day	FORTS	30.4131	-91.1964	40	1/1843-12/1892
LA	BATON ROUGE	16-0555	16-0549		1-day	NCDC	30.4292	-91.2069	20	6/1892-12/1978
LA	BATON ROUGE METRO AP	16-0549			1-day	NCDC	30.5372	-91.1469	64	**1/1843-10/2010**
LA	BATON ROUGE METRO AP	16-0549		16-0549	1-hour	NCDC	30.5372	-91.1469	64	10/1947-12/2010
LA	BAYOU SORREL LOCK	16-0565			1-day	NCDC	30.1328	-91.3228	15	10/1969-10/2011
LA	BEAVER FIRE TWR	16-0617			1-day	NCDC	30.7925	-92.4953	105	4/1973-10/2011
LA	BELAH FIRE TWR	16-0639	16-4696		1-day	NCDC	31.6333	-92.1833	197	1/1952-10/1985
LA	BETHANY	16-0786	41-5081		1-hour	NCDC	**32.3832**	**-94.0409**	370	7/1963-4/1970
LA	BIENVILLE 3 NE	16-0800			1-day	NCDC	32.3744	-92.9433	307	**1/1893-10/2011**
LA	BOGALUSA	16-0945			1-day	NCDC	30.7808	-89.8567	100	7/1930-1/2009
LA	BOYCE 3 WNW	16-1232			1-day	NCDC	31.3944	-92.7164	110	1/1976-10/2011
LA	BRUSLY 2 W	16-1246			1-day	NCDC	30.3919	-91.2711	20	**10/1894-7/2010**
LA	BUNKIE	16-1287			1-day	NCDC	30.9594	-92.1786	80	12/1956-10/2011
LA	BURAS	16-1292			1-day	NCDC	29.3414	-89.5158	5	8/1945-7/2010
LA	BURRWOOD WB	16-1335			1-day	NCDC	28.9667	-89.3833	13	**1/1893-2/1965**
LA	BUTTE LA ROSE	16-1365			1-day	NCDC	30.2817	-91.6911	5	**1/1931-10/2011**
LA	CALHOUN RSCH STN	16-1411			1-day	NCDC	32.5133	-92.3478	180	12/1892-10/2011
LA	CALHOUN RSCH STN	16-1411			1-hour	NCDC	32.5133	-92.3478	180	4/1968-12/2010
LA	CALHOUN RSCH STN	16-1411			15-min	NCDC	32.5133	-92.3478	180	9/1978-10/2010
LA	CAMERON	16-1425	16-3979		1-day	NCDC	29.7639	-93.3413	10	1/1893-4/1949
LA	CAMP POLK	16-1446	16-5287		1-day	NCDC	31.0667	-93.2000	351	12/1938-10/1959
LA	CARVILLE 2 SW	16-1565			1-day	NCDC	30.1981	-91.1256	25	9/1937-6/2011
LA	CHALMETTE	16-1639			1-day	NCDC	29.9664	-89.9761	0	**7/1946-7/2005**
LA	CHENEYVILLE 1 NE	16-1729			1-day	NCDC	31.0167	-92.2833	59	4/1886-9/1956
LA	CINCLARE	16-1807	16-1246		1-day	NCDC	30.4000	-91.2333	30	10/1894-8/1965
LA	CLINTON 2	16-1894	16-1891		1-hour	NCDC	30.8833	-91.0167	210	10/1947-5/1954
LA	CLINTON 5 SE	16-1899			1-day	NCDC	30.8178	-90.9733	200	10/1947-10/2011
LA	CLINTON 5 SE	16-1899			1-hour	NCDC	30.8178	-90.9733	200	**10/1947-12/2010**
LA	CLINTON 5 SE	16-1899			15-min	NCDC	30.8178	-90.9733	200	7/1974-12/2010
LA	CLINTON FORESTRY HQ	16-1891			1-day	NCDC	30.8544	-91.0092	250	2/1891-6/2010

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LA	CLINTON FORESTRY HQ	16-1891	16-1899		1-hour	NCDC	30.8544	-91.0092	250	6/1954-7/1974
LA	COLFAX	16-1941			1-day	NCDC	31.5183	-92.7142	110	3/1926-1/2011
LA	COLUMBIA LOCK	16-1979			1-day	NCDC	32.1667	-92.1072	80	**12/1940-10/2011**
LA	COTTON VALLEY 5 NNW	16-2121			1-day	NCDC	32.8869	-93.4569	258	11/1943-10/2009
LA	COVINGTON 4 NNW	16-2151			1-day	NCDC	30.5272	-90.1114	40	5/1893-10/2009
LA	CROWLEY 2 NE	16-2212			1-day	NCDC	30.2408	-92.3478	25	**1/1893-10/2011**
LA	CURTIS 1 SSE	16-2235	16-7924		1-day	NCDC	32.4167	-93.6333	161	2/1966-10/1975
LA	CURTIS 1 SSE	16-2235	16-7738		1-hour	NCDC	32.4167	-93.6333	161	1/1966-10/1975
LA	CURTIS 1 SSE	16-2235	16-7738		15-min	NCDC	32.4167	-93.6333	161	5/1971-10/1975
LA	DE QUINCY	16-2361			1-day	NCDC	30.4347	-93.4692	81	5/1940-7/2003
LA	DE RIDDER	16-2367			1-day	NCDC	30.8428	-93.2869	190	2/1903-10/2011
LA	DENHAM SPRINGS	16-2350			1-day	NCDC	30.4808	-90.9619	35	3/1978-10/2011
LA	DIAMOND 4 NW	16-2478	16-5624		1-day	NCDC	29.5833	-89.8333	4	9/1958-7/1975
LA	DODSON 6 ENE	16-2525			1-day	NCDC	32.1000	-92.5833	200	11/1908-7/1954
LA	DONALDSONVILLE 4 SW	16-2534			1-day	NCDC	30.0717	-91.0275	30	1/1893-10/2011
LA	ELIZABETH	16-2800			1-day	NCDC	30.8500	-92.7833	150	11/1924-11/2002
LA	EMILIE	16-2872	16-7767		1-day	NCDC	30.0667	-90.6167	20	12/1892-5/1905
LA	EUNICE	16-2981			1-day	NCDC	30.4917	-92.4303	50	5/1940-10/2011
LA	FARMERVILLE	16-3079			1-day	NCDC	32.7750	-92.4075	180	2/1891-10/2011
LA	FRANKLIN 3 NW	16-3313			1-day	NCDC	29.8233	-91.5442	12	1/1893-10/2011
LA	FRANKLINTON	16-3321	16-3322		1-day	NCDC	30.8433	-90.1619	124	9/1910-6/1969
LA	FRANKLINTON	16-3322			1-day	NCDC	**30.8433**	**-90.1619**	**124**	**9/1910-4/2007**
LA	FRANKLINTON 3 SW	16-3327	16-3321		1-day	NCDC	30.8186	-90.1800	145	9/1956-10/1997
LA	GALLIANO	16-3433			1-day	NCDC	29.4631	-90.3061	5	2/1968-10/2011
LA	GONZALES	16-3695			1-day	NCDC	30.2033	-90.9225	10	10/1969-10/2011
LA	GORUM FIRE TWR	16-3741			1-day	NCDC	31.4358	-92.8828	307	11/1953-10/2011
LA	GRAMERCY	16-3755	16-5783		1-day	NCDC	30.0667	-90.7000	20	1/1986-12/1992
LA	GRAND CANE FIRE TWR	16-3794			1-day	NCDC	32.1333	-93.8000	270	4/1907-5/1985
LA	GRAND COTEAU	62-3800	16-3800		1-day	FORTS	30.4203	-92.0442	54	11/1882-12/1892
LA	GRAND COTEAU	16-3800			1-day	NCDC	30.4192	-92.0439	55	**11/1882-10/2011**
LA	GRAND ISLE	16-3807			1-day	NCDC	29.2339	-89.9961	2	3/1947-10/2011
LA	GRAND ISLE	16-3807	16-3815		1-hour	NCDC	29.2339	-89.9961	2	10/1947-9/1967

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LA	GRAND ISLE 2	16-3815		16-3807	1-hour	NCDC	29.2333	-90.0000	2	**10/1947-6/1983**
LA	GREENWELL SPRINGS	16-3867			1-day	NCDC	30.5589	-90.9856	60	6/1967-12/2005
LA	GUEYDAN 5 S	16-3930			1-day	NCDC	29.9500	-92.5167	10	9/1912-8/1968
LA	HACKBERRY 8 SSW	16-3979			1-day	NCDC	29.8889	-93.4031	6	**1/1893-10/2011**
LA	HAMMOND	16-4034			1-day	NCDC	30.4839	-90.4731	90	5/1892-6/2010
LA	HAMMOND 5 E	16-4030			1-day	NCDC	30.5031	-90.3772	35	1/1981-10/2011
LA	HAMMOND 5 E	16-4030			1-hour	NCDC	30.5031	-90.3772	35	12/1983-12/2010
LA	HAMMOND 5 E	16-4030			15-min	NCDC	30.5031	-90.3772	35	12/1983-12/2010
LA	HANNA 4 SSE	16-4050			1-day	NCDC	31.9158	-93.3183	118	**12/1942-10/2010**
LA	HARRISONBURG LOCK 2	16-4100			1-day	NCDC	31.7833	-91.8167	59	12/1940-3/1972
LA	HARRISONBURG LOCK 2	16-4100		16-4100	1-hour	NCDC	31.7833	-91.8167	59	10/1947-4/1972
LA	HAYNESVILLE	16-4131			1-day	NCDC	32.9683	-93.1297	303	3/1940-4/2010
LA	HICKORY GROVE	16-4209	16-0104		1-hour	NCDC	31.4333	-92.2333	69	10/1947-11/1958
LA	HODGES GARDENS	16-4288			1-day	NCDC	31.3747	-93.3911	420	**11/1943-10/2011**
LA	HOMEPLACE	16-4348	16-7471		1-day	NCDC	29.4667	-89.6667	10	12/1922-12/1925
LA	HOMER 1N	16-4355			1-day	NCDC	32.8100	-93.0625	215	1/1893-10/2011
LA	HORNBECK HODGES EXP A	16-4384	16-4288		1-day	NCDC	31.3833	-93.4000	361	11/1943-4/1963
LA	HOSSTON	16-4398			1-day	NCDC	32.8867	-93.8733	246	1/1940-10/2011
LA	HOUMA	16-4407			1-day	NCDC	29.5858	-90.7303	15	1/1893-3/2011
LA	JEANERETTE 5 NW	16-4674			1-day	NCDC	29.9592	-91.7108	20	5/1892-10/2011
LA	JENA 4 WSW	16-4696			1-day	NCDC	31.6661	-92.2006	210	**1/1952-10/2011**
LA	JENNINGS	16-4700			1-day	NCDC	30.2003	-92.6642	25	9/1897-10/2011
LA	JENNINGS	16-4700			1-hour	NCDC	30.2003	-92.6642	25	11/1969-12/2010
LA	JENNINGS	16-4700			15-min	NCDC	30.2003	-92.6642	25	5/1971-12/2010
LA	JONESBORO 4 ENE	16-4732			1-day	NCDC	32.2550	-92.6544	330	4/1970-10/2011
LA	JONESVILLE 4 N	16-4734			1-day	NCDC	31.6833	-91.8333	69	1/1931-3/1972
LA	JONESVILLE LOCKS	16-4739			1-day	NCDC	31.4825	-91.8628	70	4/1972-10/2011
LA	JONESVILLE LOCKS	16-4739			15-min	NCDC	31.4825	-91.8628	70	4/1972-12/2010
LA	KEITHVILLE	16-4816			1-day	NCDC	32.3550	-93.8619	200	1/1940-10/2011
LA	KEITHVILLE	16-4816		16-4816	1-hour	NCDC	32.3550	-93.8619	200	3/1948-12/1973
LA	KENTWOOD	16-4859			1-day	NCDC	30.9433	-90.5117	230	8/1941-11/2008
LA	KINDER 3 W	16-4884			1-day	NCDC	30.5000	-92.9000	50	1/1943-12/1986

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LA	KORAN	16-4931			1-day	NCDC	32.4178	-93.4669	175	4/1947-8/2011
LA	LAFAYETTE	16-5021		16-5026	1-hour	NCDC	30.2192	-92.0650	25	**10/1947-12/2010**
LA	LAFAYETTE	16-5021		16-5026	15-min	NCDC	30.2192	-92.0650	25	5/1971-12/2010
LA	LAFAYETTE FCWOS	16-5026			1-day	NCDC	30.2050	-91.9875	38	1/1893-10/2010
LA	LAFAYETTE FCWOS	16-5026	16-5021		1-hour	NCDC	30.2050	-91.9875	38	10/1947-3/1952
LA	LAKE ARTHUR 10 SW	16-5065			1-day	NCDC	30.0031	-92.7808	10	12/1901-10/2011
LA	LAKE ARTHUR 10 SW	16-5065		16-5065	1-hour	NCDC	30.0031	-92.7808	10	10/1947-9/1969
LA	LAKE CHARLES	16-5075	16-5074		1-day	NCDC	30.2167	-93.2167	10	1/1930-7/1959
LA	LAKE CHARLES 2 N	16-5074			1-day	NCDC	30.2544	-93.2186	5	**1/1895-10/2011**
LA	LAKE CHARLES AP	16-5078		16-5078	1-hour	NCDC	30.1247	-93.2283	9	1/1962-12/2010
LA	LAKE END	16-5081	16-4050		1-day	NCDC	31.9167	-93.3000	131	12/1942-4/1972
LA	LAKE PROVIDENCE	16-5090			1-day	NCDC	32.8067	-91.1731	100	2/1893-10/2011
LA	LEESVILLE	16-5266			1-day	NCDC	31.1417	-93.2397	28	3/1903-10/2011
LA	LEESVILLE	16-5266		16-5266	1-hour	NCDC	31.1417	-93.2397	28	10/1947-7/1992
LA	LEESVILLE 6 SSW	16-5287			1-day	NCDC	31.0517	-93.2789	260	**12/1938-3/2012**
LA	LELAND BOWMAN LOCK	16-5296			1-day	NCDC	29.7861	-92.2053	40	**6/1950-10/2011**
LA	LETTSWORTH	16-5335	16-6962		1-hour	NCDC	30.9667	-91.7167	30	10/1947-12/1968
LA	LIBERTY HILL	16-5365	16-0800		1-day	NCDC	32.3167	-92.9167	262	1/1893-5/1918
LA	LIVINGSTON	16-5438			1-day	NCDC	30.5197	-90.7544	43	**12/1942-10/2011**
LA	LOGANSPORT	16-5522			1-day	NCDC	31.9672	-94.0003	190	**9/1903-10/2011**
LA	LOGANSPORT 4 ENE	16-5527	16-5522		1-day	NCDC	31.9833	-93.9500	210	7/1968-12/1993
LA	LOGANSPORT 4 ENE	16-5527		16-5522	1-hour	NCDC	31.9833	-93.9500	210	7/1955-12/1993
LA	LONGVILLE	16-5584			1-day	NCDC	30.6000	-93.2333	115	1/1944-12/1990
LA	LOUISIANA NATURE CTR	16-5610			1-day	NCDC	30.0306	-89.9636	-5	**7/1961-8/2005**
LA	LSU BEN-HUR FARM	16-5620			1-day	NCDC	30.3644	-91.1672	21	1/1963-3/2011
LA	LSU BEN-HUR FARM	16-5620			1-hour	NCDC	30.3644	-91.1672	21	5/1982-12/2010
LA	LSU BEN-HUR FARM	16-5620			15-min	NCDC	30.3644	-91.1672	21	5/1982-12/2010
LA	LSU CITRUS RSCH STN	16-5624			1-day	NCDC	29.5814	-89.8222	4	**9/1958-8/2010**
LA	LSU DEAN LEE RSCH STN	16-5630			1-day	NCDC	31.1783	-92.4108	70	3/1976-10/2011
LA	LUTCHER	16-5783			1-day	NCDC	30.0389	-90.6936	20	**5/1892-8/2010**
LA	MANSFIELD	16-5874			1-day	NCDC	32.0236	-93.6881	392	5/1896-10/2011
LA	MANY	16-5892			1-day	NCDC	31.5769	-93.4817	255	10/1953-1/2011

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LA	MARION 7 SE	16-5908			1-day	NCDC	32.8167	-92.1667	151	3/1953-6/1994
LA	MARKSVILLE	16-5920			1-day	NCDC	31.1289	-92.0650	85	2/1963-9/2011
LA	MELVILLE	16-6117			1-day	NCDC	30.6833	-91.7333	30	1/1893-12/1983
LA	MERMENTAU	16-6142			1-day	NCDC	30.1900	-92.5906	16	1/1943-5/1988
LA	METAIRIE	16-6157			1-day	NCDC	29.9903	-90.1431	0	**5/1893-7/2005**
LA	MINDEN	16-6244			1-day	NCDC	32.6053	-93.2947	185	4/1893-10/2011
LA	MINDEN	16-6244			1-hour	NCDC	32.6053	-93.2947	185	**3/1960-12/2010**
LA	MINDEN	16-6244			15-min	NCDC	32.6053	-93.2947	185	5/1971-10/2010
LA	MINDEN 2	16-6245	16-6244		1-hour	NCDC	32.6167	-93.2833	249	3/1960-3/1964
LA	MITTIE 2 SE	16-6271			1-day	NCDC	30.7000	-92.8833	120	6/1954-12/1985
LA	MOISANT INTL AP	16-6295	16-6660		1-hour	NCDC	29.9861	-90.2556	3	10/1947-12/1953
LA	MONROE #2	16-6308	16-6305		1-day	NCDC	32.5181	-92.1361	31	12/1892-5/1965
LA	MONROE CITY	16-6310	16-6314		15-min	NCDC	32.5500	-92.1167	79	5/1972-7/1977
LA	MONROE LOCK 4	16-6305			1-day	NCDC	32.4667	-92.1167	79	**12/1884-8/2010**
LA	MONROE LOCK 4	16-6305		16-6305	1-hour	NCDC	32.4667	-92.1167	79	**10/1947-5/2011**
LA	MONROE RGNL AP	16-6303			1-day	NCDC	32.5156	-92.0406	79	9/1947-4/2009
LA	MONROE RGNL AP	16-6303	16-6314		1-hour	NCDC	32.5156	-92.0406	79	10/1947-3/2009
LA	MONROE RGNL AP	16-6303			15-min	NCDC	32.5156	-92.0406	79	3/2005-5/2011
LA	MONROE ULM	16-6314	16-6305		1-day	NCDC	32.5342	-92.0669	70	2/1977-4/2010
LA	MONROE ULM	16-6314	16-6305		1-hour	NCDC	32.5342	-92.0669	70	7/1977-3/2009
LA	MONROE ULM	16-6314		16-6305	15-min	NCDC	32.5342	-92.0669	70	**5/1972-10/2009**
LA	MONTGOMERY	16-6324		16-6324	1-hour	NCDC	31.6667	-92.9000	102	10/1947-6/1968
LA	MOORINGSPORT 1 N	16-6364			1-day	NCDC	32.7050	-93.9608	200	7/1975-10/2011
LA	MORGAN CITY	16-6394			1-day	NCDC	29.6833	-91.1761	5	2/1905-10/2011
LA	MORGAN CITY	16-6394			1-hour	NCDC	29.6833	-91.1761	5	10/1947-12/2010
LA	MORGAN CITY	16-6394			15-min	NCDC	29.6833	-91.1761	5	5/1971-12/2010
LA	MOSS BLUFF	16-6431			1-day	NCDC	30.2944	-93.2078	19	**1/1954-10/2011**
LA	NAPOLEONVILLE	16-6561			1-day	NCDC	29.9342	-91.0164	25	7/1895-10/2011
LA	NATCHITOCHES	16-6582			1-day	NCDC	31.7722	-93.0956	130	3/1893-8/2010
LA	NATCHITOCHES	16-6582		16-6582	1-hour	NCDC	31.7722	-93.0956	130	7/1968-2/2009
LA	NATCHITOCHES	16-6582	16-6584		15-min	NCDC	31.7722	-93.0956	130	5/1971-4/2008
LA	NATCHITOCHES #2	16-6584		16-6582	15-min	NCDC	31.8142	-93.0856	141	**5/1971-10/2010**

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LA	NEW IBERIA AIRPORT - ACAD	16-6657			1-day	NCDC	30.0375	-91.8839	24	2/1891-12/2008
LA	NEW ORLEANS ALGIERS	16-6666	16-6659		1-day	NCDC	29.9508	-90.0511	2	7/1946-8/2010
LA	NEW ORLEANS AP	16-6661	16-6667		1-day	NCDC	30.0333	-90.0333	6	1/1937-6/1954
LA	NEW ORLEANS AP	16-6660		16-6660	1-hour	NCDC	29.9933	-90.2511	4	**10/1947-5/2011**
LA	NEW ORLEANS AUDUBON	16-6664			1-day	NCDC	29.9167	-90.1303	20	**1/1893-8/2010**
LA	NEW ORLEANS AUDUBON	16-6665	16-6664		1-day	NCDC	29.9167	-90.1333	10	1/1893-9/1962
LA	NEW ORLEANS AUDUBON	16-6664			1-hour	NCDC	29.9167	-90.1303	20	**10/1947-12/2010**
LA	NEW ORLEANS AUDUBON	16-6664			15-min	NCDC	29.9167	-90.1303	20	3/1976-12/2010
LA	NEW ORLEANS CALLENDER	16-6662			1-day	NCDC	29.8333	-90.0167	2	6/1956-3/2011
LA	NEW ORLEANS CARROLLTON	16-6676	16-6669		1-day	NCDC	29.9347	-90.1361	0	5/1893-9/1937
LA	NEW ORLEANS D P S 3	16-6675	16-6661		1-day	NCDC	29.9833	-90.0667	10	7/1946-2/1991
LA	NEW ORLEANS D P S 5	16-6672	16-1639		1-day	NCDC	29.9833	-90.0167	10	7/1946-2/1991
LA	NEW ORLEANS DPS #6	16-6679	16-6157		1-day	NCDC	29.9833	-90.1167	0	7/1970-2/1991
LA	NEW ORLEANS EASTOVER	16-6668	16-5610		1-day	NCDC	30.0489	-89.9522	-5	7/1961-11/1995
LA	NEW ORLEANS LKFRNT AP	16-6667			1-day	NCDC	30.0494	-90.0289	9	**1/1937-8/2010**
LA	NEW ORLEANS WSO CITY	16-6659			1-day	NCDC	29.9500	-90.0833	3	**1/1871-8/2010**
LA	NEW ORLEANS WSO CITY	16-6659	16-6664		1-hour	NCDC	29.9500	-90.0833	3	10/1947-12/1961
LA	NEW ORLEANS WTP	16-6669	16-6157		1-day	NCDC	29.9500	-90.1333	20	7/1946-2/1991
LA	NEW ROADS 5 NE	16-6686			1-day	NCDC	30.7267	-91.3672	45	**2/1903-10/2011**
LA	NORTH LIVINGSTON	16-6794	16-5438		1-day	NCDC	30.5500	-90.7500	10	12/1942-4/1955
LA	OAK GROVE	16-6866			1-day	NCDC	32.8642	-91.3800	129	10/1970-10/2011
LA	OAK RIDGE	16-6868			1-day	NCDC	32.6228	-91.7764	82	5/1895-10/2011
LA	OAKDALE	16-6836			1-day	NCDC	30.8214	-92.6697	110	3/1953-9/2011
LA	OAKNOLIA 2 N	16-6911			1-day	NCDC	30.7531	-90.9939	150	9/1941-10/2011
LA	OBERLIN FIRE TWR	16-6938			1-day	NCDC	30.6036	-92.7739	65	5/1952-10/2011
LA	OLD RIVER LOCK	16-6962			1-day	NCDC	31.0000	-91.6667	70	10/1947-7/1989
LA	OLD RIVER LOCK	16-6962		16-6962	1-hour	NCDC	31.0000	-91.6667	70	**10/1947-7/1989**
LA	OLD TOWN BAY	16-6968	16-6431		1-day	NCDC	30.2869	-93.1444	12	1/1954-8/2010
LA	OLLA	16-6978			1-day	NCDC	31.8922	-92.2422	155	**6/1929-2/2009**
LA	OLLA	16-6978		16-6978	1-hour	NCDC	31.8922	-92.2422	155	3/1952-4/1984
LA	OPELOUSAS	16-6995	16-7001		1-day	NCDC	30.5081	-92.0925	56	10/1966-8/2010
LA	OPELOUSAS AP	16-7001			1-day	NCDC	30.5500	-92.0833	69	**1/1893-8/2010**

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LA	OPELOUSAS AP	16-7001			1-hour	NCDC	30.5500	-92.0833	69	4/1950-12/1968
LA	PARADIS 7 S	16-7096			1-day	NCDC	29.7892	-90.4278	5	7/1911-9/2011
LA	PEARL RIVER	16-7160			1-day	NCDC	30.3850	-89.7367	13	6/1906-12/1962
LA	PINE GROVE FIRE TWR	16-7304			1-day	NCDC	30.7111	-90.7519	190	12/1942-6/2010
LA	PLAIN DEALING 4 W	16-7344			1-day	NCDC	32.9078	-93.7981	290	12/1892-9/2011
LA	PLAQUEMINE	16-7364	16-7366		1-day	NCDC	30.3000	-91.2333	49	2/1892-4/1962
LA	PLAQUEMINE 2 N	16-7366			1-day	NCDC	30.3167	-91.2333	20	**2/1892-9/2011**
LA	PLAQUEMINES EXP STN	16-7368	16-2478		1-day	NCDC	29.5833	-89.8333	4	8/1975-3/1984
LA	POLLOCK FOREST NURSERY	16-7421			1-day	NCDC	31.5000	-92.4667	230	4/1935-12/1965
LA	PORT EADS	16-7457	16-1335		1-day	NCDC	29.0167	-89.1667	10	1/1893-2/1942
LA	PORT SULPHUR	16-7471			1-day	NCDC	29.4833	-89.7000	10	**12/1922-12/1964**
LA	RAYNE 6 N	16-7678	16-2212		1-day	NCDC	30.3333	-92.2667	30	1/1893-3/1968
LA	RED RIVER RSCH STN	16-7738			1-day	NCDC	32.4219	-93.6381	155	11/1975-10/2011
LA	RED RIVER RSCH STN	16-7738			1-hour	NCDC	32.4219	-93.6381	155	**1/1966-12/2010**
LA	RED RIVER RSCH STN	16-7738			15-min	NCDC	32.4219	-93.6381	155	**5/1971-10/2010**
LA	RESERVE	16-7767			1-day	NCDC	30.0564	-90.5803	15	**12/1892-2/2011**
LA	RIVERTON LOCK 3	16-7897	16-1979		1-day	NCDC	32.1833	-92.1000	79	12/1940-3/1972
LA	ROBELINE	16-7905			1-day	NCDC	31.6833	-93.3000	151	6/1896-12/1957
LA	ROBSON	16-7924			1-day	NCDC	32.3556	-93.6425	160	**6/1948-10/2011**
LA	ROCKEFELLER WL REFUGE	16-7932			1-day	NCDC	29.7286	-92.8181	4	12/1964-10/2011
LA	ROCKEFELLER WL REFUGE	16-7932		16-7932	1-hour	NCDC	29.7286	-92.8181	4	10/1964-2/1990
LA	RODESSA	16-7950	16-9392		1-day	NCDC	32.9667	-94.0000	200	1/1940-3/1985
LA	ROSEPINE RSCH STN	16-8046	16-5287		1-day	NCDC	30.9461	-93.2789	238	5/1901-1/2010
LA	RUSTON	16-8065	16-8067		1-hour	NCDC	32.5333	-92.6000	302	10/1947-10/1981
LA	RUSTON LA TECH	16-8067			1-day	NCDC	32.5014	-92.6547	280	7/1895-10/2011
LA	RUSTON LA TECH	16-8067		16-8067	1-hour	NCDC	32.5014	-92.6547	280	**10/1947-3/1989**
LA	SAILES FIRE TWR	16-8094			1-day	NCDC	32.3589	-93.1428	360	6/1952-10/2011
LA	SCHRIEVER	16-8295	16-9013		1-day	NCDC	29.7333	-90.8167	20	1/1893-9/1974
LA	SHERIDAN FIRE TWR	16-8405			1-day	NCDC	30.8500	-89.9833	330	4/1952-10/1992
LA	SHREVEPORT AP	16-8440			1-day	NCDC	32.4472	-93.8239	254	10/1871-8/2010
LA	SHREVEPORT AP	16-8440		16-8440	1-hour	NCDC	32.4472	-93.8239	254	10/1947-12/2010
LA	SIMMESPORT	16-8507			1-day	NCDC	30.9833	-91.8167	49	12/1904-6/1987

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LA	SLIDELL	16-8539			1-day	NCDC	30.2650	-89.7697	10	1/1956-10/2011
LA	SLIDELL	16-8539			1-hour	NCDC	30.2650	-89.7697	10	4/1974-12/2010
LA	SLIDELL	16-8539			15-min	NCDC	30.2650	-89.7697	10	8/1974-12/2010
LA	SPEARSVILLE FIRE TWR	16-8669			1-day	NCDC	32.9006	-92.5714	200	10/1943-5/2005
LA	SPRINGHILL	16-8683			1-day	NCDC	32.9922	-93.4419	240	1/1955-8/2011
LA	ST BERNARD	16-8108			1-day	NCDC	29.8722	-89.8300	5	2/1966-7/2005
LA	ST FRANCISVILLE	16-8136	16-6686		1-day	NCDC	30.7775	-91.3769	115	2/1903-5/2010
LA	ST JOSEPH 3 N	16-8163			1-day	NCDC	31.9497	-91.2336	78	2/1894-10/2011
LA	STERLINGTON	16-8785			1-day	NCDC	32.7031	-92.0817	60	11/1940-12/2009
LA	SUGARTOWN	16-8828			1-day	NCDC	30.8500	-93.0167	170	6/1893-12/1992
LA	SULPHUR	16-8831			1-day	NCDC	30.2383	-93.3447	10	4/1972-10/2011
LA	TALLULAH	16-8923			1-day	NCDC	32.3994	-91.1842	85	8/1907-10/2011
LA	THIBODAUX 3 ESE	16-9013			1-day	NCDC	29.7758	-90.7800	15	1/1893-11/2007
LA	TOLEDO BEND LAKE	16-9074			1-day	NCDC	31.2000	-93.5697	181	**7/1975-10/2011**
LA	URANIA	16-9235	16-6978		1-day	NCDC	31.8667	-92.3000	102	6/1929-11/1969
LA	VERMILION LOCK	16-9319	16-5296		1-day	NCDC	29.7833	-92.2000	10	6/1950-5/1985
LA	VIDALIA #2	16-9357			1-day	NCDC	31.5653	-91.4331	60	**4/1937-8/2010**
LA	VIDALIA #2	16-9357			1-hour	NCDC	31.5653	-91.4331	60	11/1952-12/2010
LA	VIDALIA #2	16-9357			15-min	NCDC	31.5653	-91.4331	60	5/1971-12/2010
LA	VIDALIA NATCHEZ	16-9355	22-3050		1-day	NCDC	31.5333	-91.4333	50	11/1952-11/1966
LA	VILLE PLATTE	16-9369			1-day	NCDC	30.6950	-92.2664	70	4/1926-9/2011
LA	VINTON	16-9375			1-day	NCDC	30.1922	-93.5811	12	1/1915-1/2003
LA	VIVIAN	16-9392			1-day	NCDC	32.9033	-93.9819	220	**1/1940-10/2011**
LA	WALLACE	16-9444	16-3755		1-day	NCDC	30.0500	-90.6833	20	5/1892-4/1904
LA	WEST MONROE	16-9631	16-6305		1-day	NCDC	32.4600	-92.1483	75	7/1938-8/2010
LA	WINNFIELD 3 N	16-9803			1-day	NCDC	31.9622	-92.6561	160	5/1893-9/2008
LA	WINNFIELD 3 N	16-9803			1-hour	NCDC	31.9622	-92.6561	160	11/1956-12/2010
LA	WINNFIELD 3 N	16-9803			15-min	NCDC	31.9622	-92.6561	160	4/1971-10/2010
LA	WINNSBORO 5 SSE	16-9806			1-day	NCDC	32.0994	-91.7019	80	1/1893-10/2011
LA	WINNSBORO 5 SSE	16-9806			1-hour	NCDC	32.0994	-91.7019	80	8/1956-12/2010
LA	WINNSBORO 5 SSE	16-9806			15-min	NCDC	32.0994	-91.7019	80	5/1971-12/2010
LA	WINONA FIRE TWR	16-9809			1-day	NCDC	32.0294	-92.6553	220	1/1952-4/2008

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LA	WOODWORTH 2 SE	16-9865			1-day	NCDC	31.1167	-92.4667	116	**7/1928-6/1985**
LA	WOODWORTH 3 ESE	16-9860	16-9865		1-day	NCDC	31.1333	-92.4500	69	7/1928-8/1956
MS	ABBEVILLE	22-0008			1-day	NCDC	34.5011	-89.5008	406	10/1942-7/2011
MS	ABERDEEN	22-0021			1-day	NCDC	33.8300	-88.5214	198	7/1892-10/2011
MS	ABERDEEN	22-0021		22-0021	1-hour	NCDC	33.8300	-88.5214	198	8/1951-12/2010
MS	ACKERMAN	22-0039			1-day	NCDC	33.3117	-89.1631	560	2/1940-10/2011
MS	ANGUILLA	22-0195	22-6351		1-day	NCDC	32.9833	-90.8333	110	8/1907-4/1936
MS	ARKABUTLA DAM	22-0237			1-day	NCDC	34.7497	-90.1336	240	8/1941-10/2011
MS	ARKABUTLA DAM	22-0237			1-hour	NCDC	34.7497	-90.1336	240	10/1947-12/2010
MS	ARKABUTLA DAM	22-0237			15-min	NCDC	34.7497	-90.1336	240	5/1980-12/2010
MS	ASHLAND	22-0290			1-day	NCDC	34.8492	-89.1597	603	10/1942-10/2011
MS	AUSTIN	22-0325	22-8996		1-day	NCDC	34.6333	-90.4333	200	10/1895-8/1934
MS	BALDWYN	22-0378	22-3700		1-day	NCDC	34.4833	-88.6394	360	2/1940-8/2010
MS	BATESVILLE 2 SW	22-0488			1-day	NCDC	34.3061	-89.9806	220	2/1891-10/2011
MS	BAY SAINT LOUIS	22-0519	22-9426		1-day	NCDC	30.3023	-89.3277	20	2/1891-11/1979
MS	BAY SPRINGS	22-0523			1-day	NCDC	31.9694	-89.2889	411	4/1912-10/2011
MS	BAY ST LOUIS NASA	22-0521			1-day	NCDC	30.3942	-89.5825	30	**2/1900-10/2011**
MS	BEAUMONT	22-0581	22-0585		1-day	NCDC	31.1833	-88.9167	57	2/1942-4/1976
MS	BEAUMONT EXP.STATION	22-0585			1-day	NCDC	31.2353	-88.9186	194	**2/1942-8/2011**
MS	BELZONI	22-0660			1-day	NCDC	33.1772	-90.4919	115	4/1930-10/2011
MS	BIENVILLE	60-0403		22-3107	1-hour	RAWS	32.3550	-89.4692	485	6/1948-2/2011
MS	BILOXI	22-0792			1-day	NCDC	30.3931	-89.0008	10	5/1893-10/2011
MS	BILOXI	22-0792	22-0797		1-hour	NCDC	30.3931	-89.0008	10	6/1948-11/1966
MS	BILOXI 9 WNW	22-0797			1-hour	NCDC	30.4375	-89.0278	19	**6/1948-12/2010**
MS	BILOXI 9 WNW	22-0797			15-min	NCDC	30.4375	-89.0278	19	5/1971-12/2010
MS	BLACK HAWK	22-0841			1-day	NCDC	33.3333	-90.0167	259	2/1954-4/1988
MS	BLUFF LAKE	22-0891			1-day	NCDC	33.2781	-88.7931	230	10/1940-7/2011
MS	BOONEVILLE	22-0955			1-day	NCDC	34.6628	-88.5797	490	7/1892-10/2011
MS	BOONEVILLE	22-0955			1-hour	NCDC	34.6628	-88.5797	490	2/1961-12/2010
MS	BOONEVILLE	22-0955			15-min	NCDC	34.6628	-88.5797	490	3/1973-12/2010
MS	BROOKHAVEN	62-1094	22-1094		1-day	FORTS	31.5783	-90.4428	486	1/1869-12/1892
MS	BROOKHAVEN 2	22-1096	22-1094		1-hour	NCDC	31.5833	-90.4500	479	3/1952-8/1978

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MS	BROOKHAVEN CITY	22-1094			1-day	NCDC	31.5447	-90.4581	435	**1/1869-10/2011**
MS	BROOKHAVEN CITY	22-1094			1-hour	NCDC	31.5447	-90.4581	435	**3/1952-12/2010**
MS	BROOKHAVEN CITY	22-1094			15-min	NCDC	31.5447	-90.4581	435	9/1978-12/2010
MS	BROOKLYN 2 SE	22-1098			1-day	NCDC	31.0333	-89.1667	269	11/1940-3/1975
MS	BROOKSVILLE EXP STN	22-1111			1-day	NCDC	33.2597	-88.5636	292	4/1912-6/2010
MS	BRUCE 2 W	22-1152			1-day	NCDC	33.9917	-89.3736	270	5/1946-12/2009
MS	BUCKATUNNA 1 NE	22-1174			1-day	NCDC	**31.5476**	**-88.5172**	150	2/1940-10/2011
MS	BUDE FIRE TWR	22-1185	22-5704		1-hour	NCDC	31.4167	-90.8500	446	3/1952-12/1982
MS	BYHALIA	22-1262			1-day	NCDC	34.8667	-89.6833	320	5/1909-4/1996
MS	BYHALIA	22-1262		22-1262	1-hour	NCDC	34.8667	-89.6833	320	1/1948-9/1996
MS	CALHOUN CITY	22-1314			1-day	NCDC	33.8586	-89.3158	255	1/1915-10/2011
MS	CALHOUN CITY	22-1314			1-hour	NCDC	33.8586	-89.3158	255	10/1947-12/2010
MS	CALHOUN CITY	22-1314			15-min	NCDC	33.8586	-89.3158	255	10/1975-12/2010
MS	CANTON 4N	22-1389			1-day	NCDC	32.6714	-90.0361	250	7/1892-10/2011
MS	CANTON 4N	22-1389			1-hour	NCDC	32.6714	-90.0361	250	10/1947-12/2010
MS	CANTON 4N	22-1389			15-min	NCDC	32.6714	-90.0361	250	5/1971-12/2010
MS	CARROLLTON 5 E	22-1460			1-day	NCDC	33.5322	-89.8256	300	3/1945-9/1997
MS	CARTHAGE	22-1489			1-day	NCDC	32.7506	-89.5389	370	8/1955-10/2011
MS	CENTREVILLE	22-1578			1-day	NCDC	31.0942	-91.0686	370	2/1957-12/2009
MS	CHARLESTON	22-1606			1-day	NCDC	34.0039	-90.0681	180	1/1910-10/2011
MS	CLARKSDALE	22-1707			1-day	NCDC	34.1864	-90.5572	173	9/1892-10/2011
MS	CLARKSDALE	22-1707			1-hour	NCDC	34.1864	-90.5572	173	**6/1951-12/2010**
MS	CLARKSDALE	22-1707			15-min	NCDC	34.1864	-90.5572	173	5/1971-12/2010
MS	CLARKSDALE 2	22-1712	22-1707		1-hour	NCDC	34.2000	-90.6000	180	5/1956-10/1959
MS	CLEVELAND	22-1738			1-day	NCDC	33.7367	-90.7389	152	2/1901-10/2011
MS	CLEVELAND	22-1738	22-1743		1-hour	NCDC	33.7367	-90.7389	152	6/1951-4/1956
MS	CLEVELAND 3 N	22-1743			1-day	NCDC	33.7942	-90.7128	140	6/1951-2/2011
MS	CLEVELAND 3 N	22-1743			1-hour	NCDC	33.7942	-90.7128	140	**6/1951-6/2006**
MS	CLEVELAND 3 N	22-1743			15-min	NCDC	33.7942	-90.7128	140	5/1971-6/2006
MS	CLINTON	54-0080			1-day	NADP	32.3069	-90.3186	282	3/1944-4/2009
MS	CLINTON EXP STN	22-1764	54-0080		1-day	NCDC	32.3000	-90.3167	322	3/1944-12/1971
MS	COFFEEVILLE	22-1804			1-day	NCDC	33.9803	-89.6714	241	5/1909-10/2011

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MS	COLLINS	22-1852			1-day	NCDC	31.6419	-89.5572	290	12/1912-10/2011
MS	COLLINS	22-1852			1-hour	NCDC	31.6419	-89.5572	290	6/1948-12/2010
MS	COLLINS	22-1852			15-min	NCDC	31.6419	-89.5572	290	10/1980-12/2010
MS	COLLINSVILLE 7 SE	22-1860			1-day	NCDC	32.4200	-88.7603	310	5/1965-10/2011
MS	COLUMBIA	22-1865			1-day	NCDC	31.2503	-89.8361	150	6/1903-10/2011
MS	COLUMBUS	22-1880			1-day	NCDC	33.4678	-88.3847	145	**7/1892-10/2011**
MS	COLUMBUS 4 ESE	22-1870	22-1880		1-day	NCDC	33.4667	-88.3667	210	7/1892-10/1981
MS	CONEHATTA 1 NE	22-1900			1-hour	NCDC	32.4608	-89.2708	523	6/1980-12/2010
MS	CORINTH 7 SW	22-1962			1-day	NCDC	34.8792	-88.6178	385	8/1895-10/2011
MS	CORINTH 7 SW	22-1962		22-1962	1-hour	NCDC	34.8792	-88.6178	385	6/1949-12/2010
MS	CRANDALL 8 N	22-2034			1-day	NCDC	32.0833	-88.5325	382	5/1940-10/2011
MS	CRAWFORD 5 W	22-2046			1-day	NCDC	33.2783	-88.7061	253	3/1940-10/2011
MS	CRENSHAW	22-2075	22-7807		1-day	NCDC	34.5000	-90.1833	190	4/1909-10/1920
MS	CRYSTAL SPGS EXP STN	22-2094			1-day	NCDC	31.9461	-90.3775	487	7/1892-10/2011
MS	CRYSTAL SPRINGS 4 NNE	22-2099			1-day	NCDC	32.0333	-90.3167	371	10/1954-10/1984
MS	DANCY	22-2160			1-day	NCDC	33.6667	-89.0500	290	6/1942-12/1989
MS	DE KALB 4 W	22-2281			1-hour	NCDC	32.7656	-88.7444	410	7/1964-9/2007
MS	DE KALB 4 W	22-2281			15-min	NCDC	32.7656	-88.7444	410	5/1971-9/2007
MS	D'LO 2 SW	22-2385			1-day	NCDC	31.9544	-89.9331	334	1/1919-10/2011
MS	DUCK HILL	22-2477	22-2722		1-day	NCDC	33.6333	-89.7167	249	1/1893-2/1953
MS	EDINBURG	22-2658			1-day	NCDC	32.7994	-89.3367	350	12/1907-5/2002
MS	ELLIOTT 4 NW	22-2722			1-day	NCDC	33.6994	-89.7631	260	**1/1893-10/2011**
MS	ENID DAM	22-2773			1-day	NCDC	34.1600	-89.9058	302	4/1909-10/2011
MS	ENID DAM	22-2773		22-2773	1-hour	NCDC	34.1600	-89.9058	302	6/1948-12/2010
MS	ENTERPRISE	22-2795			1-day	NCDC	32.1833	-88.8167	248	2/1891-11/1983
MS	EUPORA 2 E	22-2896			1-day	NCDC	33.5625	-89.2356	440	3/1927-10/2011
MS	EUPORA 2 E	22-2896			1-hour	NCDC	33.5625	-89.2356	440	4/1951-12/2010
MS	EUPORA 2 E	22-2896			15-min	NCDC	33.5625	-89.2356	440	10/1976-12/2010
MS	FAYETTE	22-2994	22-2997		1-day	NCDC	31.6833	-91.0667	279	12/1892-12/1908
MS	FAYETTE 3 S	22-2997			1-day	NCDC	31.6833	-91.0500	338	**12/1892-7/1932**
MS	FLEET	22-3050	16-9357		1-day	NCDC	31.5500	-91.4167	67	4/1937-7/1945
MS	FOREST 3 S	22-3107			1-day	NCDC	32.3186	-89.4858	482	**7/1892-10/2011**

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MS	FOREST 3 S	22-3107	60-0403		1-hour	NCDC	32.3186	-89.4858	482	6/1948-12/2002
MS	FOREST 3 S	22-3107		22-3107	15-min	NCDC	32.3186	-89.4858	482	5/1971-12/2002
MS	FRUITLAND PARK	22-3198	22-9639		1-day	NCDC	30.9167	-89.1667	302	1/1917-8/1945
MS	FULTON 3 W	22-3208			1-day	NCDC	34.2614	-88.4569	350	12/1894-7/2011
MS	GERMANIA	22-3331	22-7831		1-day	NCDC	32.6333	-90.6000	121	7/1913-3/1980
MS	GHOLSON 8 W	22-3340			1-day	NCDC	32.9267	-88.8536	500	5/1940-10/2011
MS	GOSHEN SPRINGS 3 NW	22-3516			1-day	NCDC	32.5050	-89.9275	320	9/1946-10/2011
MS	GREENVILLE	22-3605			1-day	NCDC	33.3592	-91.0600	125	2/1903-10/2011
MS	GREENWOOD	22-3614			1-day	NCDC	33.5167	-90.1833	92	1/1935-4/2010
MS	GREENWOOD 2	22-3619		22-3614	1-hour	NCDC	33.5222	-90.1758	134	5/1952-12/2010
MS	GREENWOOD 2	22-3619		22-3614	15-min	NCDC	33.5222	-90.1758	134	7/1977-12/2010
MS	GREENWOOD LEFLORE AP	22-3627			1-day	NCDC	33.4964	-90.0867	133	1/1948-10/2010
MS	GRENADA 5 NNE	22-3645			1-day	NCDC	33.8803	-89.7842	280	5/1909-10/2011
MS	GRENADA DAM	22-3650		22-3645	1-hour	NCDC	33.8056	-89.7714	278	2/1954-12/2010
MS	GRENADA DAM	22-3650		22-3645	15-min	NCDC	33.8056	-89.7714	278	10/1979-12/2010
MS	GULFPORT NAVAL CTR	22-3671			1-day	NCDC	30.3772	-89.1228	35	5/1935-3/2008
MS	GUNTOWN 3 NW	22-3700			1-day	NCDC	34.4839	-88.7036	430	**2/1940-8/2011**
MS	HATTIESBURG 5SW	22-3887			1-day	NCDC	31.2547	-89.3392	385	1/1893-10/2011
MS	HAZLEHURST	22-3917			1-day	NCDC	31.8583	-90.3939	465	8/1892-1/2003
MS	HAZLEHURST	22-3917			1-hour	NCDC	31.8583	-90.3939	465	2/1964-1/2003
MS	HAZLEHURST	22-3917			15-min	NCDC	31.8583	-90.3939	465	6/1975-1/2003
MS	HERNANDO	22-3975			1-day	NCDC	34.8161	-89.9853	380	5/1893-7/2011
MS	HICKORY 1 E	22-3997			1-day	NCDC	32.3167	-89.0333	322	5/1910-6/1981
MS	HICKORY FLAT	22-4001			1-day	NCDC	34.6189	-89.1911	400	5/1909-10/2011
MS	HICKORY FLAT	22-4001			1-hour	NCDC	34.6189	-89.1911	400	6/1948-12/2010
MS	HICKORY FLAT	22-4001			15-min	NCDC	34.6189	-89.1911	400	12/1977-12/2010
MS	HOLLY BLUFF	22-4155			1-day	NCDC	32.8167	-90.7167	102	5/1902-4/1972
MS	HOLLY SPRINGS 2 N	22-4168	22-4173		1-day	NCDC	34.8000	-89.4333	502	4/1892-1/1962
MS	HOLLY SPRINGS 4 N	22-4173			1-day	NCDC	34.8219	-89.4347	483	**4/1892-10/2011**
MS	HOLLY SPRINGS 4 N	22-4173			1-hour	NCDC	34.8219	-89.4347	483	10/1947-12/2010
MS	HOLLY SPRINGS 4 N	22-4173			15-min	NCDC	34.8219	-89.4347	483	5/1971-12/2010
MS	HOUSTON	22-4265			1-day	NCDC	33.9278	-89.0083	273	1/1942-7/2007

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MS	HOUSTON	22-4265		22-4265	1-hour	NCDC	33.9278	-89.0083	273	6/1948-12/2010
MS	INDEPENDENCE 1 W	22-4377			1-day	NCDC	34.6989	-89.8214	345	11/1957-10/2011
MS	IUKA	22-4455			1-day	NCDC	34.8492	-88.2311	605	**7/1922-10/2011**
MS	JACKSON 4 NW	22-4467	22-4472		1-day	NCDC	32.3333	-90.2333	322	1/1930-5/1971
MS	JACKSON INTL AP	22-4472			1-day	NCDC	32.3206	-90.0778	330	**1/1896-11/2011**
MS	JACKSON INTL AP	22-4472		22-4472	1-hour	NCDC	32.3206	-90.0778	330	7/1963-9/2011
MS	KIPLING 4 NNW	22-4702			1-day	NCDC	32.7247	-88.6631	370	10/1934-3/2005
MS	KOSCIUSKO	22-4776			1-day	NCDC	33.0583	-89.5797	410	3/1891-10/2011
MS	LAFAYETTE SPRINGS	22-4816			1-day	NCDC	34.3044	-89.2564	450	1/1944-3/2008
MS	LAKE	22-4824	22-3107		1-day	NCDC	32.3500	-89.3333	469	7/1892-7/1963
MS	LAKE CORMORANT	22-4842			1-day	NCDC	34.9044	-90.2119	205	4/1909-10/2011
MS	LAMBERT 1W	22-4869			1-day	NCDC	34.2044	-90.2908	155	10/1942-10/2011
MS	LAUREL	22-4939			1-day	NCDC	31.6756	-89.1236	225	3/1891-10/2011
MS	LEAKESVILLE	22-4966			1-day	NCDC	31.1494	-88.5550	105	1/1894-10/2011
MS	LEAKESVILLE	22-4966			1-hour	NCDC	31.1494	-88.5550	105	2/1957-12/2010
MS	LEAKESVILLE	22-4966			15-min	NCDC	31.1494	-88.5550	105	11/1971-12/2010
MS	LEXINGTON	22-5062			1-day	NCDC	33.1228	-90.0517	285	1/1944-7/2010
MS	LEXINGTON	22-5062			1-hour	NCDC	33.1228	-90.0517	285	6/1948-2/2008
MS	LEXINGTON	22-5062			15-min	NCDC	33.1228	-90.0517	285	1/1977-2/2008
MS	LIBERTY 5 W	22-5070			1-day	NCDC	31.1631	-90.8944	345	5/1949-7/2005
MS	LOUISVILLE	22-5247			1-day	NCDC	33.1353	-89.0711	581	2/1891-10/2011
MS	LOUISVILLE	22-5247			1-hour	NCDC	33.1353	-89.0711	581	6/1965-11/2003
MS	LOUISVILLE	22-5247			15-min	NCDC	33.1353	-89.0711	581	10/1971-11/2003
MS	MACON 2 NE	22-5366	22-5361		1-day	NCDC	33.1333	-88.5333	190	10/1892-10/1972
MS	MACON 2 NE	22-5366	22-5361		1-hour	NCDC	33.1333	-88.5333	190	6/1948-2/1973
MS	MACON 3N	22-5361			1-day	NCDC	33.1544	-88.5586	250	**2/1894-10/2011**
MS	MACON 3N	22-5361			1-hour	NCDC	33.1544	-88.5586	250	**6/1948-12/2010**
MS	MACON 3N	22-5361			15-min	NCDC	33.1544	-88.5586	250	3/1973-12/2010
MS	MAGNOLIA	22-5397			1-day	NCDC	31.1000	-90.4667	420	5/1895-1/1949
MS	MC HENRY 5 ESE	22-5644	22-7840		1-day	NCDC	30.6833	-89.0667	161	2/1940-4/1975
MS	MC NEILL	22-5687	22-7128		1-day	NCDC	30.8167	-89.6000	230	4/1903-6/1919
MS	MCCOMB AP	22-5614			1-day	NCDC	31.1828	-90.4708	413	10/1948-10/2010

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MS	MEADVILLE	22-5704			1-day	NCDC	31.4664	-90.8850	345	**2/1901-10/2011**
MS	MEADVILLE	22-5704		22-5704	1-hour	NCDC	31.4664	-90.8850	345	**3/1952-12/2010**
MS	MERIDIAN AP	22-5776			1-day	NCDC	32.3347	-88.7442	294	**9/1889-10/2010**
MS	MERIDIAN AP	22-5776		22-5776	1-hour	NCDC	32.3347	-88.7442	294	6/1948-12/2010
MS	MERIDIAN WB CITY	22-5772	22-5776		1-day	NCDC	32.3500	-88.6667	381	1/1948-9/1948
MS	MERRILL	22-5789			1-day	NCDC	30.9833	-88.7167	50	2/1905-3/1998
MS	MINTER CITY	22-5897			1-day	NCDC	33.7589	-90.2103	145	11/1955-6/2008
MS	MIZE 3 SW	22-5943			1-day	NCDC	31.8375	-89.5975	400	5/1940-10/2011
MS	MONTICELLO	22-5987			1-day	NCDC	31.5519	-90.1058	191	4/1907-10/2011
MS	MOORHEAD	22-6009			1-day	NCDC	33.4519	-90.5094	117	4/1913-10/2011
MS	MT PLEASANT 4SW	22-6084			1-day	NCDC	34.9056	-89.5619	430	10/1942-6/2011
MS	NATCHEZ	22-6177			1-day	NCDC	31.5889	-91.3408	195	9/1892-10/2011
MS	NEW ALBANY	22-6256			1-day	NCDC	34.4739	-89.0022	380	5/1909-10/2011
MS	NEWTON EXP STN	22-6308			1-day	NCDC	32.3378	-89.0817	349	9/1948-10/2011
MS	NITTA YUMA	22-6351			1-day	NCDC	33.0333	-90.8500	112	4/1901-12/1986
MS	NOXAPATER 1N	22-6400			15-min	NCDC	33.0044	-89.0631	440	6/1980-12/2010
MS	OAKLEY EXP STN	22-6476			1-day	NCDC	32.2061	-90.5133	205	7/1948-10/2011
MS	OFAHOMA	22-6493			1-day	NCDC	32.7639	-89.6986	400	5/1940-1/2001
MS	OKOLONA	22-6515			1-day	NCDC	34.0000	-88.7500	322	1/1893-9/1986
MS	ONWARD	56-0019			1-day	NRCS SCAN	32.7500	-90.9300	100	12/1954-12/2009
MS	ONWARD	22-6562	56-0019		1-day	NCDC	32.7250	-90.9400	105	12/1954-1/1992
MS	P HARRISON ARCHUSA	22-6638			1-day	NCDC	32.0339	-88.7097	216	**1/1954-10/2011**
MS	PASCAGOULA 3 NE	22-6718			1-day	NCDC	30.3964	-88.4781	12	3/1909-7/2011
MS	PASCAGOULA 3 NE	22-6718		22-6718	1-hour	NCDC	30.3964	-88.4781	12	4/1973-12/2010
MS	PASCAGOULA CHURN	22-6721		22-6721	1-hour	NCDC	30.3500	-88.5667	30	**6/1948-4/1973**
MS	PASCAGOULA ING SHIP YA	22-6719	22-6721		1-hour	NCDC	30.3500	-88.5667	10	6/1948-10/1960
MS	PAULDING	22-6750			1-day	NCDC	**32.0194**	-89.0119	**510**	5/1940-11/2010
MS	PEARLINGTON	22-6780	22-0521		1-day	NCDC	30.2500	-89.6167	10	2/1900-3/1968
MS	PELAHATCHIE	22-6811			1-day	NCDC	32.3161	-89.7994	370	11/1936-12/2010
MS	PELAHATCHIE 3 E	22-6816		22-6811	1-hour	NCDC	32.3211	-89.7469	390	6/1980-12/2010
MS	PELAHATCHIE 3 E	22-6816		22-6811	15-min	NCDC	32.3211	-89.7469	390	6/1980-12/2010
MS	PHILADELPHIA 1 WSW	22-6894			1-day	NCDC	32.7692	-89.1300	413	2/1949-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
MS	PICAYUNE	22-6921			1-day	NCDC	30.5217	-89.7083	59	1/1948-7/2011
MS	PICKENS	22-6926			1-day	NCDC	32.8867	-89.9775	238	4/1948-6/2011
MS	PLEASANT HILL	22-7066			1-day	NCDC	34.9544	-89.9356	350	11/1946-10/2011
MS	PONTOTOC	22-7106			1-day	NCDC	34.2511	-89.0167	465	12/1892-10/2011
MS	PONTOTOC EXP STN	22-7111			1-day	NCDC	34.1381	-88.9983	405	5/1953-10/2011
MS	POPLARVILLE EXP STN	22-7128			1-day	NCDC	30.8408	-89.5453	313	**4/1896-8/2011**
MS	PORT GIBSON 1 NE	22-7132			1-day	NCDC	31.9850	-90.9719	120	12/1893-9/2011
MS	PORT GIBSON 1 NE	22-7132			1-hour	NCDC	31.9850	-90.9719	120	10/1969-12/2010
MS	PORT GIBSON 1 NE	22-7132			15-min	NCDC	31.9850	-90.9719	120	5/1971-12/2010
MS	PRENTISS	22-7172			1-day	NCDC	31.5997	-89.8647	340	5/1940-10/2011
MS	PURVIS 2N	22-7220			1-day	NCDC	31.1775	-89.4156	378	1/1947-7/2011
MS	PURVIS 2N	22-7220			1-hour	NCDC	31.1775	-89.4156	378	6/1948-12/2010
MS	PURVIS 2N	22-7220			15-min	NCDC	31.1775	-89.4156	378	5/1971-12/2010
MS	QUITMAN	22-7252	22-6638		1-day	NCDC	32.0358	-88.7208	227	1/1954-9/2007
MS	RALEIGH 6N	22-7276			1-hour	NCDC	32.1419	-89.5539	590	6/1964-12/2010
MS	RALEIGH 6N	22-7276			15-min	NCDC	32.1419	-89.5539	590	5/1971-12/2010
MS	RICHTON 1 N	22-7444			1-day	NCDC	31.3656	-88.9322	165	10/1958-3/2005
MS	RICHTON 1 N	22-7444		22-7444	1-hour	NCDC	31.3656	-88.9322	165	1/1968-6/2005
MS	RIPLEY	22-7467			1-day	NCDC	34.7356	-88.9486	520	11/1897-6/2009
MS	RIPLEY	22-7467			1-hour	NCDC	34.7356	-88.9486	520	6/1948-12/2010
MS	RIPLEY	22-7467			15-min	NCDC	34.7356	-88.9486	520	5/1971-12/2010
MS	ROCKPORT	22-7537			1-day	NCDC	31.7967	-90.1525	200	5/1940-9/1999
MS	ROLLING FORK	22-7560			1-day	NCDC	32.8978	-90.8853	105	7/1936-10/2011
MS	ROLLING FORK	22-7560			1-hour	NCDC	32.8978	-90.8853	105	3/1952-12/2010
MS	ROLLING FORK	22-7560			15-min	NCDC	32.8978	-90.8853	105	6/1978-12/2010
MS	ROSE HILL 4 SW	22-7592			1-hour	NCDC	32.1003	-89.0508	505	6/1964-4/2003
MS	ROSE HILL 4 SW	22-7592			15-min	NCDC	32.1003	-89.0508	505	5/1971-4/2003
MS	ROSEDALE	22-7582			1-day	NCDC	33.8500	-91.0167	151	10/1894-6/1982
MS	RUSSELL	22-7701	22-8899		1-day	NCDC	32.4000	-88.6000	390	1/1937-6/1988
MS	RUTH 1 SE	22-7714		22-7714	1-hour	NCDC	31.3719	-90.2986	443	6/1948-8/2002
MS	SARAH 3 SE	22-7807			1-day	NCDC	34.5369	-90.1933	335	**4/1909-10/2011**
MS	SARDIS DAM	22-7815			1-day	NCDC	34.3961	-89.7903	230	8/1940-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
MS	SARDIS DAM	22-7815			1-hour	NCDC	34.3961	-89.7903	230	10/1947-12/2010
MS	SARDIS DAM	22-7815			15-min	NCDC	34.3961	-89.7903	230	1/1984-12/2010
MS	SAREPTA 1 NNE	22-7820			1-hour	NCDC	34.1200	-89.2947	365	10/1947-12/2010
MS	SAREPTA 1 NNE	22-7820			15-min	NCDC	34.1200	-89.2947	365	7/1978-12/2010
MS	SATARTIA 8 SW	22-7831			1-day	NCDC	32.5861	-90.6261	141	**7/1913-7/2011**
MS	SAUCIER EXP FOREST	22-7840			1-day	NCDC	30.6264	-89.0550	229	**2/1940-7/2011**
MS	SAUCIER EXP FOREST	22-7840			1-hour	NCDC	30.6264	-89.0550	229	5/1954-12/2010
MS	SAUCIER EXP FOREST	22-7840			15-min	NCDC	30.6264	-89.0550	229	10/1980-12/2010
MS	SCOTT	22-7886			1-day	NCDC	33.6000	-91.0833	141	6/1918-8/1978
MS	SENATOBIA	22-7921			1-day	NCDC	34.6314	-89.9592	240	5/1909-10/2011
MS	SHUBUTA	22-8053			1-day	NCDC	31.8606	-88.6964	200	12/1904-10/2011
MS	SHUBUTA	22-8053			1-hour	NCDC	31.8606	-88.6964	200	**6/1948-12/2010**
MS	SHUBUTA	22-8053			15-min	NCDC	31.8606	-88.6964	200	1/1984-12/2010
MS	SHUBUTA 2	22-8055	22-8053		1-hour	NCDC	31.8667	-88.7000	195	6/1948-12/1983
MS	SHUQUALAK	22-8062			1-day	NCDC	32.9833	-88.5667	220	2/1940-3/1989
MS	SLEDGE	22-8145			1-day	NCDC	34.4636	-90.2147	165	3/1945-10/2011
MS	STATE UNIV	22-8374			1-day	NCDC	33.4692	-88.7822	185	9/1891-10/2011
MS	STATE UNIV	22-8374			1-hour	NCDC	33.4692	-88.7822	185	6/1948-12/2010
MS	STATE UNIV	22-8374			15-min	NCDC	33.4692	-88.7822	185	5/1971-12/2010
MS	STONEVILLE EXP STN	22-8445			1-day	NCDC	33.4311	-90.9108	127	7/1914-10/2011
MS	STONEVILLE EXP STN	22-8445			1-hour	NCDC	33.4311	-90.9108	127	6/1948-12/2010
MS	STONEVILLE EXP STN	22-8445			15-min	NCDC	33.4311	-90.9108	127	11/1976-12/2010
MS	SUFFOLK	22-8530	22-5704		1-day	NCDC	31.4667	-90.9667	295	2/1901-12/1914
MS	SUMRALL	22-8556			1-day	NCDC	31.4222	-89.5386	290	5/1940-10/2011
MS	SWAN LAKE	22-8591			1-day	NCDC	33.8472	-90.3214	145	4/1905-4/2000
MS	TIBBEE	22-8792			1-day	NCDC	33.5378	-88.6331	210	9/1956-10/2011
MS	TOPTON 2	22-8899			1-day	NCDC	32.4686	-88.6083	470	**1/1937-10/2011**
MS	TUNICA	22-8996	22-8998		1-day	NCDC	34.6833	-90.3833	190	1/1935-3/1964
MS	TUNICA 2 N	22-8998			1-day	NCDC	34.7281	-90.3683	206	**10/1895-8/2010**
MS	TUPELO	22-9000	22-9003		1-day	NCDC	34.2500	-88.7167	279	1/1930-4/1969
MS	TUPELO	22-9000	22-9003		1-hour	NCDC	34.2500	-88.7167	279	6/1948-2/1963
MS	TUPELO RGNL AP	22-9003			1-day	NCDC	34.2622	-88.7714	361	**1/1930-10/2010**

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
MS	TUPELO RGNL AP	22-9003		22-9003	1-hour	NCDC	34.2622	-88.7714	361	**6/1948-12/2010**
MS	TYLERTOWN 5ESE	22-9048			1-day	NCDC	31.0800	-90.0603	382	6/1938-10/2011
MS	TYLERTOWN 5ESE	22-9048			1-hour	NCDC	31.0800	-90.0603	382	6/1948-12/2010
MS	TYLERTOWN 5ESE	22-9048			15-min	NCDC	31.0800	-90.0603	382	5/1971-12/2010
MS	UNION	22-9070			1-day	NCDC	32.5833	-89.1167	470	2/1940-1/1984
MS	UNIVERSITY	22-9079			1-day	NCDC	34.3803	-89.5358	408	2/1893-10/2011
MS	UNIVERSITY	22-9079			1-hour	NCDC	34.3803	-89.5358	408	6/1948-12/2010
MS	UNIVERSITY	22-9079			15-min	NCDC	34.3803	-89.5358	408	5/1971-12/2010
MS	UTICA	22-9101			1-day	NCDC	32.1000	-90.6333	279	7/1903-6/1970
MS	VAIDEN 1 SSW	22-9114			1-day	NCDC	33.3253	-89.7539	404	1/1893-10/2011
MS	VAN VLEET	22-9159			1-day	NCDC	33.9869	-88.9253	355	5/1943-5/2011
MS	VANCE	56-0021			1-day	NRCS SCAN	34.0700	-90.3500	150	3/1945-12/2009
MS	VANCE 1 SW	22-9154	56-0021		1-day	NCDC	34.0667	-90.3667	151	3/1945-10/1985
MS	VANCLEAVE	22-9157			1-day	NCDC	30.4856	-88.6547	10	5/1940-7/2005
MS	VICKSBURG	62-9220	22-9215		1-day	FORTS	32.3489	-90.8814	217	3/1849-12/1892
MS	VICKSBURG	22-9215	22-9216		1-day	NCDC	32.3144	-90.9053	46	1/1892-5/1949
MS	VICKSBURG	22-9220	22-9230		1-day	NCDC	32.3500	-90.8833	295	1/1930-6/1967
MS	VICKSBURG	22-9220	22-9218		1-hour	NCDC	32.3500	-90.8833	295	6/1948-6/1967
MS	VICKSBURG CITY	22-9230	22-9216		1-day	NCDC	32.3850	-90.8753	80	4/2003-8/2010
MS	VICKSBURG MILITARY PK	22-9216			1-day	NCDC	32.3567	-90.8444	255	**3/1849-8/2010**
MS	VICKSBURG W EXP STN	22-9218		22-9216	1-hour	NCDC	32.2978	-90.8658	180	**6/1948-4/2005**
MS	VICKSBURG W EXP STN	22-9218		22-9216	15-min	NCDC	32.2978	-90.8658	180	5/1971-4/2005
MS	WALNUT GROVE	22-9326			1-day	NCDC	32.5972	-89.4606	318	7/1938-10/2011
MS	WATER VALLEY	22-9400			1-day	NCDC	34.1583	-89.6311	310	1/1893-10/2011
MS	WAVELAND	22-9426			1-day	NCDC	30.2947	-89.3831	8	**2/1891-7/2011**
MS	WAYNESBORO 2 W	22-9439			1-day	NCDC	31.6772	-88.6708	200	**7/1892-10/2011**
MS	WAYNESBORO 3 WNW	22-9444	22-9439		1-day	NCDC	31.6833	-88.6833	120	5/1893-7/1970
MS	WHITE OAK 2 N	22-9597			1-day	NCDC	32.0844	-89.7056	373	5/1940-2/2011
MS	WHITE SAND	22-9617			1-hour	NCDC	30.7975	-89.6892	186	6/1948-12/2010
MS	WHITE SAND	22-9617			15-min	NCDC	30.7975	-89.6892	186	2/1976-12/2010
MS	WIGGINS	22-9639			1-day	NCDC	**30.8713**	**-89.1215**	160	**1/1917-10/2011**
MS	WIGGINS	22-9639	22-9648		1-hour	NCDC	**30.8713**	**-89.1215**	160	7/1948-10/1973

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
MS	WIGGINS RS	22-9648		22-9639	1-hour	NCDC	**30.8502**	**-89.1571**	265	**7/1948-12/2010**
MS	WIGGINS RS	22-9648		22-9639	15-min	NCDC	30.8500	-89.1500	265	10/1973-12/2010
MS	WINONA 5 E	22-9743			1-day	NCDC	33.4847	-89.6244	392	1/1953-10/2011
MS	WOODVILLE 4 ESE	22-9793			1-day	NCDC	31.0928	-91.2328	400	3/1893-10/2011
MS	YAZOO CITY	22-9850	22-9860		1-day	NCDC	32.8667	-90.4000	121	10/1891-11/1959
MS	YAZOO CITY	22-9850	22-9860		1-hour	NCDC	32.8667	-90.4000	121	6/1948-1/1960
MS	YAZOO CITY 5 NNE	22-9860			1-day	NCDC	32.9028	-90.3817	107	**10/1891-10/2011**
MS	YAZOO CITY 5 NNE	22-9860			1-hour	NCDC	32.9028	-90.3817	107	**6/1948-12/2010**
MS	YAZOO CITY 5 NNE	22-9860			15-min	NCDC	32.9028	-90.3817	107	10/1971-12/2010

Table A.1.2. List of stations used in the analysis in the buffer zone in the U.S. states of Kansas, Kentucky, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas. The table shows station name, station ID, post-merge station ID, co-located daily station ID, base duration, source of data, latitude, longitude, elevation, and period of record. Bold font in the latitude, longitude, and elevation fields indicates information that has been adjusted. Bold font in the 'Period of record' field indicates that the station data was extended using data from station that has the same ID in 'Post-merge station ID' column. For an hourly station co-located with a daily station with a different ID, the daily station's ID shown in the 'Co-located station ID' column should be used to locate the hourly station on the PFDS web page.

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
KS	COLUMBUS	14-1740			1-day	NCDC	37.1764	-94.8397	905	12/1892-10/2011
KS	COLUMBUS	14-1740			1-hour	NCDC	37.1764	-94.8397	905	8/1948-12/2010
KS	COLUMBUS	14-1740			15-min	NCDC	37.1764	-94.8397	905	1/1984-12/2010
KS	OSWEGO 1 N	14-6115			1-day	NCDC	37.1750	-95.1039	835	1/1893-9/2011
KS	PITTSBURG	14-6414			1-day	NCDC	37.3578	-94.6389	930	9/1948-10/2011
KY	HICKMAN 1 E	15-3816			1-day	NCDC	36.5667	-89.1667	381	8/1950-1/1981
MO	ADVANCE 1 S	23-0022			1-day	NCDC	37.0956	-89.9161	360	1/1948-11/2003
MO	ADVANCE 1 S	23-0022			1-hour	NCDC	37.0956	-89.9161	360	8/1948-12/2010
MO	ADVANCE 1 S	23-0022			15-min	NCDC	37.0956	-89.9161	360	5/1971-12/2010
MO	ALLEY SPRING RGR STN	23-0088		23-0088	1-hour	NCDC	37.1528	-91.4439	700	**8/1948-12/2010**
MO	ALTON 6 SE	23-0127			1-day	NCDC	36.6300	-91.3042	810	3/1940-8/2011
MO	ALTON 6 SE	23-0127		23-0127	1-hour	NCDC	36.6300	-91.3042	810	8/1948-2/1990
MO	ANDERSON	23-0164			1-day	NCDC	36.6519	-94.4386	1050	**1/1899-7/2008**
MO	ANDERSON	23-0165	23-0164		1-day	NCDC	36.6500	-94.5167	1050	1/1899-5/1943
MO	ANNAPOLIS 3 SW	23-0179			1-day	NCDC	37.3000	-90.7667	591	8/1923-12/1978
MO	BERNIE	23-0595			1-day	NCDC	36.6717	-89.9717	300	7/1944-11/2006
MO	BILLINGS 1SW	23-0657			1-day	NCDC	37.0536	-93.5750	1332	5/1962-8/2011
MO	BIRCH TREE	23-0668			1-day	NCDC	36.9833	-91.5000	1001	8/1893-10/1968
MO	BLOOMFIELD	23-0735			1-day	NCDC	36.8908	-89.9311	440	7/1944-4/2007
MO	CAPE GIRARDEAU RGNL AP	23-1289			1-day	NCDC	37.2253	-89.5706	336	**1/1892-10/2010**
MO	CARTHAGE	23-1356			1-day	NCDC	37.1772	-94.3047	978	3/1893-10/2011
MO	CARUTHERSVILLE	23-1364			1-day	NCDC	36.1686	-89.6642	270	1/1893-6/2011
MO	CASSVILLE RANGER STN	23-1383			1-day	NCDC	36.6728	-93.8578	1340	1/1911-10/2011
MO	CASSVILLE RANGER STN	23-1383		23-1383	1-hour	NCDC	36.6728	-93.8578	1340	8/1948-12/2010

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
MO	CHARLESTON	23-1540			1-day	NCDC	36.9272	-89.3536	330	5/1951-10/2002
MO	CLEARWATER DAM	23-1674			1-day	NCDC	37.1319	-90.7756	660	11/1946-10/2011
MO	CLEARWATER DAM	23-1674		23-1674	1-hour	NCDC	37.1319	-90.7756	660	8/1948-12/2010
MO	CONEHATTA 1 NE	22-1900			15-min	NCDC	32.4608	-89.2708	523	6/1980-12/2010
MO	DEXTER	23-2235			1-day	NCDC	36.8000	-89.9667	381	9/1923-3/1986
MO	DIAMOND 2W	23-2240			1-day	NCDC	36.9858	-94.3519	1070	**9/1943-10/2011**
MO	DONIPHAN	23-2289			1-day	NCDC	36.6206	-90.8125	289	4/1904-10/2011
MO	DORA 1N	23-2302			1-day	NCDC	36.7900	-92.2192	1011	9/1948-10/2011
MO	DORA 1N	23-2302		23-2302	1-hour	NCDC	36.7900	-92.2192	1011	8/1948-12/2010
MO	ELLINGTON	23-2547			1-day	NCDC	37.2333	-90.9700	730	6/1939-10/2011
MO	ELLINGTON	23-2547		23-2547	1-hour	NCDC	37.2333	-90.9700	730	8/1948-6/1990
MO	EMINENCE 5 WNW	23-2617	23-0088		1-hour	NCDC	37.1500	-91.4500	702	8/1948-5/1973
MO	FISK	23-2881	53-0329		1-day	NCDC	36.7828	-90.2033	330	11/1930-4/1981
MO	FORSYTH	23-2975	23-6460		1-hour	NCDC	36.7000	-93.1167	850	8/1948-11/1968
MO	GALENA	23-3094			1-day	NCDC	36.8061	-93.4661	1046	12/1898-10/2011
MO	GRANBY	23-3341	23-2240		1-day	NCDC	36.9667	-94.2833	1132	9/1943-7/1973
MO	GREENVILLE 6 N	23-3451			1-day	NCDC	37.2000	-90.4500	490	6/1894-7/2009
MO	HAILEY 3 WSW	23-3537			1-day	NCDC	36.7000	-93.7667	1312	**3/1893-10/1969**
MO	HOLLISTER	23-3940			1-day	NCDC	36.6167	-93.2333	896	6/1908-4/2010
MO	HORNERSVILLE	23-3999		23-3999	1-hour	NCDC	36.0436	-90.1114	250	8/1948-12/2010
MO	HOUSTON 2 W	23-4023			1-day	NCDC	37.3344	-92.0058	1075	1/1975-8/2011
MO	HOUSTON 2NE	23-4019			1-day	NCDC	37.3519	-91.9281	1263	1/1893-10/2011
MO	JEWETT 7 E	23-4301	59-0014		1-hour	NCDC	37.3656	-90.3631	620	9/1955-12/1996
MO	JOPLIN RGNL AP	23-4315			1-day	NCDC	37.1467	-94.5022	980	1/1902-12/2008
MO	KENNETT RADIO KBOA	23-4417			1-day	NCDC	36.2253	-90.0750	270	3/1953-5/2011
MO	KOSHKONONG	23-4625			1-day	NCDC	36.6000	-91.6500	961	6/1900-7/1960
MO	MALDEN FAA AP	23-5205	23-5207		1-hour	NCDC	36.6000	-89.9833	302	8/1948-1/1954
MO	MALDEN MUNI AP	23-5207			1-day	NCDC	36.5994	-89.9894	290	8/1948-10/2011
MO	MALDEN MUNI AP	23-5207		23-5207	1-hour	NCDC	36.5994	-89.9894	290	**8/1948-12/2010**
MO	MANSFIELD	23-5227			1-day	NCDC	37.1089	-92.5789	1520	1/1893-10/2011
MO	MARBLE HILL	23-5253			1-day	NCDC	37.3036	-89.9664	390	1/1893-10/2011
MO	MARSHFIELD	23-5307			1-day	NCDC	37.3339	-92.9097	1490	10/1908-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
MO	MARSHFIELD	23-5307		23-5307	1-hour	NCDC	37.3339	-92.9097	1490	12/1950-8/2008
MO	MILLER 1 E	23-5594			1-hour	NCDC	37.2147	-93.8228	1296	1/1951-12/2010
MO	MILLER 1 E	23-5594			15-min	NCDC	37.2147	-93.8228	1296	1/1984-12/2010
MO	MINERAL SPRING	23-5579	23-3537		1-day	NCDC	36.6833	-93.8000	1480	3/1893-12/1904
MO	MONETT	23-5700	23-5704		1-day	NCDC	36.9167	-93.9333	1280	12/1946-8/1972
MO	MONETT 4SW	23-5704			1-day	NCDC	36.8619	-93.9619	1380	**12/1946-8/2011**
MO	MOREHOUSE	23-5762			1-day	NCDC	36.8500	-89.7000	302	1/1926-4/1972
MO	MT VERNON 3 SW	23-5861	23-5862		1-day	NCDC	37.0667	-93.8667	1161	1/1893-8/1968
MO	MT VERNON M U SW CTR	23-5862			1-day	NCDC	37.0733	-93.8789	1190	**1/1893-10/2011**
MO	MTN GROVE 2 N	23-5834			1-day	NCDC	37.1528	-92.2636	1450	4/1901-10/2011
MO	MTN GROVE 2 N	23-5834			1-hour	NCDC	37.1528	-92.2636	1450	8/1948-12/2010
MO	MTN GROVE 2 N	23-5834			15-min	NCDC	37.1528	-92.2636	1450	11/1980-12/2010
MO	NEOSHO	23-5976			1-day	NCDC	36.8639	-94.3600	1011	1/1893-10/2011
MO	NEW MADRID	23-6040	23-6045		1-day	NCDC	36.5833	-89.5167	302	8/1893-9/1965
MO	NEW MADRID	23-6045			1-day	NCDC	36.5869	-89.5325	302	**8/1893-10/2011**
MO	OLDFIELD	23-6302			1-day	NCDC	36.9756	-93.0239	1240	10/1955-11/2004
MO	OZARK	23-6452			1-day	NCDC	37.0194	-93.2339	1134	1/1946-8/2011
MO	OZARK BEACH	23-6460			1-day	NCDC	36.6597	-93.1261	700	7/1924-10/2011
MO	OZARK BEACH	23-6460		23-6460	1-hour	NCDC	36.6597	-93.1261	700	**8/1948-12/2010**
MO	PARMA	23-6532			1-day	NCDC	36.6125	-89.8161	280	10/1920-12/1998
MO	PATTERSON ST FRANCIS RV	59-0016			1-hour	USACE ST LOUIS	37.1947	-90.5036	370	12/1996-7/2009
MO	PIERCE CITY	23-6678			1-day	NCDC	36.9494	-94.0078	1230	4/1940-12/2010
MO	POPLAR BLUFF	23-6791			1-day	NCDC	36.7578	-90.4056	370	1/1893-10/2011
MO	PORTAGEVILLE	23-6799	23-6804		1-day	NCDC	36.4333	-89.6833	279	3/1952-6/1965
MO	PORTAGEVILLE	23-6804			1-day	NCDC	36.4136	-89.6997	280	**3/1952-10/2011**
MO	PUXICO 1 SE	23-6934			1-day	NCDC	36.9333	-90.1500	400	6/1944-12/1994
MO	QULIN	23-6970			1-day	NCDC	36.5928	-90.2319	318	6/1944-8/2011
MO	ROUND SPRING 2SW	23-7309			1-day	NCDC	37.2597	-91.4278	818	2/1893-10/2011
MO	SELIGMAN	23-7645			1-day	NCDC	36.5419	-93.9367	1530	11/1921-2/2009
MO	SENECA 1W	23-7656			1-day	NCDC	36.8333	-94.6214	863	7/1945-8/2011
MO	SENECA 1W	23-7656		23-7656	1-hour	NCDC	**36.8338**	**-94.6166**	863	8/1948-12/2010
MO	SEYMOUR 1 NNW	23-7674			1-day	NCDC	37.1500	-92.7667	1644	1/1896-9/1960

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MO	SIKESTON	23-7770	23-7772		1-day	NCDC	36.8667	-89.6000	302	5/1894-4/1959
MO	SIKESTON PWR STN	23-7772			1-day	NCDC	36.8775	-89.6231	310	**5/1894-10/2011**
MO	SILOAM SPRINGS 1E	23-7780			1-day	NCDC	36.8097	-92.0550	1080	6/1940-2/2011
MO	SPRING CITY	23-7967			1-hour	NCDC	36.9839	-94.5356	1110	8/1948-12/2010
MO	SPRING CITY	23-7967			15-min	NCDC	36.9839	-94.5356	1110	5/1971-12/2010
MO	SPRINGFIELD RGNL AP	23-7976			1-day	NCDC	37.2397	-93.3897	1259	1/1897-9/2009
MO	SPRINGFIELD RGNL AP	23-7976		23-7976	1-hour	NCDC	37.2397	-93.3897	1259	8/1948-12/2010
MO	ST. FRANCIS RIVER AT FISK	53-0329			1-day	USGS	36.7903	-90.2017	**328**	11/1930-7/2009
MO	SUMMERSVILLE	23-8184			1-day	NCDC	37.1778	-91.6533	1180	4/1940-8/2011
MO	TABLE ROCK DAM	23-8252		23-3940	1-hour	NCDC	36.5972	-93.3075	820	8/1956-12/2010
MO	TECUMSEH	23-8313			1-day	NCDC	36.5886	-92.2567	600	9/1941-10/2011
MO	TOPAZ 4 NE	23-8412	23-8583		1-day	NCDC	36.9667	-92.2000	1102	6/1939-2/1969
MO	TYRONE 2 NNW	23-8498		23-8498	1-hour	NCDC	37.2333	-91.8833	1322	9/1949-12/1977
MO	VAN BUREN 1 NE	23-8569			1-day	NCDC	36.9986	-91.0106	496	2/1937-5/2006
MO	VAN BUREN RS	23-8571	23-8569		1-day	NCDC	36.9753	-91.0186	1000	8/1963-1/1995
MO	VANZANT 5E	23-8583			1-day	NCDC	36.9858	-92.2058	1123	**6/1939-8/2011**
MO	WACO 4N	23-8664			1-day	NCDC	37.2900	-94.6042	899	9/1943-10/2011
MO	WAPPAPELLO DAM	23-8700			1-day	NCDC	36.9231	-90.2836	410	1/1939-10/2011
MO	WAPPAPELLO DAM	23-8700			1-hour	NCDC	36.9231	-90.2836	410	8/1948-12/2010
MO	WAPPAPELLO DAM	23-8700			15-min	NCDC	36.9231	-90.2836	410	5/1971-12/2010
MO	WASOLA 5N	23-8754			1-day	NCDC	36.8581	-92.5875	1190	6/1939-10/2011
MO	WASOLA 5N	23-8754		23-8754	1-hour	NCDC	36.8581	-92.5875	1190	8/1948-10/1993
MO	WEST PLAINS	23-8880			1-day	NCDC	36.7425	-91.8347	1010	7/1948-10/2011
MO	WEST PLAINS	23-8880		23-8880	1-hour	NCDC	36.7425	-91.8347	1010	8/1948-12/2010
MO	WILLIAMSVILLE	23-8984			1-day	NCDC	36.9708	-90.5586	510	2/1924-10/2011
MO	WILLOW SPRG RADIO KUKU	23-8995			1-day	NCDC	36.9811	-91.9914	1310	2/1895-4/2001
MO	WILLOW SPRINGS FS	23-9000		23-8995	1-hour	NCDC	36.9833	-91.9833	1302	1/1948-9/1973
MO	ZALMA 4 E	23-9178			1-day	NCDC	37.1564	-90.0106	420	9/1936-10/2011
NC	ANDREWS	31-0184			1-day	NCDC	35.2014	-83.8386	1749	8/1909-9/2005
NC	ASHEVILLE	31-0301		31-0301	1-hour	NCDC	35.5953	-82.5567	2238	8/1902-12/2010
NC	ASHEVILLE AP	31-0300		31-0300	1-hour	NCDC	35.4319	-82.5375	2117	9/1964-12/2010
NC	ASHEVILLE FAA AP	31-0296	31-3101		1-day	NCDC	35.4333	-82.4833	2093	1/1946-3/1959

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NC	ASHEVILLE PEARSON ST	31-0294			1-day	NCDC	35.6092	-82.6119	2270	8/1887-12/1958
NC	BENT CREEK	31-0724			1-day	NCDC	35.5044	-82.5972	2110	1/1949-10/2011
NC	BLUE RIDGE PO	31-0909		31-0909	1-hour	NCDC	35.3500	-82.3667	2280	9/1948-8/1972
NC	BREVARD	31-1055			1-day	NCDC	35.2283	-82.7358	2220	2/1902-10/2011
NC	BRYSON CITY 2	31-1164			1-day	NCDC	35.4333	-83.4500	1801	9/1887-12/1973
NC	BRYSON CITY 2	31-1164		31-1164	1-hour	NCDC	35.4333	-83.4500	1801	9/1948-12/1973
NC	BUCK FOREST	31-1174			1-day	NCDC	35.1833	-82.6167	2515	1/1959-11/1991
NC	CANTON 1 SW	31-1441			1-day	NCDC	35.5167	-82.8500	2662	9/1930-4/1993
NC	CATALOOCHEE	31-1564			1-day	NCDC	35.6403	-83.0804	2650	1/1949-1/2011
NC	CATALOOCHEE	31-1564		31-1564	1-hour	NCDC	**35.6403**	**-83.0804**	2650	9/1964-3/1989
NC	CEDAR MTN	31-1614		31-1614	1-hour	NCDC	35.1500	-82.6333	2753	9/1948-4/1981
NC	COWEETA EXP STN	31-2102			1-day	NCDC	35.0592	-83.4314	2249	12/1942-10/2011
NC	CULLOWHEE	31-2200			1-day	NCDC	35.3256	-83.1911	2192	12/1909-10/2011
NC	ENKA	31-2837			1-day	NCDC	35.5406	-82.6531	2050	11/1930-10/2011
NC	FLETCHER 2 NE	31-3101			1-day	NCDC	35.4500	-82.4833	2190	**1/1946-7/1995**
NC	FLETCHER 3 W	31-3106			1-day	NCDC	35.4264	-82.5572	2070	11/1959-10/2011
NC	FRANKLIN	31-3228			1-day	NCDC	35.1803	-83.3925	2125	**1/1927-10/2011**
NC	FRANKLIN PWR HOUSE	31-3224	31-3228		1-day	NCDC	35.2167	-83.3667	2001	1/1927-3/1950
NC	HAW KNOB STRATTON MD	31-3917		31-3917	1-hour	NCDC	**35.3414**	**-84.0305**	4642	**9/1948-6/1974**
NC	HAYWOOD GAP	31-3925		31-3925	1-hour	NCDC	35.3000	-82.9167	5404	9/1948-4/1981
NC	HENDERSONVILLE 1 NE	31-3976			1-day	NCDC	35.3297	-82.4492	2160	6/1898-10/2011
NC	HIGHLANDS	31-4055			1-day	NCDC	35.0531	-83.1883	3840	1/1879-10/2011
NC	LAKE TOXAWAY 2 SW	31-4788			1-day	NCDC	35.1086	-82.9608	3080	7/1950-10/2011
NC	MAX PATCH MTN	31-5402		31-5402	1-hour	NCDC	**35.8137**	**-82.9524**	4022	9/1948-4/1981
NC	MURPHY	31-6001			1-day	NCDC	35.0961	-84.0239	1576	1/1888-10/2011
NC	NANTAHALA	31-6031			1-day	NCDC	35.2741	-83.6810	2011	2/1934-7/1976
NC	OCONALUFTEE	31-6341			1-day	NCDC	35.5261	-83.3089	2040	**1/1949-10/2011**
NC	PISGAH FOREST 3 NE	31-6805			1-day	NCDC	35.2719	-82.6475	2190	10/1939-10/2011
NC	QUEBEC	31-7035	31-7037		1-hour	NCDC	35.1833	-82.9000	2602	9/1948-12/1955
NC	QUEBEC	31-7037		31-7037	1-hour	NCDC	35.1333	-82.8833	2600	**9/1948-4/1991**
NC	RAVENSFORD	31-7129	31-6341		1-day	NCDC	35.5167	-83.3000	2103	1/1949-10/1958
NC	ROCK HOUSE	31-7363			1-day	NCDC	**35.0039**	**-83.1528**	3104	1/1893-6/1958

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NC	ROSMAN	31-7486			1-day	NCDC	35.1267	-82.8175	2200	12/1935-10/2011
NC	SPRUCE MTN	31-8216		31-8216	1-hour	NCDC	**35.6235**	**-83.1804**	4603	9/1948-6/1976
NC	TAPOCO	31-8492			1-day	NCDC	35.4503	-83.9414	1110	9/1929-10/2011
NC	TUCKASEGEE 2 S	31-8754			1-day	NCDC	35.2343	-83.1262	2313	9/1945-12/1977
NC	WATERVILLE 2	31-9123			1-day	NCDC	35.7742	-83.0981	1440	10/1930-10/2011
NC	WAYNESVILLE 1 E	31-9147			1-day	NCDC	35.4867	-82.9683	2658	5/1894-10/2011
OK	ADAIR 1 E	34-0026	34-0028		1-hour	NCDC	36.4333	-95.2500	679	10/1947-4/1969
OK	ADAIR 3SW	34-0028		34-0028	1-hour	NCDC	36.4008	-95.3000	647	**10/1947-12/2010**
OK	BATTIEST	34-0562	34-1873		1-day	NCDC	34.4000	-94.9333	600	1/1948-12/1951
OK	BATTIEST	34-0567			1-day	NCDC	34.3850	-94.8981	822	**1/1948-8/2010**
OK	BEAR MTN TWR	34-0584			1-day	NCDC	34.1394	-94.9519	800	11/1938-1/1998
OK	BENGAL 2 NNW	34-0670			1-hour	NCDC	34.8547	-95.0697	665	10/1947-12/2010
OK	BENGAL 2 NNW	34-0670			15-min	NCDC	34.8547	-95.0697	665	5/1971-12/2010
OK	BROKEN BOW 1 N	34-1162			1-day	NCDC	34.0497	-94.7381	475	11/1917-10/2011
OK	BROKEN BOW DAM	34-1168		34-1168	1-hour	NCDC	34.1333	-94.7000	443	8/1964-7/1997
OK	CARNASAW TWR	34-1499			1-day	NCDC	34.1442	-94.6378	1000	11/1938-10/2001
OK	CARTER TWR	34-1544			1-day	NCDC	34.2661	-94.7753	1300	1/1939-4/2008
OK	CARTER TWR	34-1544			1-hour	NCDC	34.2661	-94.7753	1300	11/1947-8/2010
OK	CARTER TWR	34-1544			15-min	NCDC	34.2661	-94.7753	1300	5/1971-8/2010
OK	CLAREMORE 2 ENE	34-1828			1-day	NCDC	36.3225	-95.5808	588	5/1900-10/2011
OK	CLEBIT 2 ESE	34-1873	34-0567		1-day	NCDC	34.3833	-94.9833	830	5/1978-12/1982
OK	EUFAULA DAM	34-2994	34-2997		1-hour	NCDC	35.3000	-95.3333	541	3/1957-5/1965
OK	EUFAULA RSVR	34-2997	34-4975		1-hour	NCDC	35.3000	-95.3667	732	5/1965-8/1970
OK	FANSHAWE	34-3065			1-day	NCDC	34.9511	-94.9081	547	9/1941-10/2011
OK	FLASHMAN TWR	34-3182			1-day	NCDC	34.4833	-95.0000	1752	11/1938-2/1984
OK	FORT GIBSON	62-3283	34-3283		1-day	FORTS	35.8072	-95.2533	595	4/1836-9/1890
OK	FORT GIBSON	62-3284	62-3283		1-day	FORTS	35.7975	-95.2503	565	4/1873-5/1882
OK	FORT GIBSON	34-3283			1-day	NCDC	35.8000	-95.2500	528	**4/1836-8/1943**
OK	FT GIBSON DAM	34-3286		34-3286	1-hour	NCDC	35.8667	-95.2333	531	5/1949-4/2001
OK	GRAND RIVER DAM	34-3700			1-day	NCDC	36.4667	-95.0500	771	**11/1923-6/1979**
OK	GRAND RIVER DAM	34-3700		34-3700	1-hour	NCDC	36.4667	-95.0500	771	10/1947-3/1980
OK	GROVE	34-3794			1-day	NCDC	36.5806	-94.7681	770	5/1935-7/1975

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OK	HEAVENER 2 N	34-4008			1-day	NCDC	34.9128	-94.5997	592	12/1951-9/2002
OK	HEE MTN TWR	34-4017			1-day	NCDC	34.3414	-94.6573	1503	12/1948-9/1995
OK	HOLLOW	34-4258			1-day	NCDC	36.8806	-95.2867	910	4/1940-2/2006
OK	IDABEL	34-4451			1-day	NCDC	33.9336	-94.8278	365	3/1907-10/2011
OK	INOLA 6 SSW	34-4506		34-4506	1-hour	NCDC	36.0667	-95.5500	545	3/1968-1/1999
OK	JAY	86-0064			1-day	OK MESONET	36.4821	-94.7829	997	9/1940-7/2009
OK	JAY	34-4564	86-0064		1-day	NCDC	36.4167	-94.8000	1040	9/1940-9/1978
OK	JAY TWR	34-4567	34-4564		1-day	NCDC	36.4236	-94.7967	1050	8/1979-11/1996
OK	KANSAS 2 NE	34-4672			1-day	NCDC	36.2133	-94.7725	1190	4/1959-7/2010
OK	LAKE EUFAULA	34-4975			1-day	NCDC	35.2928	-95.4322	850	3/1957-9/2004
OK	LAKE EUFAULA	34-4975		34-4975	1-hour	NCDC	35.2928	-95.4322	850	**3/1957-9/2004**
OK	LYONS 2 N	34-5437			1-day	NCDC	35.7575	-94.7291	1025	6/1942-9/2003
OK	MC CURTAIN 1 SE	34-5693			1-day	NCDC	35.1500	-94.9500	571	7/1947-1/2009
OK	MIAMI	86-0081			1-day	OK MESONET	36.8883	-94.8444	810	12/1917-8/2010
OK	MIAMI	34-5855	86-0081		1-day	NCDC	36.8833	-94.8833	805	12/1917-8/2010
OK	MUSKOGEE	34-6130			1-day	NCDC	35.7781	-95.3339	518	2/1905-10/2011
OK	MUSKOGEE	34-6130		34-6130	1-hour	NCDC	35.7781	-95.3339	518	10/1947-12/2010
OK	NOWATA	34-6485			1-day	NCDC	36.6917	-95.6436	710	7/1936-12/2007
OK	NOWATA	34-6485		34-6485	1-hour	NCDC	36.6917	-95.6436	710	7/1949-3/2008
OK	OKAY 2 NE	34-3286			1-day	NCDC	**35.8833**	**-95.2833**	**551**	**1/1912-4/2001**
OK	OKAY 2 NE	34-6625	34-3286		1-day	NCDC	35.8833	-95.2833	551	1/1912-4/1949
OK	PAGE 2 SE	34-6842			1-day	NCDC	34.7200	-94.5692	980	**5/1951-12/2007**
OK	PENSACOLA	34-6989	34-3700		1-day	NCDC	36.4500	-95.1333	640	11/1923-7/1948
OK	PINE CREEK DAM	34-7080		34-7080	1-hour	NCDC	34.1167	-95.0833	490	11/1965-6/1997
OK	POTEAU	34-7246	34-7254		1-day	NCDC	35.0500	-94.6167	479	9/1917-8/1985
OK	POTEAU WTR WKS	34-7254			1-day	NCDC	35.0539	-94.6264	440	**9/1917-8/2002**
OK	PRYOR	34-7309			1-day	NCDC	36.3092	-95.3297	625	4/1926-3/2004
OK	PRYOR	34-7309			1-hour	NCDC	36.3092	-95.3297	625	2/1973-3/2004
OK	PRYOR	34-7309			15-min	NCDC	36.3092	-95.3297	625	2/1973-3/2004
OK	QUAPAW	34-7358			1-day	NCDC	36.9667	-94.7833	850	12/1943-12/1989
OK	QUINTON	34-7372			1-day	NCDC	35.1167	-95.3667	639	9/1941-2/1998
OK	ROSE	34-7732			1-day	NCDC	36.2167	-95.0333	1001	5/1942-8/2003

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OK	ROSE	34-7732	34-7739		1-hour	NCDC	36.2167	-95.0333	1001	2/1951-1/1974
OK	ROSE TWR	34-7739			1-hour	NCDC	36.1672	-95.0292	1250	**2/1951-8/2003**
OK	ROSE TWR	34-7739			15-min	NCDC	36.1672	-95.0292	1250	1/1974-8/2003
OK	SAGEEYAH	34-6729			1-day	NCDC	**36.3667**	**-95.6667**	**620**	**7/1928-1/1999**
OK	SAGEEYAH	34-7844	34-6729		1-day	NCDC	36.3667	-95.6667	620	7/1928-9/1957
OK	SALLISAW	34-7862			1-day	NCDC	35.4667	-94.7833	531	4/1893-8/2011
OK	SMITHVILLE	34-8285			1-day	NCDC	34.4678	-94.6428	822	2/1888-9/2008
OK	SPAVINAW	34-8380			1-day	NCDC	36.3894	-95.0597	685	2/1923-10/2011
OK	SPIRO	34-8416			1-day	NCDC	35.2500	-94.6167	494	9/1941-2/2009
OK	STIGLER 1 SE	34-8497			1-hour	NCDC	35.2453	-95.1144	570	10/1947-12/2004
OK	STIGLER 1 SE	34-8497			15-min	NCDC	35.2453	-95.1144	570	8/1972-12/2004
OK	STILWELL 5 NNW	34-8506			1-day	NCDC	35.8953	-94.6486	1000	10/1948-4/2003
OK	TAHLEQUAH	34-8677			1-day	NCDC	35.9369	-94.9644	850	2/1900-10/2008
OK	TENKILLER FERRY DAM	34-8769			1-day	NCDC	35.6000	-95.0500	770	4/1949-4/2011
OK	TENKILLER FERRY DAM	34-8769		34-8769	1-hour	NCDC	35.6000	-95.0500	770	4/1949-1/1999
OK	TUSKAHOMA	34-9023			1-day	NCDC	34.6147	-95.2803	600	11/1917-10/2011
OK	TUSKAHOMA	34-9023			1-hour	NCDC	34.6147	-95.2803	600	10/1947-12/2010
OK	TUSKAHOMA	34-9023			15-min	NCDC	34.6147	-95.2803	600	1/1984-12/2010
OK	VALLIANT 3 W	34-9118			1-day	NCDC	33.9981	-95.1433	475	9/1941-8/2011
OK	VINITA 2 N	34-9203			1-day	NCDC	**36.6803**	-95.1322	735	6/1895-10/2011
OK	WAGONER	34-9247			1-day	NCDC	35.9675	-95.3739	590	4/1895-2/2003
OK	WATTS 5 N	34-9382	03-6624		1-day	NCDC	36.1833	-94.5667	1181	5/1922-8/1954
OK	WEBBERS FALLS	34-9445			1-day	NCDC	35.5167	-95.1167	479	2/1900-5/2007
OK	WEBBERS FALLS DAM	34-9450			1-hour	NCDC	35.5872	-95.1683	520	6/1966-10/2001
OK	WEBBERS FALLS DAM	34-9450			15-min	NCDC	35.5872	-95.1683	520	5/1971-10/2001
OK	WILBURTON 9 ENE	34-9634			1-day	NCDC	34.9611	-95.1711	1613	2/1921-11/2004
OK	WISTER 3 NE	34-9719	34-9724		1-hour	NCDC	35.0000	-94.6833	499	7/1967-3/1989
OK	WISTER 3 S	34-9724			1-day	NCDC	34.9417	-94.7039	525	6/1946-8/2011
OK	WISTER 3 S	34-9724		34-9724	1-hour	NCDC	34.9417	-94.7039	525	**7/1967-12/2010**
OK	WYANDOTTE 1 N	34-9773			1-day	NCDC	36.8167	-94.7167	761	12/1911-2/1968
OK	ZOE 1 S	34-9985	34-6842		1-day	NCDC	34.7500	-94.6333	640	5/1951-10/1987
SC	AIKEN 5SE	38-0074			1-day	NCDC	33.4925	-81.6958	492	5/1854-10/2008

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
SC	ANDERSON	38-0165			1-day	NCDC	34.5283	-82.6606	800	1/1892-10/2011
SC	ANDERSON FAA AIRPORT	38-0170			1-day	NCDC	34.4978	-82.7097	760	9/1948-10/2010
SC	ANTREVILLE	38-0204			1-day	NCDC	34.2558	-82.5656	675	1/1952-10/2011
SC	BAMBERG	38-0448			1-day	NCDC	33.3000	-81.0306	165	8/1951-10/2011
SC	BATESBURG	38-0506			1-day	NCDC	33.9000	-81.5389	660	5/1894-10/2011
SC	BEAUFORT WWTP	38-0559			1-day	NCDC	32.3953	-80.6956	25	1/1893-8/2006
SC	BELTON 7 NNE	38-0613			1-hour	NCDC	34.6014	-82.4336	660	6/1958-12/2010
SC	BELTON 7 NNE	38-0613			15-min	NCDC	34.6014	-82.4336	660	5/1971-12/2010
SC	BLACKVILLE 3 W	38-0764			1-day	NCDC	33.3631	-81.3292	324	6/1894-7/2002
SC	BRANCHVILLE 6 SW	38-0972			1-day	NCDC	33.1831	-80.8097	95	1/1947-4/2000
SC	CAESARS HEAD	38-1249	38-1256		1-day	NCDC	35.1167	-82.6333	3123	12/1924-11/1967
SC	CAESARS HEAD	38-1256			1-day	NCDC	35.1072	-82.6256	3200	**12/1924-10/2011**
SC	CALHOUN FALLS	38-1277			1-day	NCDC	34.0906	-82.5883	530	3/1899-10/2011
SC	CALHOUN FALLS	38-1277			1-hour	NCDC	34.0906	-82.5883	530	12/1983-12/2010
SC	CALHOUN FALLS	38-1277			15-min	NCDC	34.0906	-82.5883	530	1/1984-12/2010
SC	CHAPPELLS 2 NNW	38-1530			1-day	NCDC	34.2142	-81.8850	475	8/1905-10/2011
SC	CLARKS HILL 1 W	38-1726			1-day	NCDC	33.6631	-82.1897	380	8/1952-10/2011
SC	CLARKS HILL 1 W	38-1726		38-1726	1-hour	NCDC	33.6631	-82.1897	380	1/1952-12/2010
SC	CLEMSON COLLEGE DAIRY	38-1775	38-1770		1-hour	NCDC	34.6500	-82.8167	869	6/1948-8/1960
SC	CLEMSON UNIV	38-1770			1-day	NCDC	34.6603	-82.8236	824	1/1930-8/2011
SC	CLEMSON UNIV	38-1770			1-hour	NCDC	34.6603	-82.8236	824	**6/1948-12/2010**
SC	CLEMSON UNIV	38-1770			15-min	NCDC	34.6603	-82.8236	824	2/1979-12/2010
SC	CLEVELAND 3S	38-1804			1-day	NCDC	35.0269	-82.5011	1120	6/1943-10/2011
SC	CRESCENT 1 S	38-2159	38-9412		1-day	NCDC	34.7500	-82.1000	702	9/1926-4/1970
SC	EDGEFIELD 3 NNE	38-2712			1-day	NCDC	33.8275	-81.9142	550	7/1912-10/2011
SC	EDISTO ISLAND	38-2730			1-day	NCDC	32.5050	-80.2947	5	8/1956-10/2011
SC	GREENVILLE	38-3732	38-3735		1-day	NCDC	34.8667	-82.3833	991	1/1963-12/1977
SC	GREENVILLE	38-3735			1-day	NCDC	34.8231	-82.3628	960	**4/1884-8/2010**
SC	GREENVILLE WB AP	38-3742	38-3735		1-day	NCDC	34.8500	-82.3500	1037	4/1884-10/1962
SC	GREENWOOD	38-3754			1-day	NCDC	34.1997	-82.1711	615	5/1894-3/2011
SC	GRNVL SPART INTL AP	38-3747		38-3747	1-hour	NCDC	34.8847	-82.2239	943	10/1962-12/2010
SC	HAMPTON 1S	38-3906			1-day	NCDC	32.8442	-81.1244	95	6/1951-9/2005

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SC	HILTON HEAD	38-4169			1-day	NCDC	32.2167	-80.7500	15	6/1953-2/1998
SC	JOCASSEE 8 WNW	38-4581			1-day	NCDC	34.9831	-83.0678	2500	6/1948-10/2011
SC	JOCASSEE 8 WNW	38-4581		38-4581	1-hour	NCDC	34.9831	-83.0678	2500	6/1948-12/2010
SC	JOHNSTON 4 SW	38-4607			1-day	NCDC	33.7775	-81.8467	620	**4/1893-10/2011**
SC	LAURENS	38-5017			1-day	NCDC	34.4989	-82.0219	589	9/1901-10/2011
SC	LAURENS	38-5017			1-hour	NCDC	34.4989	-82.0219	589	6/1948-12/2010
SC	LAURENS	38-5017			15-min	NCDC	34.4989	-82.0219	589	5/1971-12/2010
SC	LONG CREEK	38-5278			1-day	NCDC	34.7975	-83.2675	1650	1/1942-10/2011
SC	MC CORMICK 9 E	38-5658			1-day	NCDC	33.9236	-82.1439	495	5/1893-8/2010
SC	NEWBERRY	38-6209			1-day	NCDC	34.2978	-81.6236	476	1/1893-10/2011
SC	NEWBERRY	38-6209			1-hour	NCDC	34.2978	-81.6236	476	6/1948-1/2002
SC	NEWBERRY	38-6209			15-min	NCDC	34.2978	-81.6236	476	5/1971-1/2002
SC	OAKWAY	38-6423			1-day	NCDC	34.6000	-83.0333	990	1/1952-1/1990
SC	ORANGEBURG 2	38-6527			1-day	NCDC	33.4886	-80.8733	180	**9/1916-10/2011**
SC	ORANGEBURG 2 SE	38-6522	38-6527		1-day	NCDC	33.4667	-80.8333	259	9/1916-4/1953
SC	PELION 4 NW	38-6775			1-day	NCDC	33.7175	-81.2742	450	1/1947-10/2011
SC	PELZER	38-6783	38-9122		1-day	NCDC	34.6500	-82.4500	850	8/1904-6/1965
SC	PICKENS	38-6830	38-6831		1-day	NCDC	34.8833	-82.7000	1161	11/1941-7/1951
SC	PICKENS	38-6831			1-day	NCDC	34.8814	-82.7189	1162	**11/1941-10/2011**
SC	PICKENS	38-6830	38-6831		1-hour	NCDC	34.8833	-82.7000	1161	6/1948-7/1951
SC	PICKENS	38-6831		38-6831	1-hour	NCDC	34.8814	-82.7189	1162	**6/1948-12/2010**
SC	RIDGELAND 5 NE	38-7281			1-day	NCDC	32.5333	-80.9000	20	11/1941-5/1999
SC	SALEM 5 NNE	38-7589			1-day	NCDC	34.9444	-82.9464	1082	1/1952-9/2004
SC	SALUDA	38-7631			1-day	NCDC	33.9978	-81.7747	480	4/1902-10/2011
SC	SPRINGFIELD	38-8219			1-day	NCDC	33.4931	-81.2797	300	1/1947-10/2011
SC	TRAVELERS REST 1 S	38-8707			1-hour	NCDC	34.9483	-82.4431	1030	1/1971-12/2010
SC	TRAVELERS REST 1 S	38-8707			15-min	NCDC	34.9483	-82.4431	1030	5/1971-12/2010
SC	TRENTON 1 NNE	38-8714	38-4607		1-day	NCDC	33.7500	-81.8333	620	4/1893-7/1957
SC	WAGENER 1SW	38-8879			1-hour	NCDC	33.6256	-81.3828	430	6/1948-12/2010
SC	WAGENER 1SW	38-8879			15-min	NCDC	33.6256	-81.3828	430	9/1971-12/2010
SC	WALHALLA	38-8887			1-day	NCDC	34.7483	-83.0842	980	7/1896-10/2011
SC	WALTERBORO 1 SW	38-8922			1-day	NCDC	32.8847	-80.6761	56	5/1903-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
SC	WARE SHOALS	38-8947	38-8951		1-day	NCDC	34.4000	-82.2500	642	10/1937-6/1990
SC	WARE SHOALS	38-8947		38-8947	1-hour	NCDC	34.4000	-82.2500	642	**1/1971-12/2003**
SC	WARE SHOALS	38-8947	38-8951		15-min	NCDC	34.4000	-82.2500	642	5/1971-7/1990
SC	WARE SHOALS 2	38-8951			1-day	NCDC	34.3981	-82.2297	464	**10/1937-9/2011**
SC	WARE SHOALS 2	38-8951	38-8947		1-hour	NCDC	34.3981	-82.2297	464	9/1990-12/2003
SC	WARE SHOALS 2	38-8951			15-min	NCDC	34.3981	-82.2297	464	**5/1971-12/2003**
SC	WEST PELZER 2 W	38-9122			1-day	NCDC	34.6531	-82.4872	862	**8/1904-10/2011**
SC	WOODRUFF 5 NW	38-9412			1-day	NCDC	34.7636	-82.1061	740	**9/1926-10/2011**
SC	YEMASSEE	38-9469			1-day	NCDC	32.6800	-80.8417	25	1/1899-8/2011
TN	AMES PLANTATION	40-0137			1-day	NCDC	35.1131	-89.2122	460	1/1976-10/2011
TN	ASHWOOD	62-0271	40-0271		1-day	FORTS	35.5833	-87.6333	702	3/1879-11/1892
TN	ASHWOOD	40-0271			1-day	NCDC	35.5833	-87.1333	732	**3/1879-3/1977**
TN	ATHENS	40-0284			1-day	NCDC	35.4322	-84.5833	940	**1/1949-10/2011**
TN	ATHENS SUBSTN	40-0279	40-0284		1-day	NCDC	35.4833	-84.5833	942	1/1949-3/1962
TN	BELVIDERE	40-0603		40-0603	1-hour	NCDC	35.1333	-86.2000	971	9/1948-7/1976
TN	BOLIVAR	40-0871	40-0876		1-hour	NCDC	35.2500	-88.9667	449	6/1949-7/1957
TN	BOLIVAR WTR WKS	40-0876			1-day	NCDC	35.2622	-88.9892	455	1/1893-10/2011
TN	BOLIVAR WTR WKS	40-0876			1-hour	NCDC	35.2622	-88.9892	455	**9/1948-12/2010**
TN	BOLIVAR WTR WKS	40-0876			15-min	NCDC	35.2622	-88.9892	455	5/1971-12/2010
TN	BOLTON	40-0884			1-day	NCDC	35.3167	-89.7667	275	11/1902-10/1989
TN	BROWNSVILLE	40-1145			1-day	NCDC	35.5894	-89.2586	330	9/1895-10/2011
TN	BROWNSVILLE SWR PLT	40-1150		40-1145	1-hour	NCDC	35.5847	-89.2692	355	9/1948-12/2010
TN	BROWNSVILLE SWR PLT	40-1150		40-1145	15-min	NCDC	35.5847	-89.2692	355	5/1971-12/2010
TN	CAGLE	40-1323		40-1323	1-hour	NCDC	35.4667	-85.4500	2060	9/1948-10/1980
TN	CENTERVILLE WATER PL	40-1587			1-day	NCDC	35.7553	-87.4261	660	1/1949-7/2006
TN	CHARLESTON	40-1636			1-day	NCDC	35.2833	-84.7500	722	2/1883-3/1962
TN	CHATTANOOGA AP	40-1656			1-day	NCDC	35.0311	-85.2014	671	1/1928-11/2011
TN	CHATTANOOGA AP	40-1656		40-1656	1-hour	NCDC	35.0311	-85.2014	671	9/1948-12/2010
TN	CLEVELAND FLTR PLT	40-1808			1-day	NCDC	35.2203	-84.7981	800	10/1955-10/2011
TN	COLDWATER	40-1916			1-day	NCDC	35.0833	-86.7333	630	2/1898-12/1975
TN	COLUMBIA 3 WNW	40-1957			1-day	NCDC	35.6386	-87.0872	650	9/1948-10/2011
TN	CONASAUGA 2N	40-1978			1-day	NCDC	35.0328	-84.7347	854	9/1944-10/2003

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TN	CONASAUGA 2N	40-1978			1-hour	NCDC	35.0328	-84.7347	854	6/1948-10/2003
TN	CONASAUGA 2N	40-1978			15-min	NCDC	35.0328	-84.7347	854	5/1971-10/2003
TN	COPPERHILL	40-2024			1-day	NCDC	34.9939	-84.3758	1450	4/1914-1/2009
TN	COVINGTON 3 SW	40-2108			1-day	NCDC	35.5497	-89.7000	385	5/1890-10/2011
TN	DAYTON 2SE	40-2360			1-day	NCDC	35.4717	-84.9947	865	9/1956-10/2011
TN	DECATUR 1 N	40-2385			1-day	NCDC	35.5333	-84.7833	879	11/1895-8/1956
TN	DRESDEN	40-2600			1-day	NCDC	36.2833	-88.7000	450	5/1924-10/2011
TN	DUNLAP	40-2657			1-day	NCDC	35.3667	-85.3833	722	8/1909-3/1962
TN	DYERSBURG	40-2680			1-day	NCDC	36.0456	-89.3697	350	5/1893-7/2011
TN	DYERSBURG	40-2680			1-hour	NCDC	36.0456	-89.3697	350	9/1948-12/2010
TN	DYERSBURG	40-2680			15-min	NCDC	36.0456	-89.3697	350	7/1975-12/2010
TN	DYERSBURG III GOLF	40-2685			1-day	NCDC	36.0003	-89.4100	300	9/1948-8/2010
TN	FAYETTEVILLE WTP	40-3074			1-day	NCDC	35.1500	-86.5411	725	1/1935-10/2011
TN	FT LOUDOUN DAM	40-3229	40-5158		1-day	NCDC	35.8000	-84.2500	820	9/1948-3/1962
TN	GATLINBURG 2 SW	40-3420			1-day	NCDC	35.6878	-83.5369	1454	12/1921-10/2011
TN	GREENFIELD	40-3697			1-hour	NCDC	36.1678	-88.7975	400	9/1948-12/2010
TN	GREENFIELD	40-3697			15-min	NCDC	36.1678	-88.7975	400	5/1971-12/2010
TN	HOHENWALD	40-4223			1-day	NCDC	35.5567	-87.5414	980	1/1893-10/2011
TN	HUMBOLDT	40-4392		40-4392	1-hour	NCDC	35.8167	-88.9333	331	9/1948-3/1989
TN	JACKSON EXP STN	40-4561			1-day	NCDC	35.6214	-88.8456	400	8/1891-10/2011
TN	JACKSON EXP STN	40-4561		40-4561	1-hour	NCDC	35.6214	-88.8456	400	**9/1948-12/2010**
TN	JACKSON MCKELLAR AP	40-4556			1-day	NCDC	35.5931	-88.9167	433	9/1948-10/2010
TN	JACKSON MCKELLAR AP	40-4556	40-4561		1-hour	NCDC	35.5931	-88.9167	433	9/1948-2/2009
TN	KENTON	40-4771			1-day	NCDC	36.2014	-88.9986	325	3/1902-10/2011
TN	KINGSTON	40-4871			1-day	NCDC	35.8581	-84.5275	730	12/1884-10/2011
TN	KNOXVILLE AP	40-4950			1-day	NCDC	35.8181	-83.9858	962	1/1910-10/2010
TN	KNOXVILLE AP	40-4950		40-4950	1-hour	NCDC	35.8181	-83.9858	962	9/1948-12/2010
TN	LAWRENCEBURG FILT PLT	40-5089			1-day	NCDC	35.2639	-87.3514	870	10/1954-10/2011
TN	LENOIR CITY	40-5158			1-day	NCDC	35.7875	-84.2622	785	**9/1948-7/2011**
TN	LEWISBURG EXP STN	40-5187			1-day	NCDC	35.4139	-86.8086	787	5/1890-10/2011
TN	LEWISBURG EXP STN	40-5187			1-hour	NCDC	35.4139	-86.8086	787	9/1948-12/2010
TN	LEWISBURG EXP STN	40-5187			15-min	NCDC	35.4139	-86.8086	787	5/1971-12/2010

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TN	LEXINGTON	40-5210			1-day	NCDC	35.6467	-88.3975	540	9/1948-10/2011
TN	LEXINGTON	40-5210		40-5210	1-hour	NCDC	35.6467	-88.3975	540	**9/1948-12/2010**
TN	LINDEN	40-5273	40-5278		1-day	NCDC	35.6167	-87.8333	669	6/1941-2/1951
TN	LINDEN WTP	40-5278			1-day	NCDC	35.6333	-87.8261	505	**6/1941-7/2011**
TN	LOOKOUT MTN	40-5429	40-5431		1-day	NCDC	34.9833	-85.3500	1972	11/1913-3/1962
TN	LOOKOUT MTN-POINT PARK	40-5431			1-day	NCDC	35.0103	-85.3447	2150	**11/1913-10/2011**
TN	LORETTO	40-5442			1-day	NCDC	35.0833	-87.4333	840	12/1895-3/1962
TN	LOUDON 1 E	40-5451			1-day	NCDC	35.7333	-84.3333	801	1/1885-6/1962
TN	LYNNVILLE 4 SSW	40-5535			1-day	NCDC	35.3333	-87.0500	732	5/1890-12/1971
TN	MARTIN U OF T BRANCH E	40-5681			1-day	NCDC	36.3444	-88.8636	340	9/1936-10/2011
TN	MASON	40-5720			1-hour	NCDC	35.4156	-89.5314	319	10/1948-12/2010
TN	MASON	40-5720			15-min	NCDC	35.4156	-89.5314	319	5/1971-12/2010
TN	MC GHEE	40-5841			1-day	NCDC	35.6167	-84.2167	810	12/1904-3/1962
TN	MC GHEE 2 SE	40-5836	40-5841		1-day	NCDC	35.6167	-84.2167	850	1/1927-1/1949
TN	MC MINNVILLE	40-5882			1-day	NCDC	35.6719	-85.7814	940	8/1891-10/2011
TN	MEMPHIS INTL AP	40-5954			1-day	NCDC	35.0564	-89.9864	254	1/1940-10/2010
TN	MEMPHIS INTL AP	40-5954		40-5954	1-hour	NCDC	35.0564	-89.9864	254	9/1948-12/2010
TN	MEMPHIS INTL AP	40-0001		40-5954	15-min	NCDC	35.0564	-89.9864	254	**1/1984-5/2011**
TN	MEMPHIS INTL AP	40-5954	40-0001		15-min	NCDC	35.0564	-89.9864	254	1/1984-9/2000
TN	MEMPHIS PO BLDG	40-5964			1-day	NCDC	35.1500	-90.0500	384	1/1872-12/1985
TN	MEMPHIS PO BLDG	40-5964	40-5946		1-hour	NCDC	35.1500	-90.0500	384	9/1948-8/1965
TN	MEMPHIS SEWAGE PLT	40-5946		40-5964	1-hour	NCDC	35.2000	-90.0333	175	**9/1948-12/1985**
TN	MILAN EXP STN	40-6012			1-day	NCDC	35.9158	-88.7389	426	3/1883-10/2011
TN	MONTEAGLE	40-6162			1-day	NCDC	35.2244	-85.8417	1850	11/1938-10/2011
TN	MONTEAGLE	40-6162			1-hour	NCDC	35.2244	-85.8417	1850	6/1982-12/2010
TN	MONTEAGLE	40-6162			15-min	NCDC	35.2244	-85.8417	1850	6/1982-12/2010
TN	MOSCOW	40-6274			1-day	NCDC	35.0667	-89.4000	352	5/1920-7/2011
TN	MT PLEASANT 1N	40-6340			1-day	NCDC	35.5572	-87.2019	778	2/1953-10/2011
TN	MUNFORD	40-6358			1-hour	NCDC	35.4556	-89.8114	448	9/1948-12/2010
TN	MUNFORD	40-6358			15-min	NCDC	35.4556	-89.8114	448	7/1981-12/2010
TN	NEAPOLIS	40-6427	40-6435		1-day	NCDC	35.7167	-86.9667	722	1/1952-3/1972
TN	NEAPOLIS RES & EDU STN	40-6435			1-day	NCDC	35.7197	-86.9819	700	**1/1952-10/2011**

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
TN	NEWBERN	40-6471			1-day	NCDC	36.1167	-89.2667	371	4/1924-9/1993
TN	NORTH CAROLINA 3917	40-3963	31-3917		1-hour	NCDC	**35.3160**	**-84.0338**	**4984**	9/1948-9/1967
TN	OAK GROVE	40-6709	40-5210		1-hour	NCDC	35.6667	-88.3500	531	9/1948-10/1980
TN	PALMETTO	40-6950			1-day	NCDC	35.4833	-86.5833	771	3/1893-3/1977
TN	PARKSVILLE	40-7007			1-day	NCDC	35.1000	-84.6500	751	5/1890-3/1962
TN	PERRYVILLE	40-7099			1-day	NCDC	35.6333	-88.0333	371	1/1896-3/1962
TN	PIKEVILLE	40-7184			1-day	NCDC	35.5981	-85.1936	864	3/1962-9/2011
TN	PULASKI	40-7454	40-7459		1-day	NCDC	35.2000	-87.0167	761	1/1949-3/1962
TN	PULASKI WWTP	40-7459			1-day	NCDC	35.1839	-87.0422	634	**1/1949-10/2011**
TN	RIPLEY	40-7710			1-day	NCDC	35.7178	-89.4986	400	6/1962-10/2011
TN	ROCK ISLAND 2 NW	40-7811			1-day	NCDC	35.8058	-85.6347	870	8/1904-4/2010
TN	ROCK ISLAND 2 NW	40-7811			1-hour	NCDC	35.8058	-85.6347	870	9/1948-12/2010
TN	ROCK ISLAND 2 NW	40-7811			15-min	NCDC	35.8058	-85.6347	870	5/1971-12/2010
TN	ROCKWOOD 2	40-7834			1-day	NCDC	35.8528	-84.7050	860	4/1962-7/2011
TN	RODDY	40-7850		40-7850	1-hour	NCDC	35.7656	-84.7772	810	9/1948-4/2003
TN	SAMBURG WR	40-8065			1-day	NCDC	36.4528	-89.3028	310	5/1924-10/2011
TN	SAMBURG WR	40-8065			1-hour	NCDC	36.4528	-89.3028	310	9/1948-12/2010
TN	SAMBURG WR	40-8065			15-min	NCDC	36.4528	-89.3028	310	5/1971-12/2010
TN	SAVANNAH 6 SW	40-8108			1-day	NCDC	35.1525	-88.3214	420	3/1883-10/2011
TN	SAVANNAH 6 SW	40-8108			1-hour	NCDC	35.1525	-88.3214	420	3/1982-12/2010
TN	SAVANNAH 6 SW	40-8108			15-min	NCDC	35.1525	-88.3214	420	3/1982-12/2010
TN	SAVANNAH TVA	40-8113		40-8113	1-hour	NCDC	35.2333	-88.2167	430	9/1948-10/1980
TN	SELMER	40-8160			1-day	NCDC	35.1647	-88.5994	470	10/1923-10/2011
TN	SEWANEE	40-8184			1-day	NCDC	35.2025	-85.9172	1900	5/1895-10/2011
TN	SHADY GROVE	40-8203		40-8203	1-hour	NCDC	35.7500	-87.2833	551	9/1948-10/1980
TN	SHELBYVILLE DAM	40-8241	40-8246		1-day	NCDC	35.4833	-86.4667	741	1/1949-3/1962
TN	SHELBYVILLE WATER DEPT	40-8246			1-day	NCDC	35.4922	-86.4775	760	**1/1949-10/2011**
TN	SUGAR HILL	40-8704		40-8704	1-hour	NCDC	35.5333	-87.8167	531	9/1948-2/1977
TN	SUMMITVILLE	40-8758		40-8758	1-hour	NCDC	35.5500	-85.9833	1122	9/1948-10/1980
TN	TELLICO PLAINS	40-8886			1-day	NCDC	35.3675	-84.2997	910	4/1896-7/2011
TN	TULLAHOMA	40-9155			1-day	NCDC	35.3453	-86.2089	1022	3/1893-10/2011
TN	UNION CITY	40-9219			1-day	NCDC	36.3925	-89.0317	350	8/1891-10/2011

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
TN	UNION CITY	40-9219			1-hour	NCDC	36.3925	-89.0317	350	**9/1948-12/2010**
TN	UNION CITY	40-9219			15-min	NCDC	36.3925	-89.0317	350	**5/1971-12/2010**
TN	UNION CITY SEWAGE PLT	40-9223	40-9219		1-hour	NCDC	36.4167	-89.0667	341	12/1969-8/1972
TN	UNION CITY SEWAGE PLT	40-9223	40-9219		15-min	NCDC	36.4167	-89.0667	341	5/1971-8/1972
TN	VICTORY	40-9339		40-9339	1-hour	NCDC	35.0833	-87.8167	971	9/1948-10/1980
TN	WAYNESBORO	40-9502			1-day	NCDC	35.3042	-87.7592	750	8/1891-10/2011
TN	WILDERSVILLE	40-9752			1-day	NCDC	35.7833	-88.3667	479	10/1897-3/1962
TN	WINCHESTER 1 E	40-9800			1-day	NCDC	35.1803	-86.0925	940	**1/1949-10/2011**
TN	WINCHESTER SUBSTN	40-9785	40-9800		1-day	NCDC	35.2333	-86.1000	961	1/1949-3/1962
TN	WOODBURY 1 WNW	40-9866			1-day	NCDC	35.8375	-86.0894	750	7/1954-10/2011
TX	ANAHUAC	41-0235			1-day	NCDC	29.7878	-94.6342	24	6/1909-10/2011
TX	ATLANTA	41-0408			1-day	NCDC	33.1244	-94.1661	315	9/1930-10/2011
TX	BEAUMONT CITY	41-0611			1-day	NCDC	30.0969	-94.0997	20	11/1901-10/2011
TX	BEAUMONT RSCH CTR	41-0613			1-day	NCDC	30.0689	-94.2928	27	9/1947-10/2011
TX	BON WIER	41-0917			1-day	NCDC	30.7333	-93.6500	89	1/1914-6/1988
TX	BON WIER	41-0917		41-0917	1-hour	NCDC	30.7333	-93.6500	89	5/1940-9/1974
TX	BOXELDER 3 NNE	41-0991			1-day	NCDC	33.5164	-94.8608	440	4/1949-3/2002
TX	BROADDUS	41-1089			1-day	NCDC	31.3050	-94.2703	245	**7/1942-7/2010**
TX	BROADDUS	41-4523	41-1089		1-day	NCDC	31.3167	-94.2833	269	7/1942-12/1976
TX	BRONSON	41-1094			1-day	NCDC	31.3500	-94.0167	322	7/1924-12/1979
TX	CARTHAGE	41-1500			1-day	NCDC	32.1614	-94.3397	305	1/1908-10/2011
TX	CENTER	41-1578			1-day	NCDC	31.8075	-94.1642	325	7/1922-10/2011
TX	CLARKSVILLE 1W	41-1773			1-hour	NCDC	33.6100	-95.0217	426	9/1940-12/2010
TX	CLARKSVILLE 1W	41-1773			15-min	NCDC	33.6100	-95.0217	426	5/1971-10/2010
TX	CLARKSVILLE 2NE	41-1772			1-day	NCDC	33.6164	-95.0717	435	3/1903-10/2010
TX	CONCORD	41-1937		41-1937	1-hour	NCDC	31.9167	-94.5833	541	8/1962-10/1983
TX	DAINGERFIELD 9 S	41-2225			1-day	NCDC	32.9203	-94.7225	300	10/1944-10/2011
TX	DEKALB	41-2352			1-day	NCDC	33.5139	-94.6164	414	2/1944-10/2011
TX	DEPORT 4 NW	41-2415		41-2415	1-hour	NCDC	33.5639	-95.3742	436	2/1944-4/2001
TX	DEWEYVILLE 5 S	41-2436	41-6680		1-day	NCDC	30.2333	-93.7333	20	5/1954-4/1986
TX	EVADALE	41-3000			1-day	NCDC	30.3333	-94.0833	33	8/1944-3/2004
TX	HAGANSPORT	41-3846			1-day	NCDC	33.3361	-95.2486	360	12/1909-1/2009

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
TX	HARLETON	41-3941			1-day	NCDC	32.6758	-94.5675	345	5/1949-10/2011
TX	HEMPHILL	41-4076	41-4077		1-day	NCDC	31.3500	-93.8333	300	6/1967-1/1992
TX	HEMPHILL 6 NE	41-4077			1-day	NCDC	31.4081	-93.7853	180	**6/1967-10/2011**
TX	HENDERSON	41-4081			1-day	NCDC	32.1822	-94.7967	420	7/1908-10/2011
TX	HORGER	41-4280			1-day	NCDC	31.0000	-94.1667	112	8/1944-12/1982
TX	HYATT	41-4397	41-9754		1-day	NCDC	30.5667	-94.4000	112	4/1935-10/1953
TX	JASPER	41-4563			1-day	NCDC	30.9153	-94.0097	290	9/1878-10/2011
TX	JEFFERSON	41-4577			1-day	NCDC	32.7681	-94.3561	205	11/1903-10/2011
TX	JEFFERSON	41-4577		41-4577	1-hour	NCDC	32.7681	-94.3561	205	2/1944-12/1978
TX	KARNACK	41-4693			1-day	NCDC	32.6664	-94.1781	255	5/1942-3/2007
TX	KIRBYVILLE	41-4819			1-day	NCDC	30.6167	-93.9167	200	1/1929-2/1999
TX	KOUNTZE	41-4878			1-day	NCDC	30.3750	-94.2994	61	1/1940-10/2011
TX	KOUNTZE	41-4878		41-4878	1-hour	NCDC	30.3750	-94.2994	61	1/1940-12/1979
TX	LATEX	41-5081	41-6788		1-hour	NCDC	32.3500	-94.1000	302	12/1942-7/1963
TX	LINDEN	41-5229			1-day	NCDC	33.0161	-94.3675	415	6/1940-10/2011
TX	LONGVIEW	41-5341			1-day	NCDC	32.4725	-94.7172	330	1/1902-9/2011
TX	LONGVIEW 11 SE	41-5348			1-day	NCDC	32.3467	-94.6533	407	9/1975-8/2010
TX	LONGVIEW 11 SE	41-5348			1-hour	NCDC	32.3467	-94.6533	407	8/1975-12/2010
TX	LONGVIEW 11 SE	41-5348			15-min	NCDC	32.3467	-94.6533	407	9/1978-10/2010
TX	MARSHALL	41-5618			1-day	NCDC	32.5403	-94.3508	352	5/1893-10/2011
TX	MAUD	41-5667			1-day	NCDC	33.3331	-94.3431	305	6/1940-10/2011
TX	MC CARTNEY BRG	41-5710	41-9916		1-day	NCDC	33.3167	-94.1667	230	8/1947-9/1954
TX	MC CARTNEY BRG	41-9916			1-day	NCDC	**33.3167**	**-94.1667**	**230**	**8/1947-8/2010**
TX	MT PLEASANT	41-6108			1-day	NCDC	33.1689	-95.0056	425	3/1905-10/2011
TX	MT PLEASANT	41-6108			1-hour	NCDC	33.1689	-95.0056	425	2/1940-12/2010
TX	MT PLEASANT	41-6108			15-min	NCDC	33.1689	-95.0056	425	5/1971-10/2010
TX	MT VERNON	41-6119			1-day	NCDC	33.1953	-95.2233	447	5/1966-10/2011
TX	NACOGDOCHES	41-6176	41-6177		1-day	NCDC	31.6000	-94.6500	312	4/1900-5/1973
TX	NACOGDOCHES	41-6177			1-day	NCDC	31.6164	-94.6431	435	**4/1900-10/2011**
TX	NACOGDOCHES	41-6176	41-6177		1-hour	NCDC	31.6000	-94.6500	312	12/1947-10/1961
TX	NACOGDOCHES	41-6177			1-hour	NCDC	31.6164	-94.6431	435	**10/1947-12/2010**
TX	NACOGDOCHES	41-6177			15-min	NCDC	31.6164	-94.6431	435	1/1974-10/2010

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
TX	NAPLES 1 SW	41-6190	41-6195		1-day	NCDC	33.1833	-94.6833	361	12/1909-11/1981
TX	NAPLES 5 NE	41-6195			1-day	NCDC	33.2425	-94.6736	290	**12/1909-1/1997**
TX	NEGLEY 4 SSW	41-6247			1-day	NCDC	33.7042	-95.0700	405	6/1946-1/2003
TX	NEUVILLE	41-6265			1-day	NCDC	31.6503	-94.1519	480	6/1940-7/2008
TX	NEW BOSTON	41-6270			1-day	NCDC	33.4547	-94.4089	345	4/1980-10/2011
TX	NEW BOSTON	41-6270			1-hour	NCDC	33.4547	-94.4089	345	10/1973-12/2010
TX	NEW BOSTON	41-6270			15-min	NCDC	33.4547	-94.4089	345	10/1973-10/2010
TX	NEWTON	41-6339	41-6341		1-day	NCDC	30.8500	-93.7667	190	1/1966-3/1977
TX	NEWTON	41-6341			1-day	NCDC	30.8331	-93.7369	150	**1/1966-8/2011**
TX	ORANGE	41-6664			1-day	NCDC	30.0858	-93.7417	10	12/1903-10/2011
TX	ORANGE 9 N	41-6680			1-day	NCDC	30.2264	-93.7394	18	**5/1954-10/2011**
TX	PANOLA 1 WSW	41-6788		41-6788	1-hour	NCDC	32.3500	-94.1167	322	**12/1942-8/1973**
TX	PINELAND	41-7040			1-day	NCDC	31.2442	-93.9656	220	1/1965-10/2011
TX	PITTSBURG 5 SSE	41-7066			1-day	NCDC	32.9258	-94.9397	345	4/1949-9/2011
TX	PITTSBURG 5 SSE	41-7066		41-7066	1-hour	NCDC	32.9258	-94.9397	345	5/1949-12/2010
TX	PORT ARTHUR AP	41-7174			1-day	NCDC	29.9506	-94.0206	16	10/1947-10/2010
TX	PORT ARTHUR AP	41-7174		41-7174	1-hour	NCDC	29.9506	-94.0206	16	12/1947-12/2010
TX	PORT ARTHUR WB CITY	41-7172			1-day	NCDC	**29.8667**	**-93.9333**	**10**	**3/1911-8/2010**
TX	PORT ARTHUR WB CITY	41-7173	41-7172		1-day	NCDC	29.8667	-93.9333	10	3/1911-12/1967
TX	ROCKLAND 2 NW	41-7700			1-day	NCDC	31.0167	-94.4000	88	4/1904-6/1979
TX	ROCKLAND 2 NW	41-7700		41-7700	1-hour	NCDC	31.0167	-94.4000	88	1/1940-3/1975
TX	SAM RAYBURN DAM	41-7936			1-day	NCDC	31.0619	-94.1011	189	1/1968-10/2011
TX	SAM RAYBURN DAM	41-7936		41-7936	1-hour	NCDC	31.0619	-94.1011	189	1/1968-12/2010
TX	SAN AUGUSTINE	41-7951			1-day	NCDC	31.5069	-94.1072	310	6/1909-10/2011
TX	SIMMS 4 WNW	41-8335		41-8335	1-hour	NCDC	33.3667	-94.5667	322	3/1944-10/1973
TX	TATUM	41-8859		41-8859	1-hour	NCDC	32.3000	-94.5167	269	1/1940-8/1975
TX	TEXARKANA	41-8942			1-day	NCDC	33.4367	-94.0772	390	10/1968-10/2011
TX	TEXARKANA	41-8942			15-min	NCDC	33.4367	-94.0772	390	9/1973-10/2010
TX	TEXARKANA DAM	41-8944	41-9916		1-hour	NCDC	33.3000	-94.1667	282	11/1955-5/1972
TX	TOLEDO BEND DAM	41-9068	16-9074		1-day	NCDC	31.1750	-93.5653	190	7/1975-11/2004
TX	TOWN BLUFF DAM	41-8568	41-9101		1-day	NCDC	30.8000	-94.1833	210	8/1953-1/1970
TX	TOWN BLUFF DAM	41-9101			1-day	NCDC	30.8000	-94.1833	214	**8/1953-10/2011**

State	Station name	Station ID	Post-merge station ID	Co-located station ID	Base duration	Source of data	Latitude	Longitude	Elevation (ft)	Period of record
TX	WARREN 2 S	41-9480			1-day	NCDC	30.5833	-94.4000	110	5/1935-6/1992
TX	WILDWOOD	41-9754			1-day	NCDC	30.5164	-94.4383	200	**4/1935-10/2011**
TX	WRIGHT PATMAN DM & LK	41-9916		41-9916	1-hour	NCDC	33.3042	-94.1728	282	**11/1955-12/2010**

Table A.1.3. List of stations used in the analysis for n-minute scaling factors (see Section 4.6.3) showing state, station name, station ID, source of data, latitude, longitude, elevation, and period of record.

State	Station name	Station ID	Source of data	Latitude	Longitude	Elevation (ft)	Period of Record
AL	ALABASTER SHELBY CO AP	01-0116	NCDC	33.1783	-86.7817	565	3/2005-7/2009
AL	ANNISTON METRO AP	01-0272	NCDC	33.5872	-85.8556	594	1/1984-7/2009
AL	BIRMINGHAM WSFO	01-0829	NCDC	33.4667	-86.8333	744	1/1984-4/1991
AL	BIRMINGHAM AP ASOS	01-0831	NCDC	33.5656	-86.7450	615	1/1973-7/2009
AL	CENTREVILLE 6 SW	01-1525	NCDC	32.8661	-87.2383	450	1/1984-5/1994
AL	HUNTSVILLE INTNL AP	01-4064	NCDC	34.6439	-86.7861	624	1/1973-7/2009
AL	MOBILE RGNL AP	01-5478	NCDC	30.6883	-88.2456	215	1/1973-7/2009
AL	MONTGOMERY AP ASOS	01-5550	NCDC	32.2997	-86.4075	202	1/1973-7/2009
AL	MUSCLE SHOALS AP	01-5749	NCDC	34.7442	-87.5997	540	1/1984-7/2009
AL	TUSCALOOSA ACFD	01-8380	NCDC	33.2119	-87.6161	169	1/1984-4/1994
AR	DEQUEEN SEVIER CO AP	03-1953	NCDC	34.0500	-94.4006	355	3/2005-7/2009
AR	EL DORADO GOODWIN FLD	03-2300	NCDC	33.2208	-92.8142	252	1/1984-7/2009
AR	FT SMITH RGNL AP	03-2574	NCDC	35.3331	-94.3625	449	1/1973-7/2009
AR	HARRISON BOONE CO AP	03-3165	NCDC	36.2667	-93.1567	1374	1/1984-7/2009
AR	LITTLE ROCK ADAMS FLD	03-4248	NCDC	34.7272	-92.2389	258	1/1973-7/2009
AR	MONTICELLO MUNI AP	03-4900	NCDC	33.6361	-91.7556	290	3/2005-7/2009
AR	NORTH LITTLE ROCK WFO	03-5320	NCDC	34.8353	-92.2597	563	1/1978-5/1997
AR	PINE BLUFF GRIDER FLD	03-5756	NCDC	34.1667	-91.9333	-999	3/2005-7/2009
AR	TEXARKANA WEBB FLD	03-7048	NCDC	33.4536	-94.0075	361	1/1984-7/2009
FL	APALACHICOLA AP	08-0211	NCDC	29.7258	-85.0206	20	1/1973-7/2009
FL	CRESTVIEW BOB SIKES AP	08-1986	NCDC	30.7797	-86.5225	190	3/2005-7/2009
FL	DAYTONA BEACH INTL AP	08-2158	NCDC	29.1828	-81.0483	31	1/1973-7/2009
FL	FT LAUDERDALE INTL AP	08-3165	NCDC	26.0719	-80.1536	11	3/2005-7/2009
FL	FT MYERS PAGE FLD AP	08-3186	NCDC	26.5850	-81.8614	15	1/1973-7/2009
FL	GAINESVILLE RGNL AP	08-3326	NCDC	29.6919	-82.2756	123	1/1984-7/2009
FL	JACKSONVILLE INTL AP	08-4358	NCDC	30.4950	-81.6936	26	1/1973-7/2009
FL	JACKSONVILLE CRAIG AP	08-4370	NCDC	30.3361	-81.5147	41	3/2005-7/2009
FL	KEY WEST INTL AIRPORT	08-4570	NCDC	24.5550	-81.7522	4	1/1973-7/2009
FL	LAKELAND	08-4797	NCDC	28.0206	-81.9219	145	1/1976-8/1978
FL	MAYPORT PILOT STN	08-5549	NCDC	30.4000	-81.4167	16	1/2007-7/2009
FL	MELBOURNE WFO	08-5612	NCDC	28.0958	-80.6308	35	3/2005-7/2009
FL	MIAMI BEACH	08-5658	NCDC	25.8064	-80.1336	1	1/1973-12/1974

State	Station name	Station ID	Source of data	Latitude	Longitude	Elevation (ft)	Period of Record
FL	MIAMI INTL AP	08-5663	NCDC	25.7906	-80.3164	29	1/1973-7/2009
FL	MIAMI WSO CITY	08-5668	NCDC	25.7167	-80.2833	15	1/1973-5/1997
FL	NAPLES MUNI AP	08-6076	NCDC	26.1522	-81.7753	9	3/2005-7/2009
FL	ORLANDO INTL AP	08-6628	NCDC	28.4339	-81.3250	90	9/1973-7/2009
FL	ORLANDO WSO AP	08-6638	NCDC	28.5500	-81.3333	120	1/1973-12/1973
FL	PENSACOLA RGNL AP	08-6997	NCDC	30.4781	-87.1869	112	1/1984-7/2009
FL	ST PETERSBURG	08-7886	NCDC	27.7631	-82.6272	8	3/2005-7/2009
FL	TALLAHASSEE WSO AP	08-8758	NCDC	30.3931	-84.3533	55	1/1973-7/2009
FL	TAMPA WSCMO AP	08-8788	NCDC	27.9614	-82.5403	19	1/1973-7/2009
FL	VERO BEACH INTL AP	08-9214	NCDC	27.6531	-80.2428	28	1/1984-7/2009
FL	WEST PALM BCH INTL AP	08-9525	NCDC	26.6847	-80.0994	19	1/1973-7/2009
GA	ALMA BACON CO AP	09-0211	NCDC	31.5358	-82.5067	193	1/1984-7/2009
GA	ATHENS BEN EPPS AP	09-0435	NCDC	33.9481	-83.3275	785	1/1973-7/2009
GA	ATLANTA HARTSFIELD AP	09-0451	NCDC	33.6300	-84.4417	1010	1/1973-7/2009
GA	AUGUSTA BUSH FLD AP	09-0495	NCDC	33.3644	-81.9633	132	1/1973-7/2009
GA	BRUNSWICK MCKINNON AP	09-1345	NCDC	31.1522	-81.3908	16	1/1984-7/2009
GA	COLUMBUS METO AP	09-2166	NCDC	32.5161	-84.9422	392	1/1973-7/2009
GA	MACON MIDDLE GA AP	09-5443	NCDC	32.6847	-83.6528	343	1/1973-7/2009
GA	PEACHTREE CITY	09-6848	NCDC	33.3553	-84.5669	798	3/2005-7/2009
GA	ROME WSO AP	09-7610	NCDC	34.3500	-85.1667	640	1/1973-12/1979
GA	SAVANNAH INTL AP	09-7847	NCDC	32.1300	-81.2100	46	1/1973-7/2009
GA	WAYCROSS WSMO	09-9192	NCDC	31.2500	-82.4000	140	1/1984-5/1994
LA	ALEXANDRIA FCWOS	16-0104	NCDC	31.3953	-92.2908	118	1/1973-7/2009
LA	BATON ROUGE METRO AP	16-0549	NCDC	30.5372	-91.1469	64	1/1973-7/2009
LA	BOOTHVILLE ASOS	16-1157	NCDC	29.3331	-89.4075	3	1/1973-5/1988
LA	LAFAYETTE FCWOS	16-5026	NCDC	30.2050	-91.9875	38	1/1984-7/2009
LA	LAKE CHARLES AP	16-5078	NCDC	30.1247	-93.2283	9	1/1973-7/2009
LA	NEW ORLEANS INTL AP	16-6295	NCDC	29.9861	-90.2556	3	1/1984-5/1997
LA	MONROE RGNL AP	16-6303	NCDC	32.5156	-92.0406	79	1/1984-7/2009
LA	NEW ORLEANS WSO CITY	16-6659	NCDC	29.9500	-90.0833	3	1/1984-1/1990
LA	NEW ORLEANS AP	16-6660	NCDC	29.9933	-90.2511	4	1/1973-7/2009
LA	NEW ORLEANS AUDUBON	16-6664	NCDC	29.9167	-90.1303	20	1/1973-3/1976
LA	NEW ORLEANS LKFRNT AP	16-6667	NCDC	30.0494	-90.0289	9	3/2005-7/2009
LA	SHREVEPORT DWTN AP	16-8438	NCDC	32.5428	-93.7450	179	3/2005-7/2009

State	Station name	Station ID	Source of data	Latitude	Longitude	Elevation (ft)	Period of Record
LA	SHREVEPORT AP	16-8440	NCDC	32.4472	-93.8239	254	1/1973-7/2009
LA	TALLULAH VICKSBURG RGN	16-8926	NCDC	32.3500	-91.0278	86	3/2005-7/2009
MS	GREENVILLE ASOS	22-3608	NCDC	33.4825	-90.9853	128	3/2005-7/2009
MS	GREENWOOD LEFLORE AP	22-3627	NCDC	33.4964	-90.0867	133	1/1984-7/2009
MS	GULFPORT - BILOXI AP	22-3666	NCDC	30.4119	-89.0808	42	3/2005-7/2009
MS	HATTIESBURG CHAIN AP	22-3895	NCDC	31.2819	-89.2531	151	3/2005-7/2009
MS	JACKSON HAWKINS FLD AP	22-4469	NCDC	32.3367	-90.2214	342	3/2005-7/2009
MS	JACKSON INTL AP	22-4472	NCDC	32.3206	-90.0778	330	1/1973-7/2009
MS	MCCOMB AP	22-5614	NCDC	31.1828	-90.4708	413	1/1984-7/2009
MS	MERIDIAN AP	22-5776	NCDC	32.3347	-88.7442	294	1/1973-7/2009
MS	PASCSGOULA AP	22-6714	NCDC	30.4636	-88.5319	18	3/2005-7/2009
MS	TUPELO	22-9000	NCDC	34.2500	-88.7167	279	1/1984-5/1997
MS	TUPELO RGNL AP	22-9003	NCDC	34.2622	-88.7714	361	1/2000-7/2009
MO	CAPE GIRARDEAU RGNL AP	23-1289	NCDC	37.2253	-89.5706	336	1/1984-7/2009
MO	JOPLIN RGNL AP	23-4315	NCDC	37.1467	-94.5022	980	1/1984-7/2009
MO	SPRINGFIELD RGNL AP	23-7976	NCDC	37.2397	-93.3897	1259	1/1973-7/2009
NC	ASHEVILLE FAA AP	31-0296	NCDC	35.4333	-82.4833	2093	1/1984-5/1997
NC	ASHEVILLE AP	31-0300	NCDC	35.4319	-82.5375	2117	1/1973-7/2009
SC	ANDERSON FAA AIRPORT	38-0170	NCDC	34.4978	-82.7097	760	1/1984-7/2009
SC	GRNVL SPART INTL AP	38-3747	NCDC	34.8847	-82.2239	943	1/1973-7/2009
TN	CHATTANOOGA AP	40-1656	NCDC	35.0311	-85.2014	671	1/1973-5/1997
TN	JACKSON MCKELLAR AP	40-4556	NCDC	35.5931	-88.9167	433	1/1984-7/2009
TN	KNOXVILLE AP	40-4950	NCDC	35.8181	-83.9858	962	1/1973-7/2009
TN	MEMPHIS INTL AP	40-5954	NCDC	35.0564	-89.9864	254	1/1973-7/2009
TX	LONGVIEW E TX RGNL AP	41-5342	NCDC	32.3847	-94.7117	365	3/2005-7/2009
TX	LONGVIEW 11 SE	41-5348	NCDC	32.3467	-94.6533	407	1/1984-2/1990
TX	PORT ARTHUR AP	41-7174	NCDC	29.9506	-94.0206	16	1/1973-7/2009

Appendix A.2 Annual maximum series trend analysis

1. Selection of statistical tests for detection of trends in AMS

Precipitation frequency analysis methods used in NOAA Atlas 14 volumes are based on the assumption that annual maximum series (AMS) data are stationary over the period of observation (and application). Several parametric and non-parametric statistical tests were used for the detection of trends in AMS mean and variance. The selection of statistical tests was made in consideration of the data tested and the limitations of each of the tests.

First, AMS were graphed to observe types of trends in the data for all stations in the project area at 1-hour and 1-day durations. Visual inspection of time series plots did not detect any abrupt changes or apparent cycles in the AMS, but suggested the possibility of slight trends at some locations. Changes appeared to be gradual and approximately linear.

The null hypotheses that there are no trends in AMS mean and/or variance was tested on 1-day and 1-hour AMS data at each station tested in the project area. The hypotheses were tested at the level of significance $\alpha = 5\%$. The hypothesis that there are no trends in AMS means was also tested for each climate region (see Figure 4.1.2) as a whole.

Levene's test (Levene, 1960) was used to test for homogeneity of variance in the AMS data. The test has been proven to be less sensitive to non-normality in data than some other commonly used tests (such as the Barlett test). The test statistic, *W*, is defined as follows:

$$W = \frac{(\mathrm{N}-\mathrm{k})\sum_{\mathrm{i}=1}^{\mathrm{k}} \mathrm{N_i}\ (\mathrm{Z_{i\cdot}} - \mathrm{Z_{\cdot\cdot}})^2}{(\mathrm{k}-1)\sum_{\mathrm{i}=1}^{\mathrm{k}}\sum_{\mathrm{j}=1}^{\mathrm{N_i}} \mathrm{N_i}\ (\mathrm{Z_{ij}} - \mathrm{Z_{i\cdot}})^2}$$

where k is the number of sub-groups, N is the sample size, N_i is the sample size of the i^{th} subgroup, Y_{ij} is the value of the j^{th} sample from the i^{th} subgroup, and Z_{ij} is the absolute deviation of Y_{ij} from the mean of the i^{th} subgroup. Levene's test rejects the hypothesis that the variances are equal if

$$W > F_{\alpha,\, k\text{-}1,\, N\text{-}k}$$

where $F_{\alpha,\, k\text{-}1,\, N\text{-}k}$ is the upper critical value of the *F* distribution with *k*-1 and *N*-*k* degrees of freedom at a significance level of α.

At-station trends in AMS means were inspected using the parametric *t*-test and non-parametric Mann-Kendall test (e.g., Maidment, 1993). Both tests are extensively used for trend analysis in environmental sciences and are appropriate for records that have undergone a gradual change. The tests are fairly robust, readily available, and easy to use and interpret. Since each test is based on different assumptions and different test statistics, the rationale was that if both tests have similar outcomes there can be more confidence about the results, and if the outcomes are different, it would provide an opportunity to investigate reasons for discrepancies.

Parametric tests in general have been shown to be more powerful than non-parametric tests when the data are approximately normally distributed and when the assumption of homoscedasticity (homogeneous variance) holds (Hirsch et al., 1991), but are less reliable when those assumptions do not hold. The parametric *t*-test for trend detection is based on linear regression, and therefore checks only for a linear trend in data. A linear trend assumption seemed adequate here, since, time series plots indicated, if any, monotonic, linear changes in AMS. The Pearson correlation coefficient (*r*) was used as a measure of linear association between annual maximum series data and time for the *t*-test. The hypothesis that the data are not dependent on time (and also that they are independent and normally distributed values) was tested using the *t*-statistic that follows Student's distribution defined as:

$$t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

where n is the record length of the AMS. The hypothesis is rejected when the absolute value of the computed t-statistic is greater than the critical value obtained from Student's distribution with (n - 2) degrees of freedom and exceedance probability of α/2 %, where α is the significance level. The sign of the t-statistic indicates the direction of the trend, positive or negative.

Non-parametric tests have advantages over parametric tests since they make no assumption of probability distribution and are performed without specifying whether trend is linear or nonlinear. They are also more resilient to outliers in data because they do not operate on data directly. One of the disadvantages of non-parametric tests is that they do not account for the magnitude of the data. The Mann-Kendall test was selected among various non-parametric tests because it can accommodate missing values in a time series, which was a frequent occurrence in the AMS data. The Mann-Kendall test compares the relative magnitudes of annual maximum data. If annual maximum values are indexed based on time, and x_i is the annual maximum value that corresponds to year t_i, then the Mann-Kendall statistic is given by:

$$S = \sum_{k=1}^{n-1} \sum_{i=k+1}^{n} sign(x_i - x_k)$$

The test statistic Z is then computed using a normal approximation and standardization of the statistic S. The null hypothesis that there is no trend in the data is rejected at significance level α if the computed Z value is greater, in absolute terms, than the critical value obtained from a standard normal distribution that has probability of exceedance of α/2 %. The sign of the statistic indicates the direction of the trend, positive or negative.

In addition to an at-station trend analysis, the relative magnitude of any trend in AMS for each of four climate regions (see Figure 4.1.2) as a whole was assessed by linear regression techniques. 1-hour and 1-day station-specific AMS for stations with at least 70 years of data for the 1-day duration and with at least 40 years of data for the 1-hour duration were rescaled by corresponding mean annual maximum values and then regressed against time, where time was defined as year of occurrence minus 1900. The regression results from all stations were tested against a null hypothesis of zero serial correlation (zero regression slopes).

2. Trend analysis results and conclusion

The stationarity assumption was tested by applying a parametric t-test and non-parametric Mann-Kendal test for trends in means and the Levene's test for trends in variance in the 1-day and 1-hour AMS data at 5% significance level. For the 1-day duration, testing was done on stations with at least 70 years of data; for the 1-hour duration, the minimum number of data years was lowered to 40 to increase the sample size. 205 and 407 stations satisfied the record length criterion for the 1-hour duration and 1-day duration, respectively. For 1-hour, based on the Levene's test using two subgroups of equal length, the hypothesis that variance did not change could not be rejected for any of the stations. The t-test and Mann-Kendall test indicated no statistically significant trends in the mean at about 89% and 87% of stations, respectively. In the 1-day dataset, Levene's test indicated non-homogeneous variance in less than 5% of stations. Based on t-test and Mann-Kendall test results, respectively, no trends were detected at about 87% and 83% of stations, respectively. More details are provided in Table A.2.1. The spatial distribution of the results for all three tests for 1-hour and 1-day AMS are shown in Figures A.2.1 and A.2.2, respectively. Small clusters of stations where tests indicated positive trends are often due to AMS data sampled from the same storm events at several nearby locations.

Table A.3.1. Trend analysis results for 1-hour and 1-day AMS data.

<table>
<tr><th rowspan="2">Number of stations</th><th colspan="3">1-hour</th><th colspan="3">1-day</th></tr>
<tr><th>t-test</th><th>Mann-Kendall test</th><th>Levene’s test</th><th>t-test</th><th>Mann-Kendall test</th><th>Levene’s test</th></tr>
<tr><td>no trend</td><td>183</td><td>179</td><td>205</td><td>353</td><td>336</td><td>387</td></tr>
<tr><td>positive trend</td><td>19</td><td>21</td><td rowspan="2">0</td><td>46</td><td>63</td><td rowspan="2">20</td></tr>
<tr><td>negative trend</td><td>3</td><td>5</td><td>8</td><td>8</td></tr>
<tr><td>Total</td><td>205</td><td>205</td><td>205</td><td>407</td><td>407</td><td>407</td></tr>
</table>

Results from the regional trend analysis also indicated that the null hypothesis, that there are no trends in AMS, could not be rejected at the 5% significance level for either climate region for the 1-hour and 1-day durations.

Because tests at both, the 1-hour and 1-day durations indicated no statistically significant trends in the data, the assumption of stationary AMS was accepted for this project area and no adjustment to AMS data was recommended.

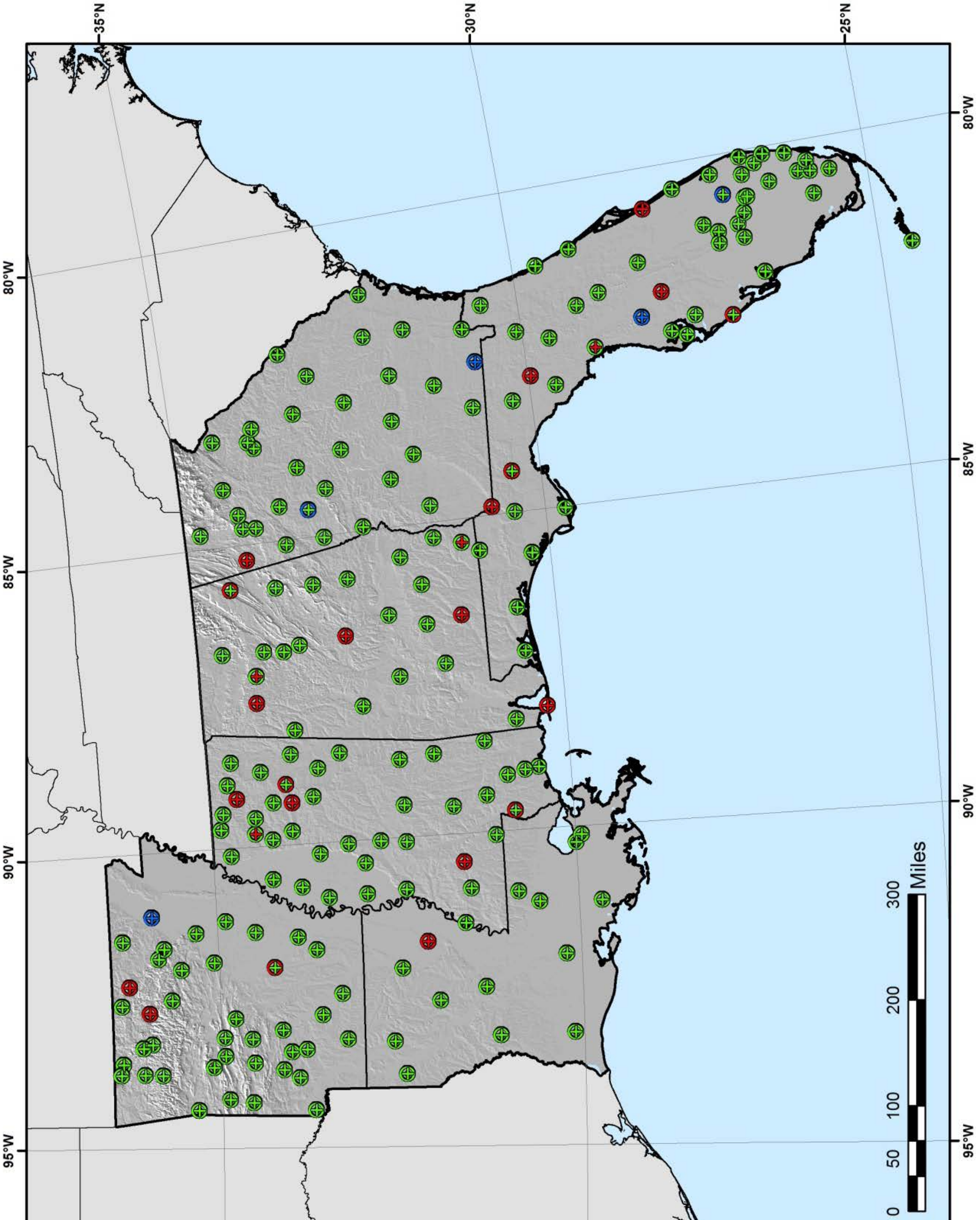

Figure A.2.1. Spatial distribution of results of *t*-, Mann-Kendall, and Levene's tests for 1-hour AMS. Circles were used to present *t*-test results and plus signs were used to present Mann-Kendal test results. Red color indicates positive trends, green no trend, and blue negative trends. There were no stations where Levene's test detected non-homogeneous variance.

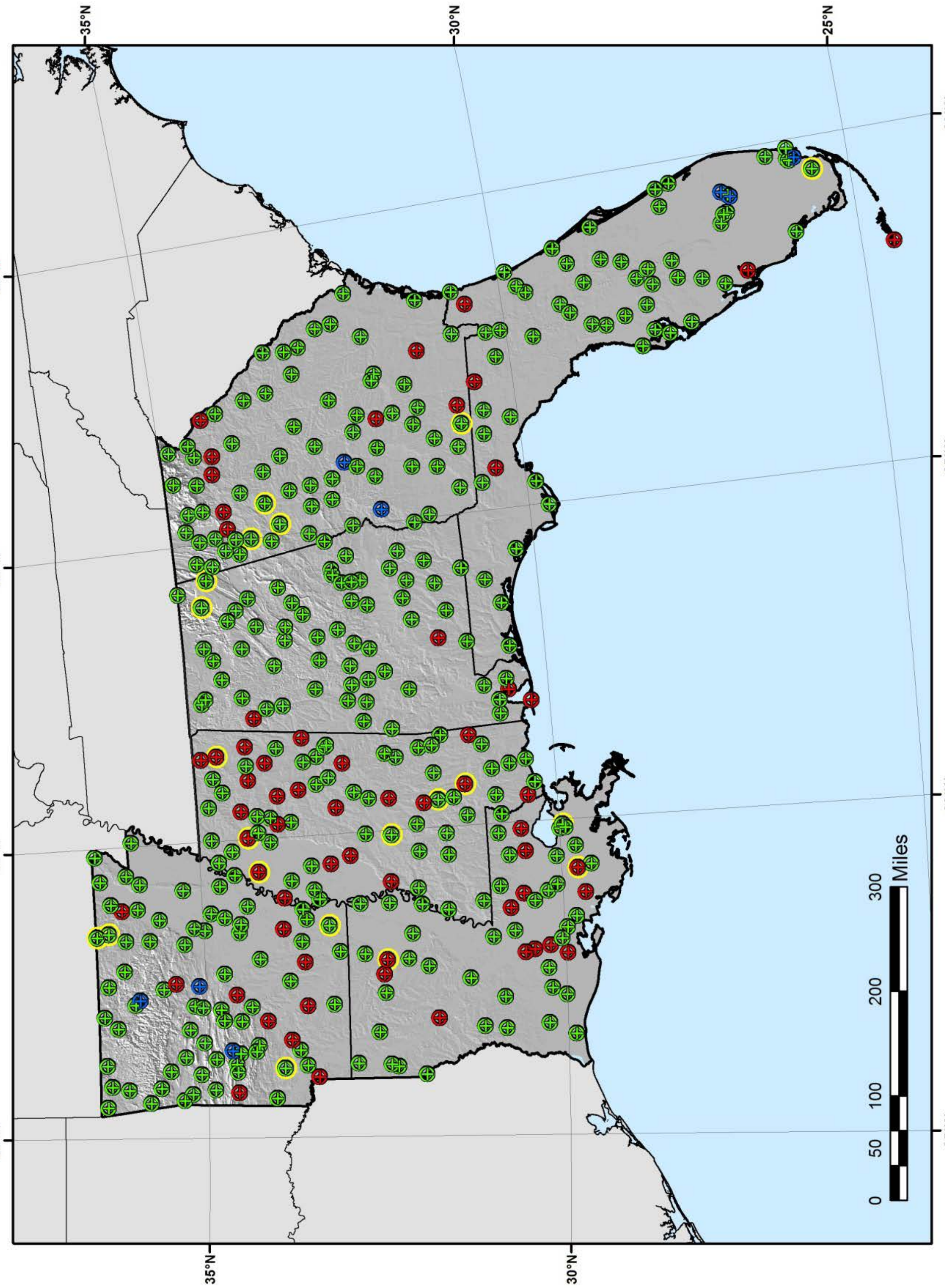

Figure A.2.2. Same as in Figure A.2.1, but for 1-day duration. Yellow circles show locations where Levene's test detected changes in variance.

Appendix A.3 PRISM report
[The results shown in this Appendix apply for Volumes 8 and 9. This report was formatted by HDSC.]

Final Report
Production of Mean Annual Maximum Grids for the Midwestern and Southeastern Regions Using a Specifically Optimized PRISM System

Prepared for
National Weather Service, Hydrologic Design Service Center
Silver Spring, Maryland

Prepared by
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February 2013

1. Project Goal

The Hydrometeorological Design Studies Center (HDSC) within the Office of Hydrologic Development of NOAA's National Weather Service is updating precipitation frequency estimates for the Midwest and Southeast regions (hereafter referred to as MWSE). In order to complete the spatial interpolation of point estimates, HDSC requires spatially interpolated grids of MAM (Mean Annual Maximum) precipitation. The contractor, the PRISM Climate Group at Oregon State University (OSU), was tasked with producing a series of grids for rainfall frequency estimation using an optimized system based on the Parameter-elevation Regressions on Independent Slopes Model (PRISM) and HDSC-calculated point estimates for the MWSE.

2. Background

HDSC used L-moment based regional frequency analysis approach to estimate precipitation frequencies. In this approach, the mean of the underlying precipitation frequency distribution is estimated at point locations with a sufficient history of observations. The form of the distribution and its parameters are estimated regionally. Once the form of the distribution has been selected and its parameters have been estimated, precipitation frequency estimates can be computed from grids of the MAM. The grids that are the subject of this report are spatially interpolated grids of the point estimates of the MAM for various precipitation durations. The point estimates of the MAM were provided by HDSC. HDSC selected an appropriate precipitation frequency distribution along with regionally estimated parameters and used this information with the grids of the MAM to derive grids of precipitation frequency estimates.

The PRISM Climate Group has performed similar work previously to produce spatially interpolated MAM grids for updates of precipitation frequency estimates in the Semiarid Southwest United States, the Ohio River Basin and Surrounding States, Puerto Rico/US Virgin Islands, Hawaiian Islands, California, and Alaska study areas.

3. Report

This report describes tasks performed to produce mean annual maximum (MAM) grids for 17 precipitation durations: 15 and 30 minutes; 1, 2, 3, 6, and 12 hours; and 1, 2, 3, 4, 7, 10, 20, 30, 45, and 60 days for the MWSE. The tasks described were not necessarily performed in the order described, nor were they performed just once. The process was dynamic and had numerous feedbacks.

3.1. Adapting the PRISM system

The PRISM modeling system was adapted for use in this project after a small investigation was performed for the Semiarid Southwest United States, and subsequently used in the Ohio River Basin and Surrounding States, Puerto Rico/Virgin Islands, Hawaiian Islands, California, and Alaska study areas. This investigation and adaptation procedure is summarized below.

PRISM is a knowledge-based system that uses point data, a digital elevation model (DEM), and many other geographic data sets to generate gridded estimates of climatic parameters (Daly et al. 1994, 2002, 2003, 2006, 2008) at monthly to daily time scales. Originally developed for precipitation estimation, PRISM has been generalized and applied successfully to temperature, among other parameters. PRISM has been used extensively to map precipitation, dew point, and minimum and maximum temperature over the United States, Canada, China, and other countries. Details on PRISM formulation can be found in Daly et al. (2002, 2003, 2008), which are available from http://prism.oregonstate.edu/docs/.

Adapting the PRISM system for mapping precipitation frequencies required an approach slightly different than the standard modeling procedure. The amount of station data available to HDSC for precipitation frequency was much less than that available for high-quality precipitation maps, such as the peer-reviewed PRISM 1971-2000 mean precipitation maps (Daly et al. 2008). Data sources suitable for long-term mean precipitation but not for precipitation frequency included snow courses, short-term COOP stations, remote storage gauges, and others. In addition, data for precipitation durations of less than 24 hours were available from hourly precipitation stations only. This meant that mapping precipitation frequency using HDSC stations would sacrifice a significant amount of the spatial detail present in the 1971-2000 mean precipitation maps.

A pilot project to identify ways of capturing more spatial detail in the precipitation frequency maps was undertaken. Early tests showed that mean annual precipitation (MAP) was an excellent predictor of precipitation frequency in a local area, much better than elevation, which is typically used as the underlying, gridded predictor variable in PRISM applications. In these initial tests, the DEM, the predictor grid in PRISM, was replaced by the official USDA digital map of MAP for the lower 48 states (USDA-NRCS 1998, Daly et al. 2000). Detailed information on the creation of the USDA PRISM precipitation grids is available from Daly and Johnson (1999). MAP was found to have superior predictive capability over the DEM for locations in the southwestern US. The relationships between MAP and precipitation frequency were strong because many of the effects of various physiographic features on mean precipitation patterns had already been incorporated into the MAP grid from PRISM. Preliminary PRISM maps of 2-year and 100-year, 24-hour precipitation were made for the Semiarid Southwest and compared to hand-drawn HDSC maps of the same statistics. Differences were minimal, and mostly related to differences in station data used.

Further investigation found that the square-root transformation of MAP produced somewhat more linear, tighter and cleaner regression functions, and hence, more stable predictions, than the untransformed values; this transformation was incorporated into subsequent model applications. Square-root MAP was a good local predictor of not only longer-duration precipitation frequency statistics, but for short-duration statistics, as well. Therefore, it was determined that a modified PRISM system that used square-root MAP as the predictive grid was suitable for producing high-quality precipitation frequency maps for this project.

For this study, an official USDA grid of MAP for the study region (1981-2010 average) was used (Figure 1). This grid was developed under funding from the USDA Natural Resources Conservation Service, and is an update to the 1971-2000 grids described in Daly et al. (2008).

3.2. PRISM configuration and operation for the MWSE

In general, PRISM interpolation consists of a local moving-window regression function between a predictor grid and station values of the element to be interpolated. The regression function is guided by an encoded knowledge base and inference engine (Daly et al., 2002, 2008). This knowledge base/inference engine is a series of rules, decisions and calculations that set weights for the station data points entering the regression function. In general, a weighting function contains knowledge about an important relationship between the climate field and a geographic or meteorological factor. The inference engine sets values for input parameters by using default values, or it may use the regression function to infer grid cell-specific parameter settings for the situation at hand. PRISM acquires knowledge through assimilation of station data, spatial data sets such as MAP and others, and a control file containing parameter settings.

The other center of knowledge and inference is that of the user. The user accesses literature, previously published maps, spatial data sets, and a graphical user interface to guide the model application. One of the most important roles of the user is to form expectations for the modeled climatic patterns, i.e., what is deemed “reasonable.” Based on knowledgeable expectations, the user selects the station weighting algorithms to be used and determines whether any parameters should be changed from their default values. Through the graphical user interface, the user can click on any grid cell, run the model with a given set of algorithms and parameter settings, view the results graphically, and access a traceback of the decisions and calculations leading to the model prediction.

For each grid cell, the moving-window regression function for MAM vs. MAP took the form

$$\text{MAM value} = \beta_1 * \text{sqrt(MAP)} + \beta_0 \qquad (1)$$

where β_1 is the slope and β_0 is the intercept of the regression equation, and MAP is the grid cell value of mean annual precipitation.

Upon entering the regression function, each station was assigned a weight that is based on several factors. For PRISM MAP mapping (used as the predictor grid in this study), the combined weight of a station was a function of distance, elevation, cluster, vertical layer, topographic facet, coastal proximity, and effective terrain weights, respectively. A full discussion of the general PRISM station weighting functions is available from Daly et al. (2008).

Given that the MAP grid incorporated detailed information about the complex spatial patterns of precipitation, only a subset of these weighting functions was needed for this study. For the MWSE, the combined weight of a station was a function of distance and clustering, respectively. A station is down-weighted when it is relatively distant from the target grid cell, or when it is clustered with other stations (which can lead to over-representation).

The moving-window regression function was populated by station data provided by the HDSC. A PRISM GUI snapshot of the moving-window relationship between sqrt(MAP) and 24-hour MAM in south-central Colorado is shown in Figure 2.

There were relatively few stations with data for durations of 12 hours or less from which to perform the interpolation. In addition, it was clear that the spatial patterns of durations of 12 hours or less could be very different than those of durations of 24 hours or more. This issue was encountered in a previous study for Puerto Rico. During that study the following procedure was developed, and adopted here:

(1) Convert available ≤ 12-hour station values to an MAM/24-hr MAM ratio (termed R24) by dividing by the 24-hour values;

(2) using the station R24 data in (1), interpolate R24 values for each ≤ 12-hour duration (15, 30, and 60 minutes; and 2, 3, 6, and 12 hours) using PRISM in inverse-distance weighting mode;

(3) using bi-linear interpolation from the cells in the R24 grids from (2), estimate R24 at the location of each station having data for ≥ 24-hour durations only;

(4) multiply the estimated R24 values from (3) by the 24-hour value at each ≥ 24-hour station to obtain estimated ≤ 12-hour values;

(5) append the estimated stations from (4) to the ≤ 12-hour station list to generate a station list that matches the density of that for ≥ 24 hours; and

(6) interpolate MAM values for ≤ 12-hour durations with PRISM, using MAP as the predictor grid.

Investigation of the little available data failed to provide convincing evidence that the spatial patterns of R24 values in the MWSE were strongly affected by coastal proximity, topographic facets, or other factors. Therefore, the slope of the moving-window regression function for R24 vs. MAP of the form

$$R24 = \beta_1 * \text{sqrt}(MAP) + \beta_0 \qquad (2)$$

was forced to zero everywhere. This meant that the interpolated value of R24 was a function of distance and cluster weighting only (essentially inverse-distance weighting).

Relevant PRISM parameters for applications to 60-minute R24 and 24-hour MAM statistics are listed in Tables 1 and 2, respectively. Further explanations of these parameters and associated equations are available in Daly et al. (2002, 2008).

The values of radius of influence (*R*), the minimum number of total (s_t) stations required in the regression were based on information from user assessment via the PRISM graphical user interface, and on a jackknife cross-validation exercise, in which each station was deleted from the data set one at a time, a prediction made in its absence, and mean absolute error statistics compiled (see Results section).

The input parameter that changed readily among the various durations was the default slope (β_{1d}) of the regression function. Slopes are expressed in units that are normalized by the average observed value of the precipitation in the regression data set for the target cell. Evidence gathered during PRISM model development indicates that this method of expression is relatively stable in both space and time (Daly et al. 1994).

Bounds are put on the slopes to minimize unreasonable slopes that might occasionally be generated due to local station data patterns; if the slope is out of bounds and cannot be brought within bounds by the PRISM outlier deletion algorithm, the default slope is invoked (Daly et al., 2002). The maximum slope bound was set to a uniformly high value of 30.0, to accommodate a large range of valid slopes; lower values were not needed to handle extreme values, because all values were within reasonable ranges. Slope default values were based on PRISM diagnostics that provided information on the distribution of slopes across the modeling region. The default value was set to approximate the average regression slope calculated by PRISM. For these applications, default slopes typically increased with increasing duration (Table 3). In general, the longer the duration, the larger the slope. This is primarily a result of higher precipitation amounts at the longer durations, and the tendency for longer-duration MAM statistics to bear a stronger and steeper relationship with MAP than shorter-duration statistics.

3.3. Preparation and review of draft grids

Draft grids for the 60-minute, 24-hour and 10-day durations were produced and made available to HDSC for evaluation. All of the necessary station data were provided by HDSC. The process began with a careful scrutiny of the station data and PRISM behavior. A version of PRISM which predicts for stations locations in the absence of each station (termed jackknifing) was run, and stations that were difficult for PRISM to predict for were identified, and sent to HDSC for review. HDSC removed the stations, modified their values, or determined that the stations were accurate as-is. This process was performed iteratively, until an acceptable station data set was produced. The draft PRISM grids were subsequently completed and submitted to HDSC for review. HDSC submitted the draft PRISM grids for external review, and revised the station data accordingly.

3.4. Final grids

Having found the revised draft grids acceptable, HDSC requested that grids for all durations be completed. Before delivering the final grids to HDSC, the PRISM Climate Group checked them for internal consistency. In other words, the value of the MAM at each grid point for each duration must have been greater than the value for shorter durations at the same grid point. If an inconsistency of this nature occurred, the convention was to start with the 24 duration as a baseline, and set longer durations to slightly higher values and shorter durations to slightly lower values.

The final delivered grids inherited the spatial resolution of the latest 1981-2010 PRISM mean annual precipitation grids for MWSE, which is 30 arc-seconds (~800 meters). The grid cell units are in mm*100. Final MAM grids delivered to HDSC are as follows:

15-minute
30-minute
60-minute
2-hour
3-hour
6-hour
12-hour
24-hour
48-hour
3-day
4-day
7-day
10-day
20-day
30-day
45-day
60-day
Total: 17

3.5. Performance evaluation

PRISM cross-validation statistics for 60-minute/24-hour MAM ratio and the 60-minute and 24-hour MAM intensities were compiled and summarized in Table 4. These errors were estimated using an omit-one jackknife method, where each station is omitted from the data set, estimated in its absence, then replaced. Since the 60-minute/24-hour MAM ratio was expressed as a percent, the percent bias and mean absolute error are the given as the bias and MAE in the original percent units (not as a percentage of the percent).

For the 60-minute/24-hour MAM ratio, the overall bias was near zero and the mean absolute error (MAE) about 3 percent. For the 60-minute, 24-hour, and 10-day MAM intensities, biases were less than 0.25 percent, and the MAE varied around the 4 percent mark. Biases for the 15- and 30-minute durations were slightly negative (-1.8 and -0.19 percent, respectively), while those for the other durations were slightly positive (ranging between 0.08 and 0.25 percent). MAEs for all durations were less than 5 percent, with most less than 4 percent. Given the lack of independent data at durations of less than 24 hours, one would have expected the 15-minute to 12-hour MAM errors to be substantially higher than those for the 24-hour to 60-day MAMs. A likely reason why this was not the case was that the addition of many synthesized stations, derived from a PRISM interpolation of R24 values, resulted in a station data set that was spatially consistent, and thus, somewhat easier to interpolate with each station deleted from the data set. Therefore, there is little doubt that the true interpolation errors for the 60-minute MAM are higher than those shown in Table 4.

Table 1. Values of relevant PRISM parameters for interpolation of 60-minute/24-hour mean annual maximum ratio (60-minute R24) for the MWSE. See Daly et al. (2002) for details on PRISM parameters.

Name	Description	Value
Regression Function		
R	Radius of influence	10 km*
s_t	Minimum number of total stations desired in regression	45 stations
β_{1m}	Minimum valid regression slope	0.0^+
β_{1x}	Maximum valid regression slope	0.0^+
β_{1d}	Default valid regression slope	0.0^+
Distance Weighting		
A	Distance weighting exponent	2.0
F_d	Importance factor for distance weighting	1.0
D_m	Minimum allowable distance	0.0 km
Elevation Weighting		
B	MAP weighting exponent	NA/NA
F_z	Importance factor for MAP weighting	NA/NA
Δz_m	Minimum station-grid cell MAP difference below which MAP weighting is maximum	NA/NA
Δz_x	Maximum station-grid cell MAP difference above which MAP weight is zero	NA/NA

* Expands to encompass minimum number of total stations desired in regression (s_t).

+ Slopes are expressed in units that are normalized by the average observed value of the precipitation in the regression data set for the target cell. Units here are 1/[sqrt(MAP(mm))*1000].

Table 2. Values of relevant PRISM parameters for modeling of 24-hour mean annual maximum statistics for the MWSE. See Daly et al. (2002) for details on PRISM parameters.

Name	Description	Value
<u>Regression Function</u>		
R	Radius of influence	3 km*
s_t	Minimum number of total stations desired in regression	25 stations
β_{1m}	Minimum valid regression slope	0.0^{+}
β_{1x}	Maximum valid regression slope	30.0^{+}
β_{1d}	Default valid regression slope	2.8^{+}
<u>Distance Weighting</u>		
A	Distance weighting exponent	2.0
F_d	Importance factor for distance weighting	1.0
D_m	Minimum allowable distance	0.0 km
<u>Elevation Weighting</u>		
B	Elevation weighting exponent	0.0
F_z	Importance factor for elev weighting	0.0
Δz_m	Minimum station-grid cell elev difference below which MAP weighting is maximum	NA
Δz_x	Maximum station-grid cell elevation difference above which station is eliminated from data set	NA

* Expands to encompass minimum number of total stations desired in regression (s_t).

+ Slopes are expressed in units that are normalized by the average observed value of the precipitation in the regression data set for the target cell. Units here are 1/[sqrt(MAP(mm))*1000].

Table 3. Values of PRISM slope parameters for modeling of MAM statistics for the MWSE for all durations. For durations of 12 hours and below, station data were expressed as the ratio of the given duration's MAM value to the 24-hour MAM value, and interpolated; this was followed by an interpolation of the actual MAM values. See text for details. See Table 1 for definitions of parameters.

	MWSE		
Duration	β_{1m}	β_{1x}	β_{1d}
15m/24h ratio	0.0	0.0	0.0
30m/24h ratio	0.0	0.0	0.0
1h/24h ratio	0.0	0.0	0.0
2h/24h ratio	0.0	0.0	0.0
3h/24h ratio	0.0	0.0	0.0
6h/24h ratio	0.0	0.0	0.0
12h/24h ratio	0.0	0.0	0.0
15 minute MAM	0.0	30.0	2.3
30 minute MAM	0.0	30.0	2.3
1 hour MAM	0.0	30.0	2.3
2 hour MAM	0.0	30.0	2.3
3 hour MAM	0.0	30.0	2.4
6 hour MAM	0.0	30.0	2.5
12 hour MAM	0.0	30.0	2.7
24 hour MAM	0.0	30.0	2.8
48 hour MAM	0.0	30.0	3.0
3 day MAM	0.0	30.0	3.1
4 day MAM	0.0	30.0	3.2
7 day MAM	0.0	30.0	3.6
10 day MAM	0.0	30.0	3.8
20 day MAM	0.0	30.0	4.2
30 day MAM	0.0	30.0	4.5
45 day MAM	0.0	30.0	4.6
60 day MAM	0.0	30.0	4.8

Table 4. PRISM cross-validation errors for 60-minute/24-hour MAM ratio and 24-hour MAM applications to the MWSE. Since the 60-minute/24-hour MAM ratio was expressed as a percent, the percent bias and mean absolute error are the given as the bias and MAE in the original percent units (not as a percentage of the percent).

Statistic	**N**	**% Bias**	**% MAE**
60-min/24-hr MAM ratio	1222	-0.03	3.14
60-minute MAM	3712	0.08	3.98
24-hour MAM	3709	0.23	4.04
10-day MAM	3709	0.19	3.41

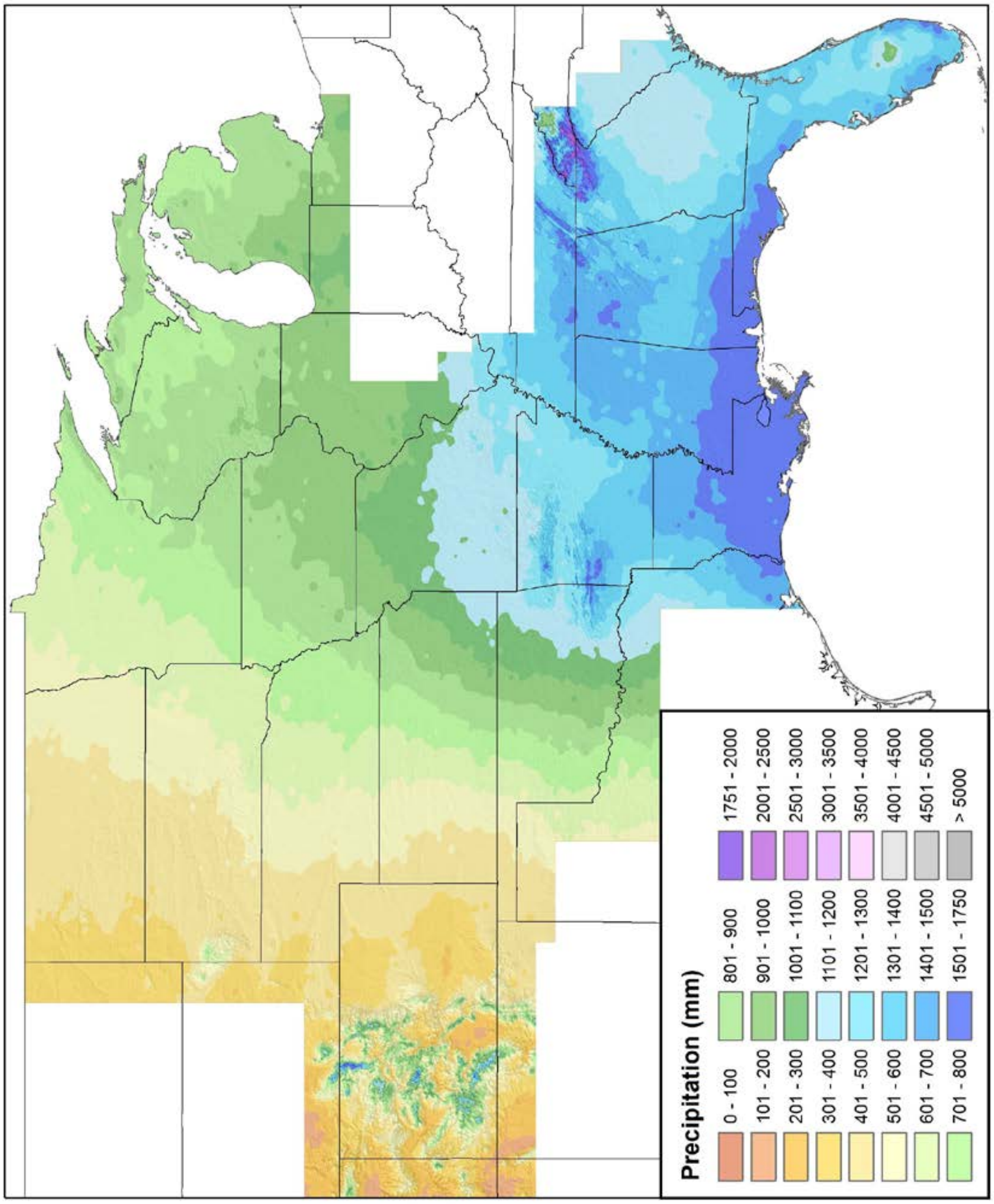

Figure 1. PRISM 1981-2010 mean annual precipitation (MAP) grid for the MWSE region.

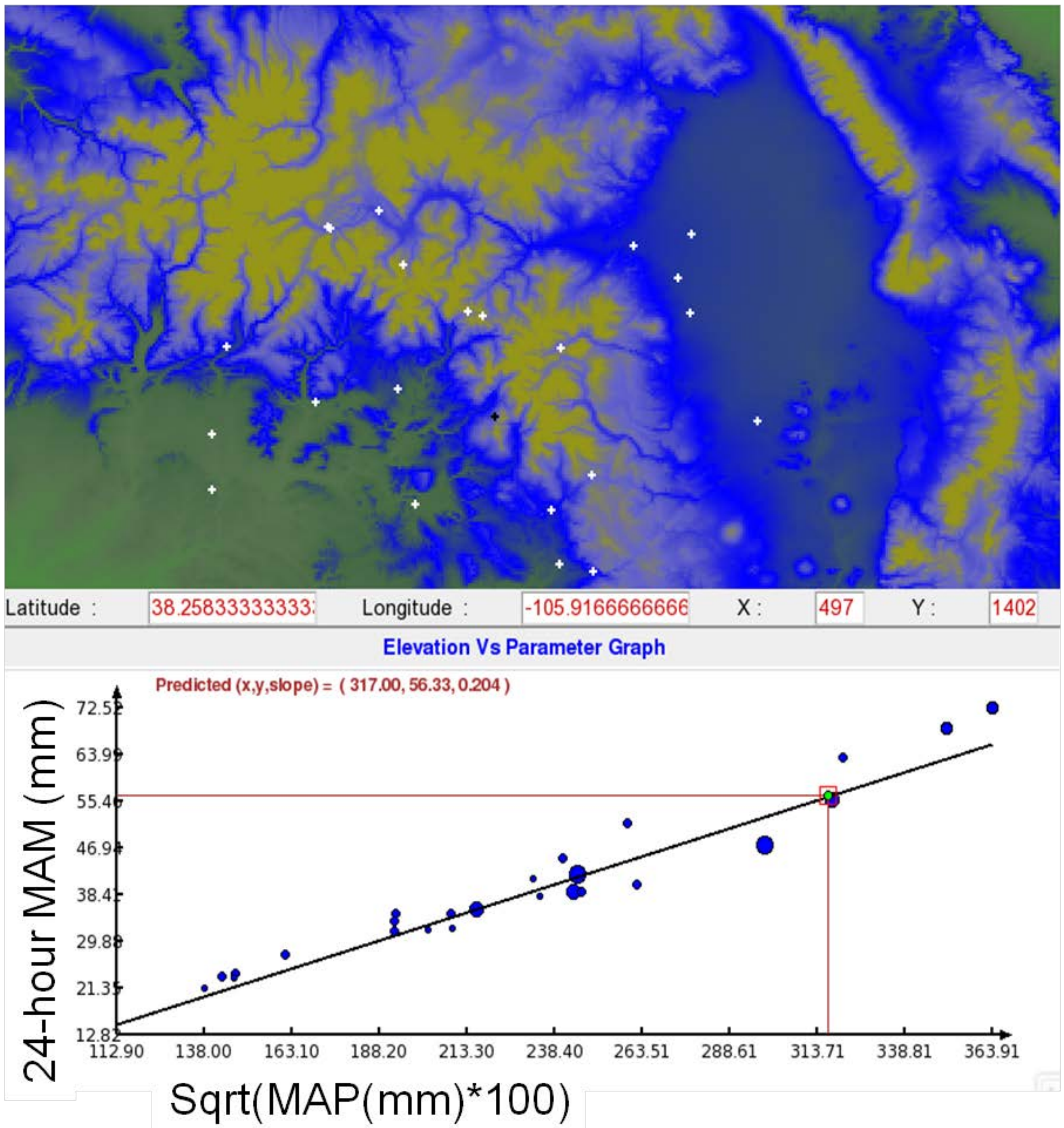

Figure 2. PRISM GUI snapshot of the moving-window weighted regression between the square root of mean annual precipitation and 24-hour mean annual maximum precipitation (MAM) in south-central Colorado.

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Appendix A.4 Peer review comments and responses

A peer review of preliminary results for the Volume 9 precipitation frequency project was carried out during a five week period starting on October 15, 2012. The request for review was sent via email to the over 700 members of the HDSC list-server from all over the United States and other interested parties. Potential reviewers were asked to evaluate the reasonableness of point precipitation frequency estimates as well as their spatial patterns. The review included the following items:

a. Metadata for stations whose data were used to prepare mean annual maximum precipitation maps and/or in precipitation frequency analysis. The table included information on station name, state, source of data, assigned station ID, latitude, longitude, elevation, and period of record. It also showed if the station was merged with another station, if the station was co-located with another station with a different ID, and if metadata at the station were changed. (Station IDs were assigned by HDSC and do not match station IDs assigned by the agency that provided the data, except for National Climatic Data Center.)

b. Metadata for stations whose data were collected, but not used in the analysis. The table contained metadata for stations that were examined, but not used, with brief comments on why the data were not used. Generally, stations were not used either because there was another station with a longer period of record nearby, station data were assessed as not reliable for this specific purpose, or the station's period of record was not long enough and it was not a candidate for merging with any nearby station.

c. At-station depth-duration-frequency (DDF) curves for 60-minute to 10-day durations and for 2-year to 100-year ARIs.

d. Maps of spatially-interpolated estimates of mean annual maxima for 60-minute, 24-hour and 10-day durations.

e. Maps of spatially-interpolated precipitation frequency estimates for 60-minute, 24-hour and 10-day durations and for 2-year and 100-year average recurrence intervals (ARIs).

Comments were received from eight individuals or offices and agencies including Water Management District Offices and Weather Forecast Offices. All reviewers' comments and HDSC's responses (in red) are shown below. The comments and their respective HDSC responses have been separated into four categories:

1. Station metadata
2. At-station precipitation frequency estimates
3. Precipitation frequency grids and cartographic maps
4. Miscellaneous.

1. Station metadata

1.1 [Alabama, Florida, Mississippi] After reviewing the Metadata spreadsheet I would suggest the following lat/lon updates for the sites listed. The lat/lon data provided are from the most recent B-44 forms on file at NCDC.
Claiborne Lock and Dam, AL..................31.6147/-87.5503
Dauphin Island, AL..................................30.2505/-88.0775
Evergreen, AL...31.4449/-86.9532

Greenville, AL..31.7901/-86.6087
Highland Home, AL................................31.8814/-86.2503.....Also note that Highland Home closed in May 2012 and was reestablished in July 2012 as Highland Home #2 at 31.9477/-86.3131
Buckatunna 1NE, MS...............................31.5476/-88.5172
Wiggins, MS..30.8713/-89.1215
Wiggins Ranger Station, MS...................30.8502/-89.1571
Niceville, FL..30.5316/-86.4928

We implemented recommended coordinates for: Claiborne Lock and Dam, AL (01-1690); Dauphin Island, AL (01-2172); Evergreen, AL (01-2758); Greenville, AL (01-3519); Highland Home, AL (01-3816); Buckatunna 1NE, MS (22-1174); Wiggins, MS (22-9639); Niceville, FL (08-6240). Wiggins Ranger Station (22-9648 which had hourly and 15-minute data) was co-located with Wiggins (22-9639 which had daily data) and is plotted at that location in the final output.

1.2 [Florida] Period of Record: The SJRWMD used the longest period of record available for a primary station between 1914 and 2008. We merged together stations from nearby (including some SJRWMD rain gauges) to develop the longest period of record possible. Only stations with greater than 50 years of record were used. It appears that NOAA/NWS merged some sites together but it was difficult to determine from the station metadata. The station period of records listed in the NOAA/NWS station metadata had wide variation in start and end dates when, for example, the currently active stations would be expected to have the same end date. Different periods of record for individual stations can influence an analysis. Current NOAA/NWS documentation states that a weighting between stations was used to compare different periods of records, but the actual weighting process was not described.

For the analysis, we collected data from various sources, so, the currently active stations from different data providers may have different end dates. Since precipitation frequency analysis is a statistical approach, sample size is an important factor to consider. Statistics calculated from a small sample could be greatly skewed by a single estimate. That is especially true for higher order moments, and consequently, estimates for more rare frequencies (50-year ARI or more). Therefore, we strived to have longer records at stations by merging nearby stations and also grouped stations using a regional approach when computing frequency estimates. During our initial station screening we looked at nearby stations (usually within 3 miles, but up to 5 miles in flat terrain, with consideration to distance from coast, climatological characteristics of extreme precipitation, etc.) to see if they could be merged to form a single longer record. Generally, for record length, 30 years of data (after merging) is considered an acceptable minimum for a meaningful statistical analysis. For sub-daily durations, we lowered that threshold to 20 years to retain as many stations as possible. We also increased sample size, and ultimately the reliability of the estimates, by using a regional frequency analysis approach, where, except for the first L-moment which is station specific, moments are regional estimates obtained by averaging corresponding station-specific estimates from all stations in a region, weighted by record lengths. A complete description of the NOAA Atlas 14 methods is available in Section 4.

1.3 [Florida] Data Records: SJRWMD used the published data for each individual station and infilling missing data from the average of the three nearest stations. We did not attempt to do quality assurance of the outliers. NOAA/NWS states that a quality assurance (verification) process was used to identify outliers and remove if necessary. NOAA/NWS does not mention anything about infilling missing records so assume this was not done.

We do not infill missing data at a station unless it was a significant amount recorded at co-located station. Estimating missing values from surrounding stations provides added weight to those surrounding stations without providing additional raw information for the statistical analysis. However, we carefully investigated AMS data at both high and low extremities, as they can considerably affect precipitation frequency estimates. We corrected or removed outliers from the AMS if due to measurement errors (see Section 4.5 for more details). Additionally, since we use a regional frequency analysis approach, if a given station missed a particular event, it would be included in the analysis as part of AMS at nearby station(s) that captured the event, and therefore would contribute to target station's estimates.

2. At-station precipitation frequency estimates

2.1 [Florida] Estimation of 24-hour Events from Daily Data: SJRWMD used a method of adding 60 percent of the largest surrounding daily precipitation to a daily maximum total to determine the 24-hour event total (Hershfield, 1963). NOAA/NWS used values from a table in the July quarterly report to multiply by the daily maximum total to determine the 24-hourly event total. This was 1.12 for the 24-hour event. We developed an analysis based on using hourly data for the Orlando International Airport gauge to calculate observation day and running 24-hour storm totals and aligning the peak values from each dataset. This analysis showed that the 1.12 factor was a good model to predict the 24-hour rain total from the observation day total (Figure 1 and Figure 2). Hershfield (1963) used 50 percent of the maximum adjacent daily precipitation, but an early analysis by SJRWMD indicated that 60 percent is a better value for Northeast Florida. We redid this analysis and it is indeed the case, at least for the Orlando International Airport gauge. The modified Hershfield (1963) model used by SJRWMD is a better predictor of 24-hour events from observation day values (Figure 3) than the 1.12 factor approach. See attached spreadsheets, 'Orlando_obsday_vs_24hr_storm.xlsx' and 'Orlando_maxadj_vs_24hr_storm.xlsx' for additional detail.

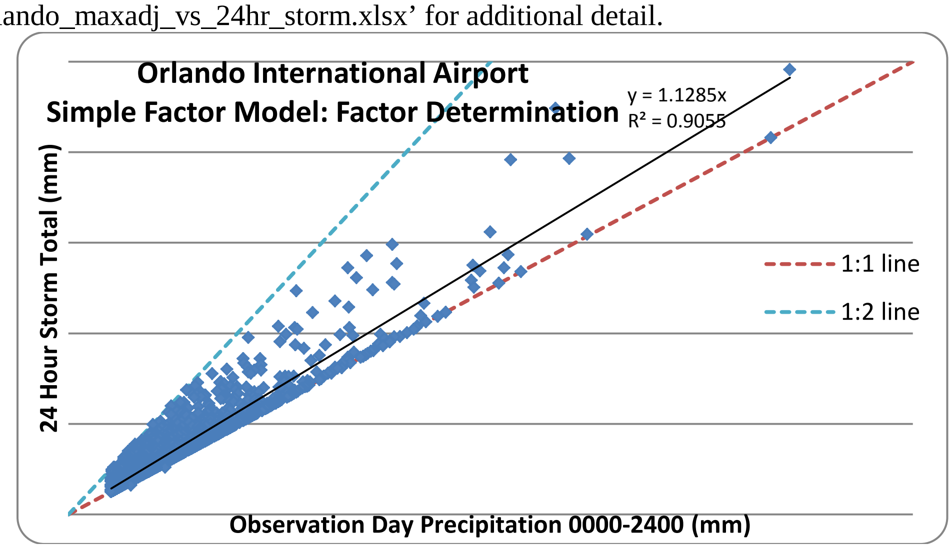

Figure 1: Simple factor determination to estimate 24-hour storm totals from observation day totals.

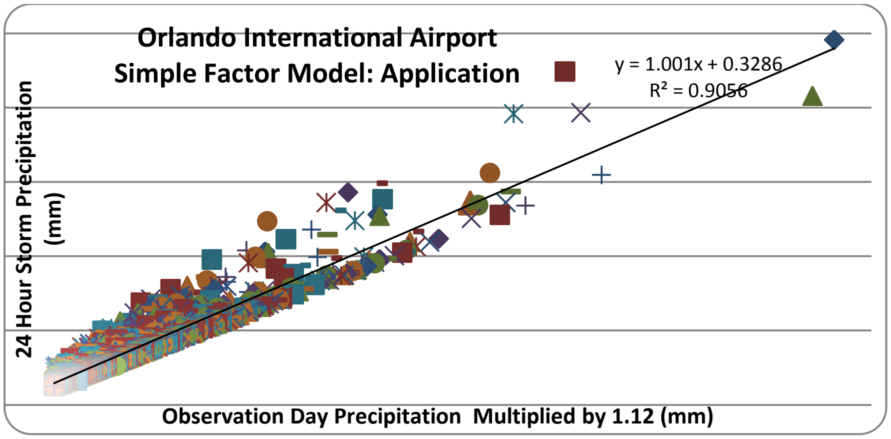

Figure 2: Application of 1.12 factor to estimate 24-hour storm totals from observation day totals.

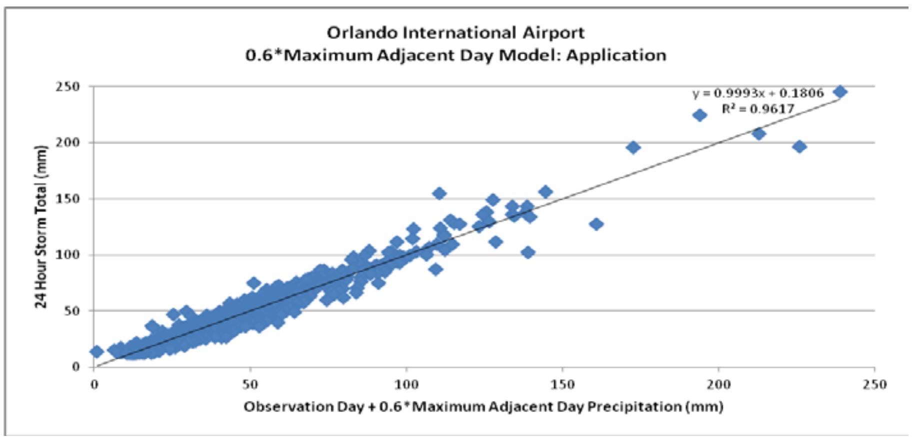

Figure 3: Application of adding 0.6 of maximum adjacent observation day value to estimate 24-hour storm totals from observation day totals.

Based on our investigation, the suggested approach worked well for some stations, but there were about the same number of cases where it performed worse than our current approach. Also, we looked at spatial patterns in the at-station 24-hour to 1-day average ratios and did not see any spatial coherence in northeast Florida or in the entire project area. Therefore, we decided to use one average factor for the project area.

2.2 [Florida] Frequency Analysis: The SJRWMD used a Log Pierson Type III Distribution for the 2-year, 5-year, 10-year, and most 25-year storm events. A manual adjustment using Weibull plotting positions was used to evaluate the 200-year, 100-year, 50-year, and some 25-year storm events since Log Pierson distributions often crossed during these higher storm events. NOAA/NWS used a Generalized Extreme Value Distribution.
We tested seven distributions (3-parameter Generalized Extreme Value - GEV, Generalized Normal, Generalized Pareto, Generalized Logistic and Pearson Type III distributions; 4-parameter Kappa distribution; and 5-parameter Wakeby distribution) using the Hosking and Wallis test based on L-moment statistics (for 3-parameter distributions), Kolmogorov-Smirnov test and χ2-test. We tested across all durations from 15-minute to 60-day. We also inspected

probability plots of all selected distributions for three base durations (1-hour, 1day and 10-day). Based on the results, the GEV distribution provided an acceptable fit more times than any other distribution across all durations. Also, GEV is a distribution generally recommended for analysis of extreme events. For consistency, we used the same distribution for all durations and frequencies. Please see Section 4.6.3 for more information.

2.3 [Florida] Regionalization: For consistency, the SJRWMD looked at surrounding stations, however this was primarily when looking at large storm events. The evaluation was to establish how much weight to put on outliers and between coastal stations. NOAA/NWS used a 10 station regionalization analysis to evaluate nearby stations. A better regionalization approach in Florida would be to group stations according to distance from the coast rather than simple proximity to each other. It is not clear from the available NOAA/NWS documentation exactly how the 10 stations were chosen.
The regionalization process is described fully in Section 4.6.2. We began by grouping the target station with the nearest 10 stations, but then stations were added to or removed from the target station's region based on examination of their distance, elevation differences, inspection of their locations with respect to the coast, and assessment of similarities/ dissimilarities in the progression of relevant L-moment statistics across durations compared with other stations in the region. We also strived to maintain an acceptable amount of daily and hourly data years in each region. Based on your comment we checked some regions in Florida particularly along the coast to ensure proper regionalization.

2.4 [Florida] Why do the NOAA/NWS 2-year storm events have a much better correlation to the SJRWMD's Mean Annual Maximum event than the SJRWMD 2-year storm event? This could be explained by the different observation total to storm total models used, where for smaller storm events it is less likely that the maximum adjacent model would alter the daily value, whereas the factor model applies regardless of the adjacent values.
The most likely reason for this difference is that, in the peer review, we presented estimates for the 2-year average recurrence interval, which means that these are PDS-based results (AMS-based results are presented as annual exceedance probabilities). PDS-based precipitation frequency estimates were calculated indirectly from the Langbein's formula that transforms a PDS-based average recurrence interval (ARI) to an annual exceedance probability (AEP). PDS-based 2-year estimates are approximately equal to the 2.54-year AMS-based estimates. Please see Section 4.1 for more details.

2.5 [Florida] To review the NOAA/NWS precipitation frequency analysis we initially compared the Depth Duration Frequency (DDF) curves to our updated analysis [based on methodologies from Technical Publications SJ-86-3 (SJRWMD, 1986a) and SJ88-3 (SJRWMD, 1988)] for stations which were analyzed in common. The spreadsheet with this comparison is 'NOAA_Rain_Frequency_Comparisons_Final.xlsx' and is attached to this e-mail. The numbers used for the NOAA/NWS analysis come from approximating precipitation from the NOAA/NWS DDF curves. These may differ slightly from the actual numbers used to develop these curves. In general we found the following differences:
1. The NOAA/NWS 2-year event data for both the 24-hour and 10 day storm events were 0.4 and 0.6 inches higher respectively than for the SJRWMD analysis. The NOAA/NWS 2-year event matched much better with what we consider the Mean Annual Maximum precipitation event. The SJRWMD calculates the Mean Annual Maximum precipitation event by averaging the annual maximum precipitation of that storm length for the period of record at a rainfall

station. An analysis by SJRWMD staff indicated that the Mean Annual Maximum precipitation event approximates the 2.33 frequency precipitation event.
2. The largest average differences occurred for the 100-year 24 hour storm event. The NOAA/NWS analysis average was 0.9 inches lower than the SJRWMD analysis but these differences varied widely between individual stations. Some of these large differences appear regionally along the coastal Northeast Florida from Fernandina Beach to St. Augustine.
3. For the 100-year, 10 day storm event the NOAA/NWS analysis average difference was 0.5 inches lower than the SJRWMD analysis. The differences between individual stations had an even wider variation than for the 100-year, 24 hour storm event.
For the first comment, please see our response to comment 2.4 regarding the 2-year estimates. For the 24-hour and 10-day 100-year estimates, we investigated cases with the largest differences between our peer reviewed estimates and the SJRWMD estimates. Since the peer review, we re-evaluated the regionalization to ensure consistency between nearby stations, particularly along the coast, and to ensure that nearby stations with high maximum events were included as appropriate. As a result, overall patterns improved and some 24-hour 100-year estimates increased. For example, the estimate at Bithlo (08-1565) increased from 9.9" to 11.6", Daytona Beach (08-2150) estimate increased from 11.3" to 12.5", and St. Augustine (08-7826) estimate increased from 10.8" to 12.4". Similar changes were seen at 10-day, with Melbourne (08-5612) increasing from 16.7" to 17.6" and St. Augustine from 17.2" to 18.6", for example.
However, there are still locations where estimates from two projects will be considerably different. For example, SJRWMD 24-hour 100-year estimates for Jacksonville Airport (08-4358) and Beach (08-4366), which are only separated by approximately 23 miles, are 11.0" and 15.8" respectively (in contrast to our estimates of 12.2" and 12.6" respectively). We could not find any justification in the data for such significant differences. Our data show that these two stations have very similar AMS.

2.6 Is there additional documentation from NOAA/NWS that would help the SJRWMD staff understand the differences outlined earlier?
1. Need a description of how NOAA/NWS evaluated stations with different period of records and used them to develop consistent DDF curves for each station.
2. Need to know what data NOAA/NWS removed or modified and why they made these decisions for each station.
3. What stations in Northeast Florida does NOAA/NWS have grouped for their regionalization technique? Do these regions adequately represent differences that often occur for coastal stations compared to inland stations in Northeast Florida?
Full descriptions of our methods are provided in the accompanying documentation. However, we'll briefly address each concern here.
1. Please see our response to comment 1.2.
2. We quality controlled low and high outliers in the AMS data. High outliers were only removed if they could be proven erroneous through inspection of nearby data and published data records. Low outliers, which usually occurred in years with missing or accumulated data, were typically removed from the data set. We do not provide the details of this analysis for each station, but we do provide the final quality-controlled AMS data through links on the PFDS web page.
3. We have ensured that coastal stations were grouped together to properly reflect the coastal influence relative to inland stations.

2.7 [Florida] Evaluation of the Mean Annual Maximum between agencies would indicate differences in the raw data used at each station. Included in the 'NOAA_Rain_Frequency_Comparisons_Final.xlsx' spreadsheet in columns 'C' and 'U' on the 'Data' tab are the period of record maximum events from SJRWMD data for 24-Hr storms and 10-day storms at each station.
Since SJRWMD infilled missing data by using an average of the three closest stations, in addition to using the published data, we expect to see some differences in the raw data for stations where any infilling was done. We checked the annual maxima series for stations where differences were significant and noticed some inconsistencies. For example, at Clermont (08-1641) the highest 24-hour annual maximum in the SJRWMD dataset is 14.8" versus our 8.2" (6.6" difference). However, there was not enough information to ascertain the reason for this difference, particularly since this station is only missing 1% of its data in our record. At Federal Point (08-2915), there is also a large difference of 4.7", where we have 12.6" and SJRWMD has 7.9". At St. Augustine, the largest 24-hour annual maximum, based on our data, is 12.6" compared to SJRWMD's 14.3". This station has a long reliable record of over 100 years of data and a review of the published NCDC data confirmed the observation at this station. We had no reason to question the quality of the NCDC data and did not make additional edits.

3. Precipitation frequency grids and cartographic maps

3.1 Regarding the display of the final data (isopluvials) and areas where interpolation may have to be used, do you have any recommendations?
In the final deliverable, our estimates have been interpolated to grids with a spatial resolution of 30 arc-seconds so that values do not need to be interpolated from isopluvials (contour lines) on cartographic maps. We recommend using the Precipitation Frequency Data Server (PFDS) for obtaining estimates for a location rather than the cartographic maps. This can be done by clicking on a location on a map-based interface, entering coordinates, selecting a station from the drop-down list, or using the high resolution grids of precipitation frequency estimates provided there.

3.2 [Florida] I have reviewed the rainfall data provided on the NOAA website and from spreadsheets that were furnished to the Southwest Florida Water Management District. Comparing the NOAA information to that previously generated by University of Central Florida who used only hourly and data, there are areas of significantly higher rainfall depths for all durations and return frequencies for the NOAA station data . Based on my review of the NCDC data, areas where significant departures between NOAA and UCF results appear to occur in areas where significant one-hour rainfall data was missing or where stations were moved from one location to another with only short-term record available. I agree that the infilling of the data is necessary to ensure that the rainfall is not under predicted.
However, from a water management perspective where the rainfall depths are used for design, it will be important that the procedures used for infilling of missing data or extending magnitude rainfall be sufficiently addressed. Significant changes in the design storm depths will occur if the NOAA rainfall data is adopted. If you have any documentation on the record infilling or record extension that would be most helpful.
We did not infill missing data at a station unless it was a significant amount recorded at co-located station. However, we carefully investigated AMS data at both high and low extremities, as they can considerably affect precipitation frequency estimate. We corrected or removed

outliers from the AMS if due to measurement errors. During our initial station screening we also looked at nearby stations (usually within 3 miles, with consideration to elevation differences, climatological characteristics of extreme precipitation, etc.) to see if they could be merged to form a single longer record. We explain the procedures used to quality control data and resulting estimates in Section 4. Differences between the UCF and NOAA Atlas 14 estimates may be caused by a combination of factors such as differences in approach and in the data used. We used regional approach that pools the information from all stations that were assigned to a target station's region to compute its estimates (see Section 4.6) versus the single-station approach used in the UCF study. In addition to hourly stations, as used in the UCF study, we used daily stations that typically had much longer periods of record.

3.3 [Florida] I have extensively reviewed the one-hour data provided by the NCDC whereby there are significant missing data which when analyzed seems to bias the rainfall depths down at certain stations. For example the Lakeland gauge missed rainfall for several hurricanes. Based on the California Map Atlas procedures it appeared that correlations between stations and other station data was used to extend, merge or ensure complete records at a location. I have no issue with the procedures NOAA has implemented as long as they can be statistically and scientifically justified. The issue is more on the side of the District in justifying the increases in rainfall depths in Manatee, Sarasota, and Charlotte Counties along the coast. From the data it appears that the NOAA 100-year, 24-hour rainfall depths will increase between 1-2.5 inches for these areas which can have a pronounced effects on project design and FEMA floodplains in these areas. It is more the political implications of adopting new rainfall depths. Just want to make sure that the increases can be scientifically justified and documented, which from my perspective they can be.
The differences between the new NA14 estimates and other estimates could be attributed to a number of factors, including, the difference in the number of stations used in analysis and their periods of record, quality control and data derivation procedures, and differences in frequency analysis approaches and interpolation techniques. We strive to use the latest techniques and the most complete data available. Section 7 provides a comparison of the updated estimates with previous NWS publications.

4. Miscellaneous

4.1 Consider making the hypothetical rainfall grids available for download.
Final precipitation frequency grids for all durations and frequencies are available for download from the Precipitation Frequency Data Server (PFDS).

4.2 I see you offer GIS data download options. Do you have plans to offer services of the data, so that they might be used in various displays? Not requiring me to download, process, and create my own services just to show this data side-by-side other relevant data (e.g. UDSM, forecast rainfall) would be tremendous.
We do not have current plans to offer services of the data other than what is currently provided via the PFDS. We are open to suggestions for improvement of all aspects of our product.

4.3 I would very much like to have access (download) to the draft Vol 8 and 9 data, but I don't see any download options for the Vol 8 and 9 data I presume is fairly far along in maturity. Would it be possible for you to give me access to, say, the Arkansas data, if not the entire Southeast, to create a demo service, so that I might work it into a display? What I have planned is a ESRI

storytelling interface that would show, on one side, the record rainfall amounts for a period, and, on the other side, show a forecast rainfall display. Using the Swipe bar, one could easily assess if a record is forecast to be exceeded, provided I can time-match the record data with the forecast data length of time. In this example (slow to load, I'm guessing), I compare the current US Drought Monitor status, with HPC's 5-day forecast rainfall guidance: http://www.srh.noaa.gov/rtimages/srh/stsd/Jack/swipe/DroughtRainfall.html.
This is a great example of a use of the product we provide; we'll be happy to assist as we can. The gridded data are now available for download from PFDS.

4.4 I see, for the present state's data you offer from 5-minute to 60-day data, including 3-, 4-, and 7-day data, but you skip a 5-day duration. Might you consider 5-day durations, so that one could easily compare that data with HPC's readily-available 5-day QPF guidance, which has been made available to create WMS layers from GIS data (unfortunately, they don't have their own geospatial services of their data, but also offer shapefiles from which we have created WMS services). http://www.hpc.ncep.noaa.gov/qpf/p120i12.gif
We are currently not able to accommodate this request but may be able to add the 5-day duration in the future.

4.5 Will there be a GIS tool developed that would allow the overlay of watershed boundary that would result in computation of an "average" rainfall over the basin or even an exact representation that could be imported into a rainfall-runoff model or other analysis tool? I think that could be done with the proper spatial query as long as the map data were digital and not simply an image, similar to what you can do with gridded or non-gridded DEM's. I'm not sure exactly how this would work, but it would be useful.
We have been looking to provide something similar to what you are requesting and may be able to add such functionality in the near future.

4.6 It would be very beneficial if NOAA would prepare and provide a single document describing the methodology and approach. Currently, readers have to search for the information in numerous progress reports.
We create a single document describing the data and methodology for each Volume of NOAA Atlas 14. The document is available online (http://www.nws.noaa.gov/oh/hdsc/currentpf.htm).

4.7 It would be helpful if NOAA would provide a Webinar for users of the new Atlas 14 to addressed what has changed (and if possible an explanation) and how to access and use the results. I believe that organizations who contributed financially to your efforts to complete the new Atlas 14 for this region would appreciate some sort of outreach.
We agree and are looking into setting up webinars (with the American Society of Civil Engineers) for this purpose. Please join our list server to receive any future announcements regarding this (see http://www.nws.noaa.gov/ohd/hdsc/listserver.html).

Appendix A.5 Temporal distributions of heavy precipitation

1. Introduction

Temporal distributions of precipitation amounts exceeding precipitation frequency estimates for the 2-year recurrence interval are provided for 6-, 12-, 24-, and 96-hour durations. The temporal distributions are expressed in probability terms as cumulative percentages of precipitation totals at various time steps. To provide detailed information on the varying temporal distributions, separate temporal distributions were also derived for four precipitation cases defined by the duration quartile in which the greatest percentage of the total precipitation occurred.

Stations were grouped into two climate regions, shown in Figure 4.1.1, and separate temporal distributions were derived for each climate region. The Mississippi Valley region (region 1) also includes stations from the Mississippi Valley region (region 4) from NOAA Atlas 14 Volume 8 (see Figure 4.1.1 in Volume 8). Regions were delineated based on extreme precipitation characteristics expressed through 24-hour mean annual maximum (MAM) estimates, mean annual precipitation, elevation and latitude.

2. Methodology and results

The methodology used to produce the temporal distributions is similar to the one developed by Huff (1967) except in the definition of precipitation cases. In accordance with the way a precipitation case ("event") was defined for the precipitation frequency analysis, a precipitation case for the temporal distribution analysis was computed as the total accumulation over a specific duration (6-, 12-, 24-, or 96-hours). As a result, it may contain parts of one or more storms. Because of that, temporal distribution curves presented here may be different from corresponding temporal distribution curves obtained from the analysis of single storms. Also, precipitation cases for this project always start with precipitation but do not necessarily end with precipitation, resulting in potentially more front-loaded cases when compared with distributions derived from the single storm approach. Cases were selected from all events of a given duration that exceeded the 2-year average recurrence interval at each station. Table A.5.1 shows the total number of precipitation cases and number of cases in each quartile for each region and duration.

For each precipitation case, cumulative precipitation amounts were converted into percentages of the total precipitation amount at one hour time increments. All cases for a specific duration were then combined and probabilities of occurrence of precipitation totals were computed at each hour. The temporal distribution curves for nine deciles (10% to 90%) were smoothed using a linear programming method (Bonta and Rao, 1988) and plotted in the same graph. Figure A.5.1 shows, as an example, temporal distribution curves computed from all cases for the four selected durations for the Mississippi Valley region (region 1); time steps were converted into percentages of durations for easier comparison.

The cases were further divided into four categories by the quartile in which the greatest percentage of the total precipitation occurred. Table A.5.1 shows the numbers and proportion of precipitation cases used to derive the temporal distributions in each quartile. Unlike the cases of 12-, 24-, and 96-hour durations in which the number of data points can be equally divided by four, the cases of 6-hour duration contain only six data points and they cannot be evenly distributed into four quartiles. Therefore, in this analysis, for the 6-hour duration, the first quartile contains precipitation cases where the most precipitation occurred in the first hour, the second quartile contains precipitation cases where the most precipitation occurred in the second and third hours, the third quartile contains precipitation cases where the most precipitation occurred in the fourth hour, and the fourth quartile contains precipitation cases where the most precipitation occurred in the fifth and sixth hours. This uneven distribution affects the number of cases contained in each quartile for the 6-hour duration. Figures A.5.2 through A.5.5 show the Mississippi Valley region's temporal distribution curves for the four quartile cases for 6-hour, 12-hour, 24-hour and 96-hour durations, respectively.

Table A.5.1. Total number of precipitation cases and number (and percent) of cases in each quartile for selected durations for each climate region: Mississippi Valley region (1) and Southeast region (2). Region 1 in this volume includes stations from region 4 of Volume 8.

Duration	Region	All cases	First quartile cases	Second quartile cases	Third quartile cases	Fourth quartile cases
6-hour	1	9,142	3,050 (33%)	2,829 (31%)	2,087 (23%)	1,176 (13%)
	2	2,131	748 (35%)	698 (33%)	426 (20%)	259 (12%)
12-hour	1	9,631	3,519 (37%)	2,476 (26%)	2,203 (23%)	1,433 (15%)
	2	2,189	826 (38%)	550 (25%)	463 (21%)	350 (16%)
24-hour	1	9,325	3,316 (36%)	2,278 (24%)	2,171 (23%)	1,560 (17%)
	2	2,218	764 (34%)	476 (21%)	505 (23%)	473 (21%)
96-hour	1	8,908	3,696 (41%)	1,962 (22%)	1,653 (19%)	1,597 (18%)
	2	2,113	747 (35%)	504 (24%)	414 (20%)	448 (21%)

From the Precipitation Frequency Data Server, regional temporal distribution data are available in a tabular form for a selected location under the “Supplementary information” tab or through the temporal distribution web page (http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_temporal.html). For 6-, 12- and 24-hour durations, temporal distribution data are provided in 0.5-hour increments and for 96-hour duration in hourly increments.

3. Interpretation

Figure A.5.1 shows as an example the temporal distribution curves of all precipitation cases in the Mississippi Valley region for the 6-, 12-, 24-, and 96-hour durations. For these plots, time steps were converted into percentages of total durations for easier comparison. Figures A.5.2 through A.5.5 show temporal distribution curves for the first-, second-, third-, and fourth-quartile cases for 6-hour, 12-hour, 24-hour and 96-hour durations, respectively. First-quartile plots show temporal distribution curves for cases where the greatest percentage of the total precipitation fell during the first quarter of the duration (e.g., the first 3 hours of a 12-hour duration). The second, third, and fourth quartile plots are similarly for cases where the most precipitation fell in the second, third, or fourth quarter of the duration.

The temporal distribution curves represent averages of many cases and illustrate the temporal distribution patterns with 10% to 90% occurrence probabilities in 10% increments. For example, the 10% curve in any figure indicates that 10% of the corresponding precipitation cases had distributions that fell above and to the left of the curve. Similarly, 10% of the cases had temporal distribution falling to the right and below the 90% curve. The 50% curve represents the median temporal distribution.

The following is an example of how to interpret the results using the figure in the upper left panel of Figure A.5.4 for 24-hour first-quartile cases in the Mississippi Valley region.

- In 10% of the first-quartile cases, 50% of the total precipitation fell in the first 2 hours and 90% of the total precipitation fell by 5.6 hours.
- A median case of this type will drop half of the precipitation (50% on the y-axis) in approximately 5.1 hours.
- In 90% of the cases, 50% of the total precipitation fell by 10.1 hours and 90% of precipitation fell by 22.1 hours.

Temporal distribution curves are provided in order to show the range of possibilities. Care should be taken in the interpretation and use of temporal distribution curves. For example, the use of different temporal distribution data in hydrologic models may result in very different peak flow estimates. Therefore, they should be selected and used in a way to reflect users' objectives.

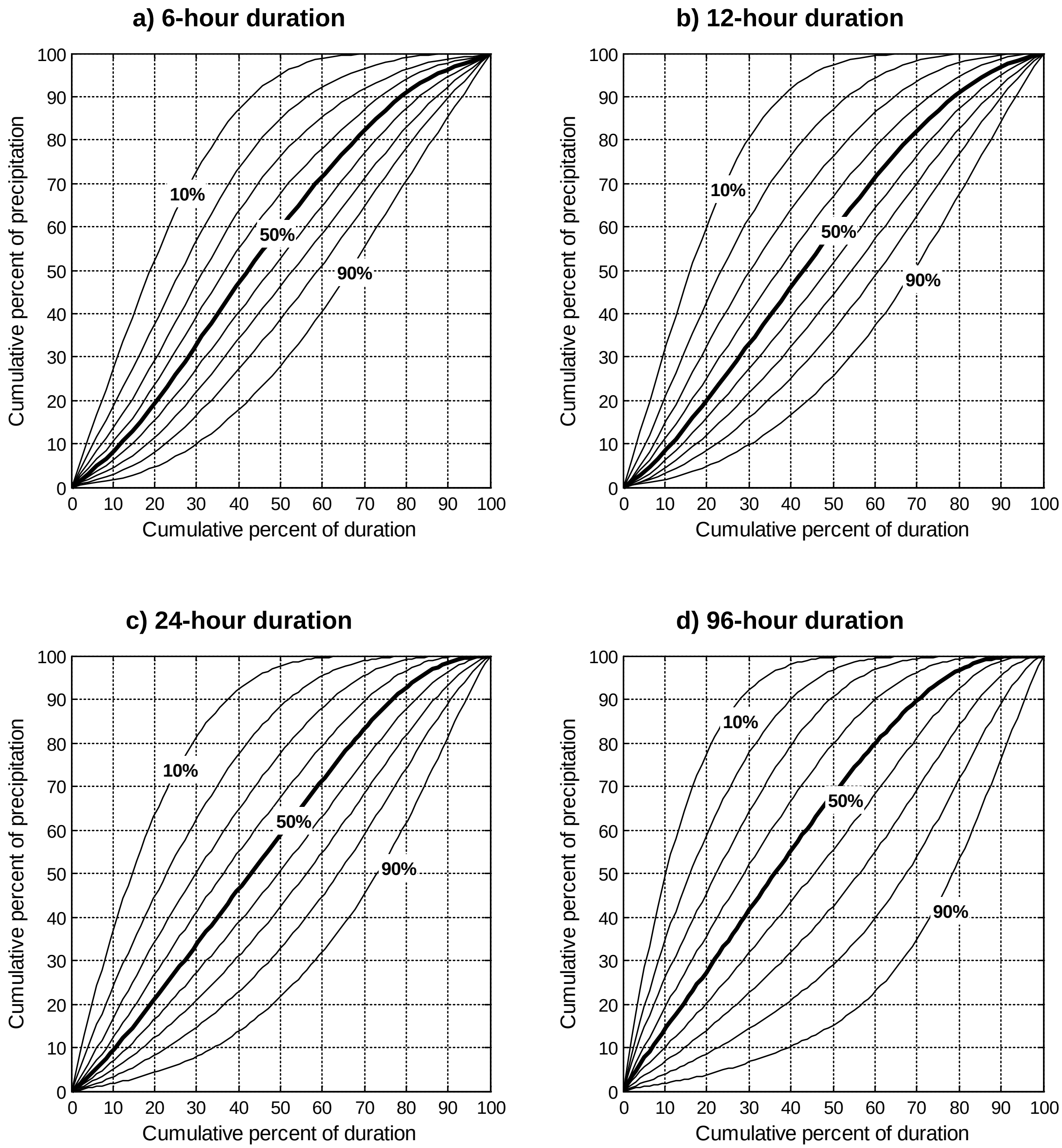

Figure A.5.1. Temporal distribution curves for the Mississippi Valley region (region 1) all cases for: a) 6-hour, b) 12-hour, c) 24-hour, and d) 96-hour durations.

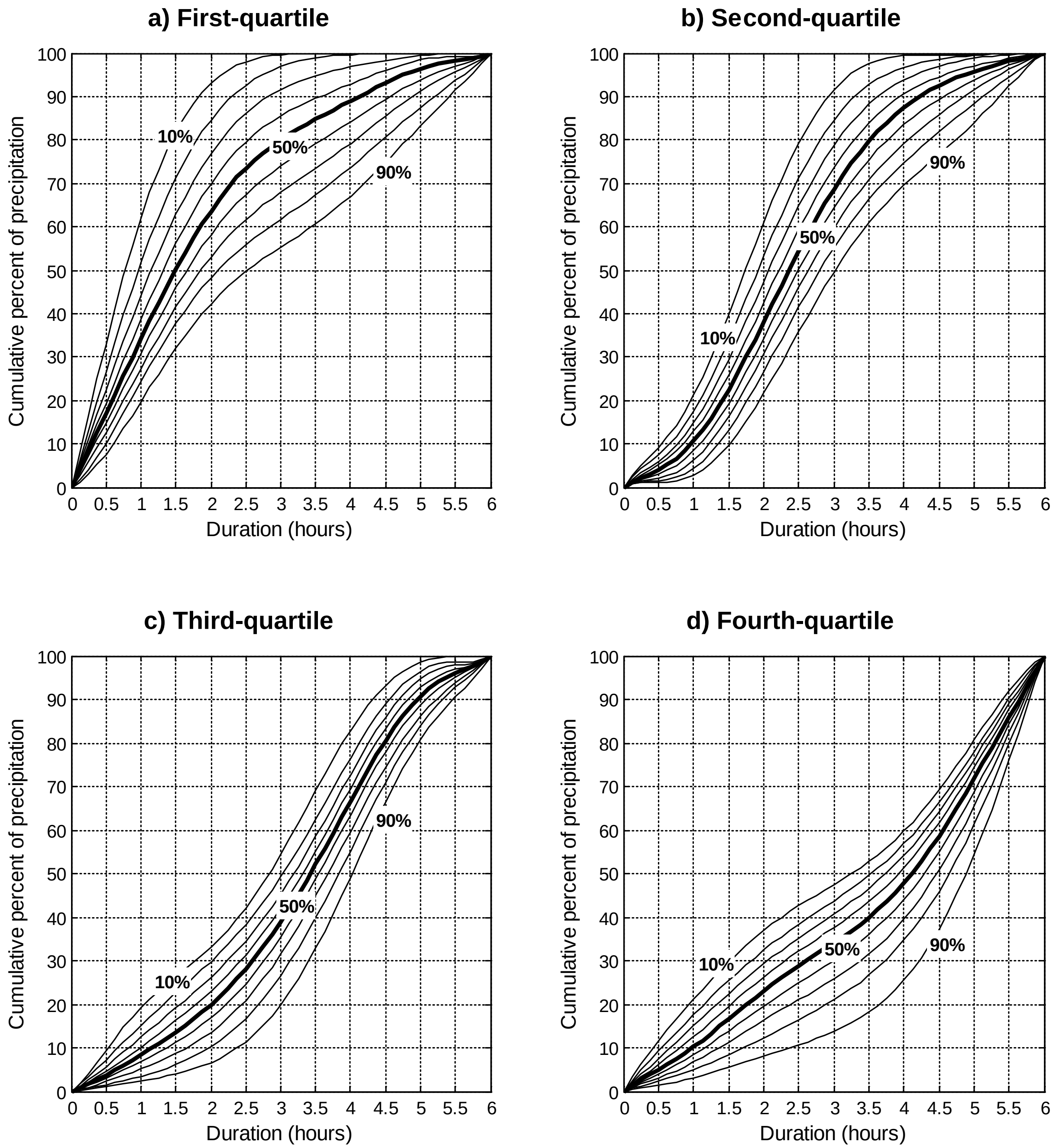

Figure A.5.2. 6-hour temporal distribution curves for the Mississippi Valley region (region 1)**:** a) first-quartile, b) second-quartile, c) third-quartile, and d) fourth-quartile cases.

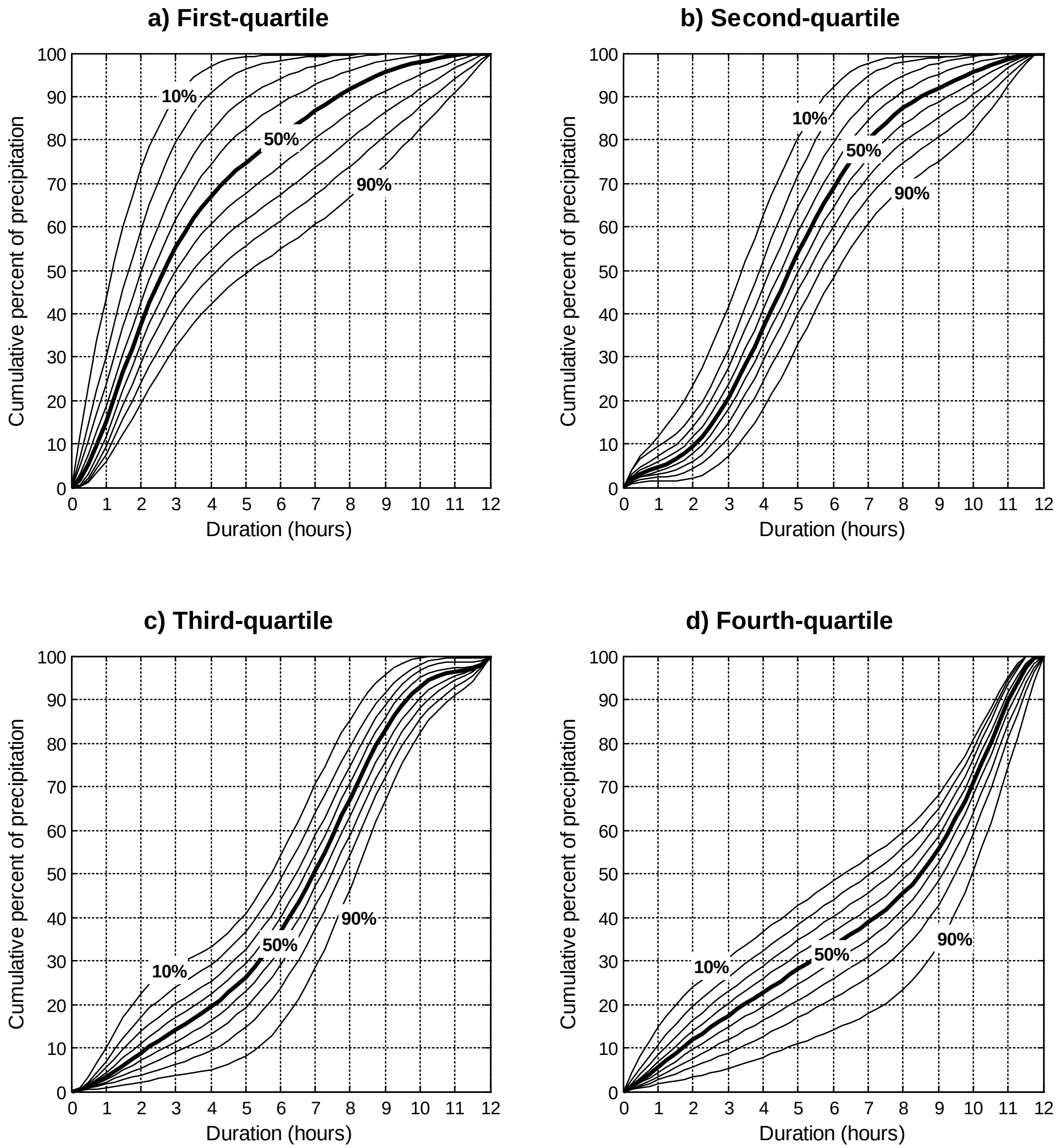

Figure A.5.3. 12-hour temporal distribution curves for the Mississippi Valley region (region 1): a) first-quartile, b) second-quartile, c) third-quartile, and d) fourth-quartile cases.

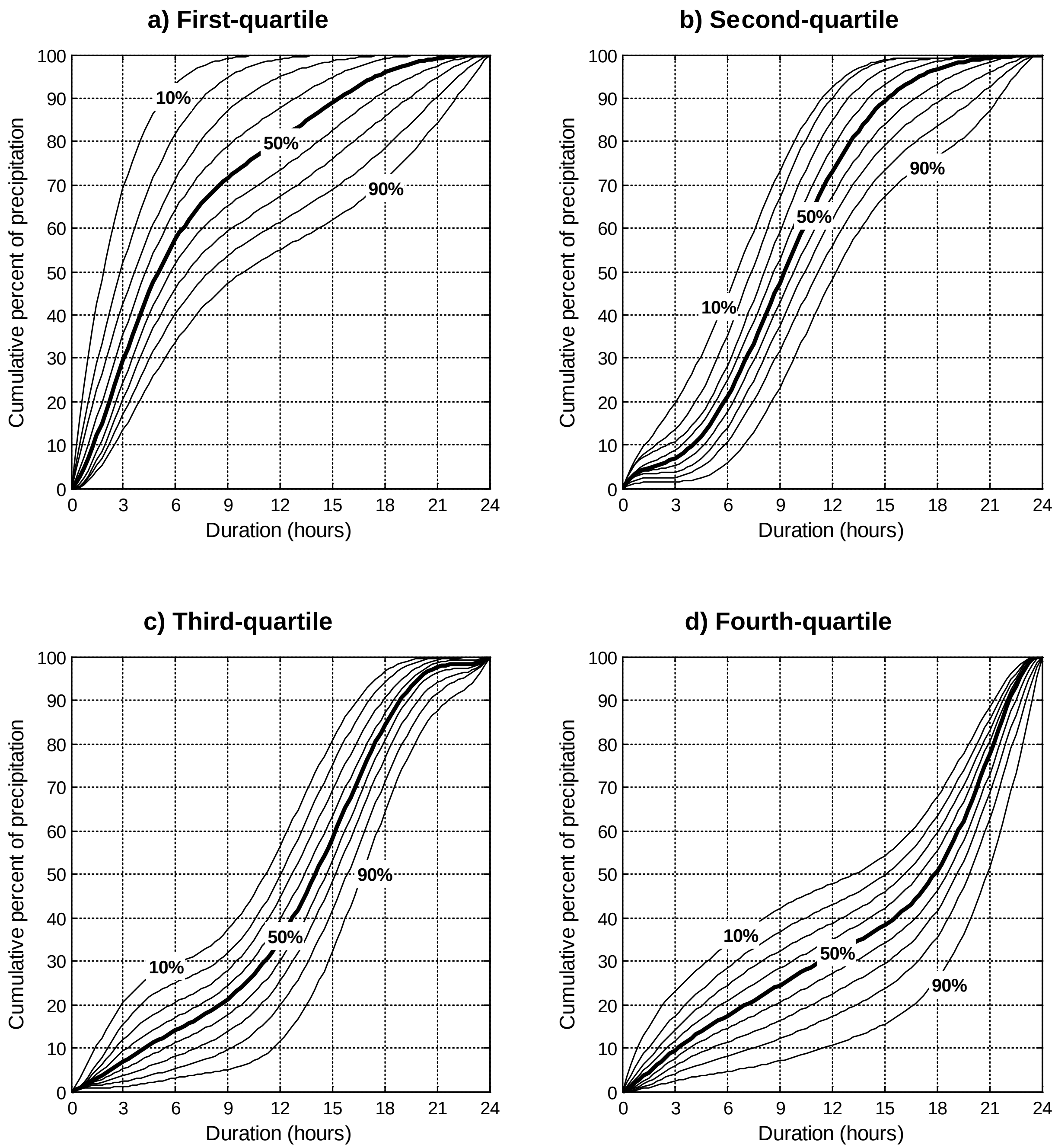

Figure A.5.4. 24-hour temporal distribution curves for the Mississippi Valley region (region 1): a) first-quartile, b) second-quartile, c) third-quartile, and d) fourth-quartile cases.

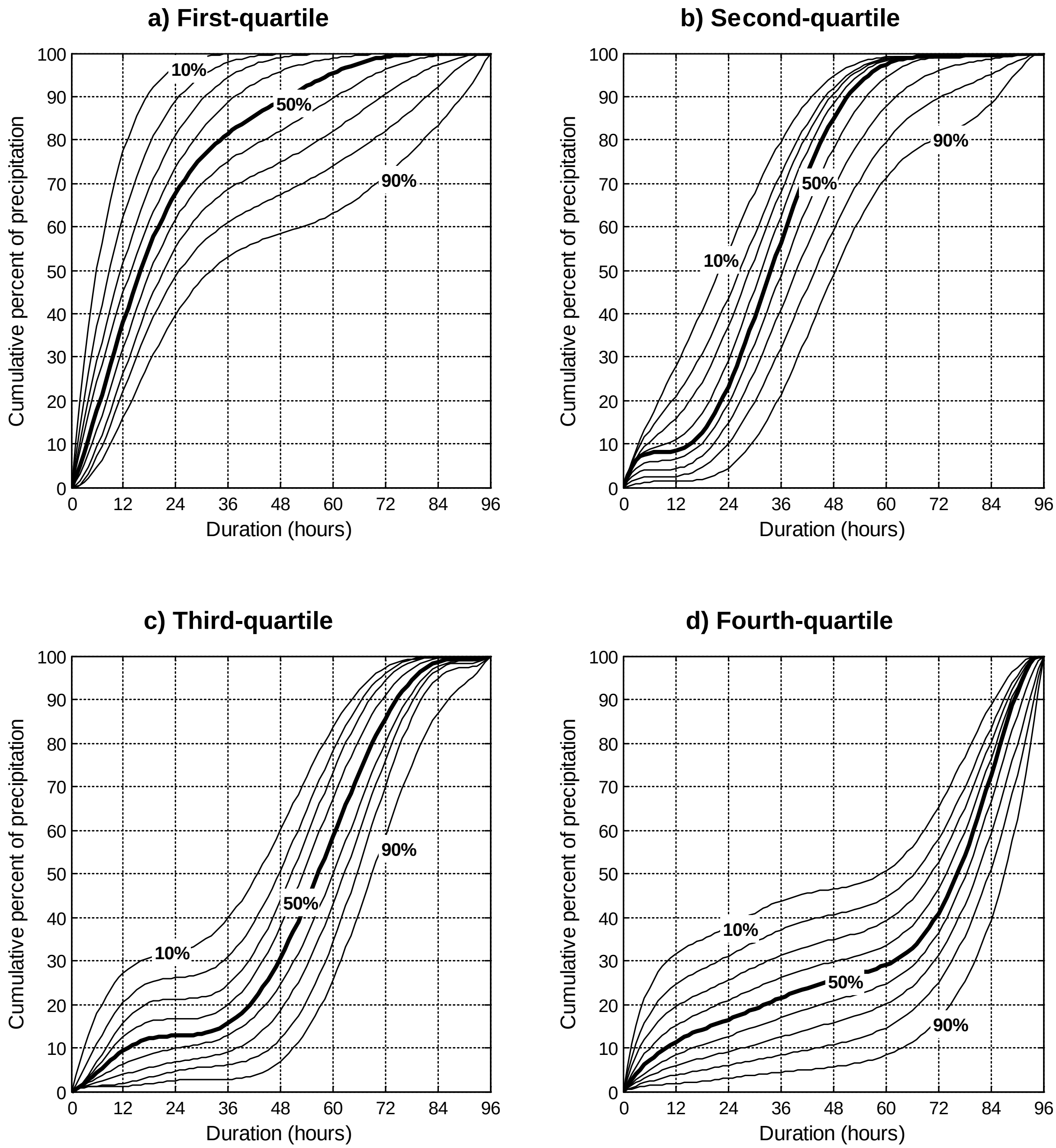

Figure A.5.5. 96-hour temporal distribution curves for the Mississippi Valley region (region 1): a) first-quartile b) second-quartile, c) third-quartile, and d) fourth-quartile cases.

Appendix A.6 Seasonality

1. Introduction

To portray the seasonality of extreme precipitation throughout the project area, annual maxima that exceeded precipitation frequency estimates (quantiles) with selected annual exceedance probabilities (AEPs) for chosen durations were examined for the two climate regions described in Section 4.1. Graphs showing the monthly variation of the exceedances for a region are provided for each location in the project area via the Precipitation Frequency Data Server (PFDS). For a selected location, seasonal exceedance graphs can be viewed by selecting "V. Seasonality analysis" of the "Supplementary information" tab on the output page.

2. Method

Separate seasonal exceedance graphs were created for the Mississippi Valley region and the Southeast region (regions 1 and 2, respectively) shown in Figure 4.1.1. Note that the Mississippi Valley region (region 1) also includes stations from the Mississippi Valley region (region 4) from NOAA Atlas 14 Volume 8 (see Figure 4.1.1 in Volume 8). They show the percentage of annual maxima for a given duration from all stations in a region that exceeded corresponding precipitation frequency estimates at selected AEP levels in each month. Results are provided for unconstrained 60-minute, 24-hour, 2-day, and 10-day durations and for AEPs of 1/2, 1/5, 1/10, 1/25, 1/50, and 1/100.

To prepare the graphs, first, the number of annual maxima exceeding the precipitation frequency estimate at a station for a given AEP was tabulated for each duration. Those numbers were then combined for all stations in a given region, sorted by month, normalized by the total number of data years in the region, and finally plotted via the PFDS.

3. Results

The exceedance graphs for a selected location (see an example for a location in the Mississippi Valley region in Figure A.6.1) indicate percent of annual maxima exceeding the quantiles with selected AEPs for various durations. The percentages are based on regional statistics. On average, 1% of annual maxima for a given duration in a year (i.e., the sum of percentages of all twelve months) are expected to exceed the 1/100 AEP quantile, 4% is expected to exceed the 1/25 AEP quantile, etc.

Note that seasonality graphs are not intended to be used to derive seasonal precipitation frequency estimates.

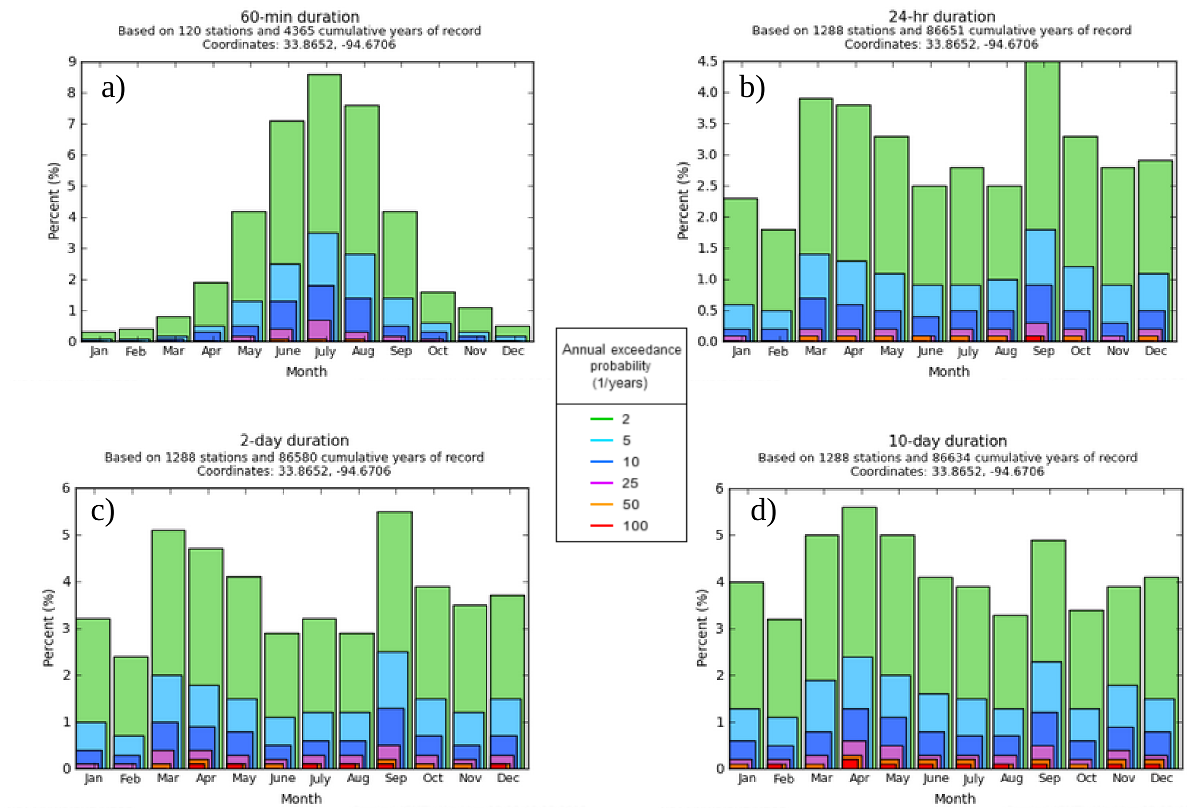

Figure A.6.1. Example of seasonal exceedance graphs for the Mississippi Valley climate region (region 1) for the: a) 60-minute, b) 24-hour, c) 2-day, and d) 10-day durations.

Glossary

(All definitions are given relative to precipitation frequency analyses in NOAA Atlas 14 Volume 9.)

ANNUAL EXCEEDANCE PROBABILITY (AEP) – The probability associated with exceeding a given amount in any given year once or more than once; the inverse of AEP provides a measure of the average time between years (and not events) in which a particular value is exceeded at least once; the term is associated with analysis of annual maximum series (see also AVERAGE RECCURENCE INTERVAL).

ANNUAL MAXIMUM SERIES (AMS) – Time series of the largest precipitation amounts in a continuous 12-month period (calendar or water year) for a specified duration at a given station.

ASCII GRID – Grid format with a 6-line header, which provides location and size of the grid and precedes the actual grid data. The grid is written as a series of rows, which contain one ASCII integer or floating point value per column in the grid. The first element of the grid corresponds to the upper-left corner of the grid.

AVERAGE RECURRENCE INTERVAL (ARI; a.k.a. RETURN PERIOD, AVERAGE RETURN PERIOD) – Average time between *cases of a particular precipitation magnitude* for a specified duration and at a given location; the term is associated with the analysis of partial duration series. However, ARI is frequently calculated as the inverse of AEP for the annual maximum series; in this case it represents the average period between years in which a given precipitation magnitude is exceeded at least once.

CONSTRAINED OBSERVATION – A precipitation measurement or observation bound by clock hours and occurring in regular intervals. This observation requires conversion to an unconstrained value (see UNCONSTRAINED OBSERVATION) because maximum 60-minute or 24-hour amounts seldom fall within a single hourly or daily observation period.

DATA YEARS – See RECORD LENGTH.

DEPTH-DURATION-FREQUENCY (DDF) CURVE – Graphical depiction of precipitation frequency estimates in terms of depth, duration and frequency (ARI or AEP).

DISTRIBUTION FUNCTION (CUMULATIVE DISTRIBUTION FUNCTION) – Mathematical description that completely describes frequency distribution of a random variable, here precipitation. Distribution functions commonly used to describe precipitation data include 3-parameter distributions such as Generalized Extreme Value (GEV), Generalized Normal, Generalized Pareto, Generalized Logistic and Pearson type III, the 4-parameter Kappa distribution, and the 5-parameter Wakeby distribution.

FEDERAL GEOGRAPHIC DATA COMMITTEE (FGDC) COMPLIANT METADATA – A document that describes the content, quality, condition, and other characteristics of data and follows the guidelines set forth by the FGDC; metadata is "data about data."

FREQUENCY – General term for specifying the average recurrence interval or annual exceedance probability associated with specific precipitation magnitude for a given duration.

FREQUENCY ANALYSIS – Process of derivation of a mathematical model that represents the relationship between precipitation magnitudes and their frequencies.

FREQUENCY ESTIMATE – Precipitation magnitude associated with specific average recurrence interval or annual exceedance probability for a given duration.

INTENSITY-DURATION-FREQUENCY (IDF) CURVE – Graphical depiction of precipitation frequency estimates in terms of intensity, duration and frequency.

INTERNAL CONSISTENCY – Term used to describe the required behavior of the precipitation frequency estimates from one duration to the next or from one frequency to the next. For instance, it is required that the 100-year 3-hour precipitation frequency estimates be greater than (or at least equal to) corresponding 100-year 2-hour estimates.

L-MOMENTS – L-moments are summary statistics for probability distributions and data samples. They are analogous to ordinary moments, providing measures of location, dispersion, skewness, kurtosis, and other aspects of the shape of probability distributions or data samples, but are computed from linear combinations of the ordered data values (hence the prefix L).

MEAN ANNUAL PRECIPITATION (MAP) – The average precipitation for a year (usually calendar) based on the whole period of record or for a selected period (usually 30 year period such as 1971-2000).

PARTIAL DURATION SERIES (PDS) – Time series that includes all precipitation amounts for a specified duration at a given station above a pre-defined threshold regardless of year; it can include more than one event in any particular year.

PRECIPITATION FREQUENCY DATA SERVER (PFDS) – The on-line portal for all NOAA Atlas 14 deliverables, documentation, and information; http://hdsc.nws.noaa.gov/hdsc/pfds/.

PARAMETER-ELEVATION REGRESSIONS ON INDEPENDENT SLOPES MODEL (PRISM) – Hybrid statistical-geographic approach to mapping climate data developed by Oregon State University's PRISM Climate Group.

QUANTILE – Generic term to indicate the precipitation frequency estimate associated with either ARI or AEP.

RECORD LENGTH – Number of years in which enough precipitation data existed to extract meaningful annual maxima in a station's period of record (or data years).

UNCONSTRAINED OBSERVATION – A precipitation measurement or observation for a defined duration. However the observation is not made at a specific repeating time, rather the duration is a moveable window through time.

WATER YEAR – Any 12-month period, usually selected to begin and end during a relatively dry season. In NOAA Atlas 14 Volume 9, it is defined as the calendar year (January 1 to December 31).

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