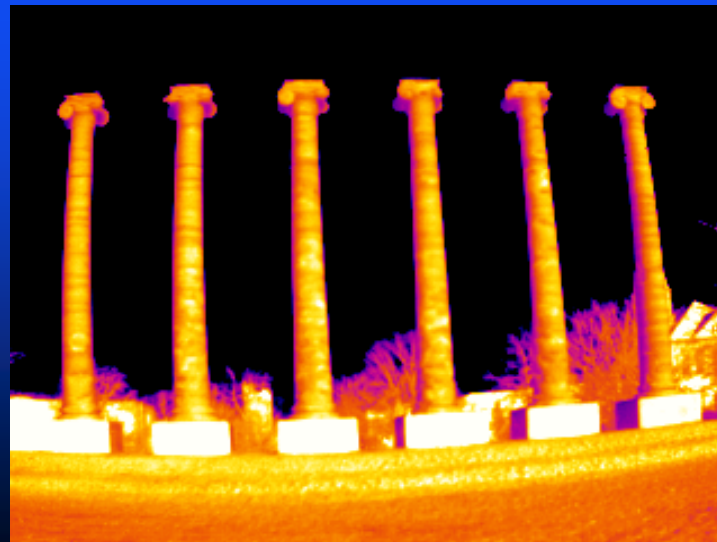
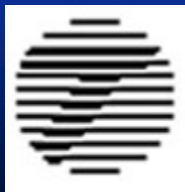


Development of Hand-held Thermographic Inspection Technologies

Progress Report 3
Glenn Washer, Ph.D.
University of Missouri
December 17, 2007

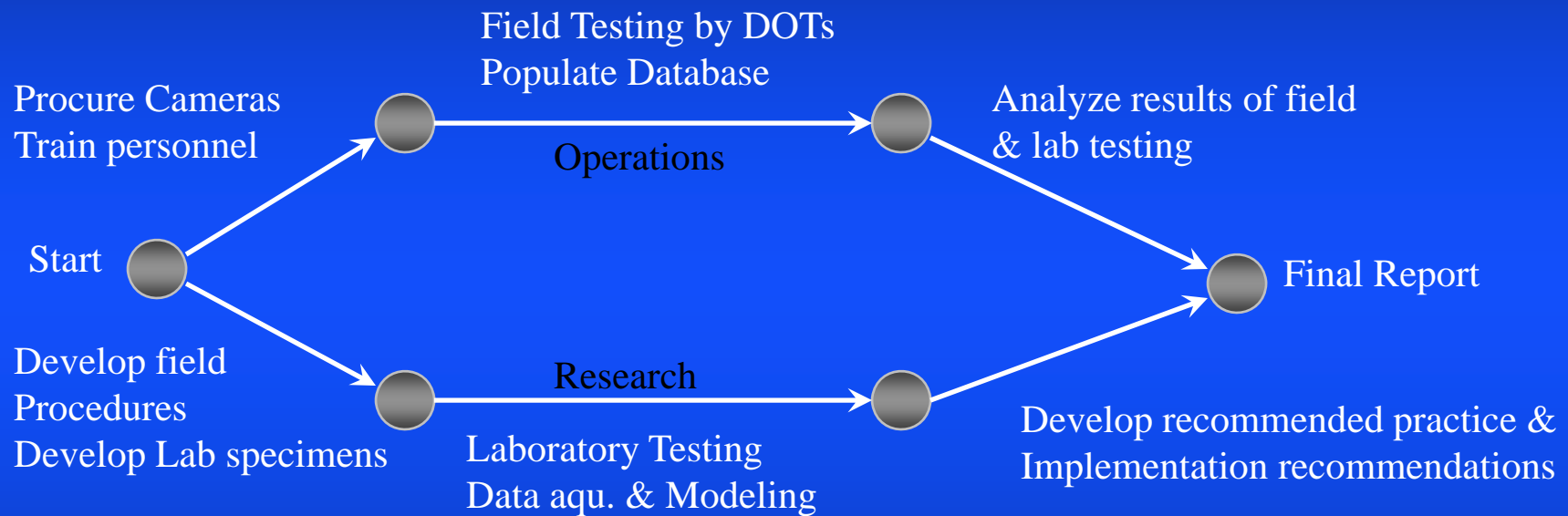


Agenda

- Development of Field Data Acquisition System
- Procurement of Cameras
- Development of Test block
- Initial Testing
- Issues and Problems
- Future Outlook



Path

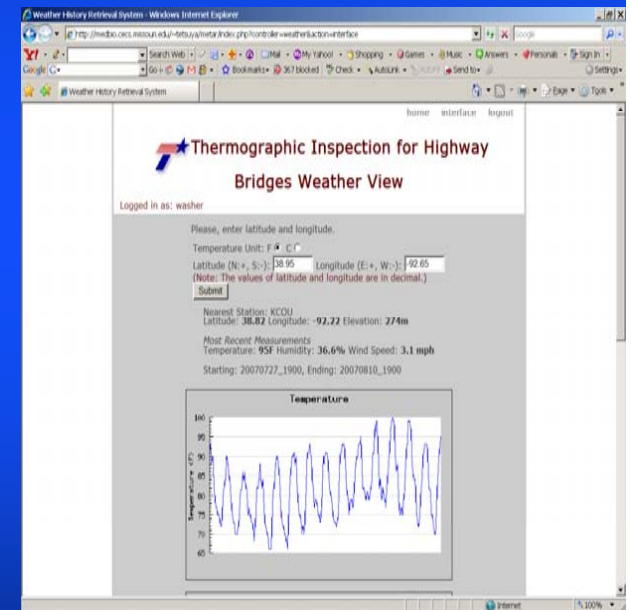
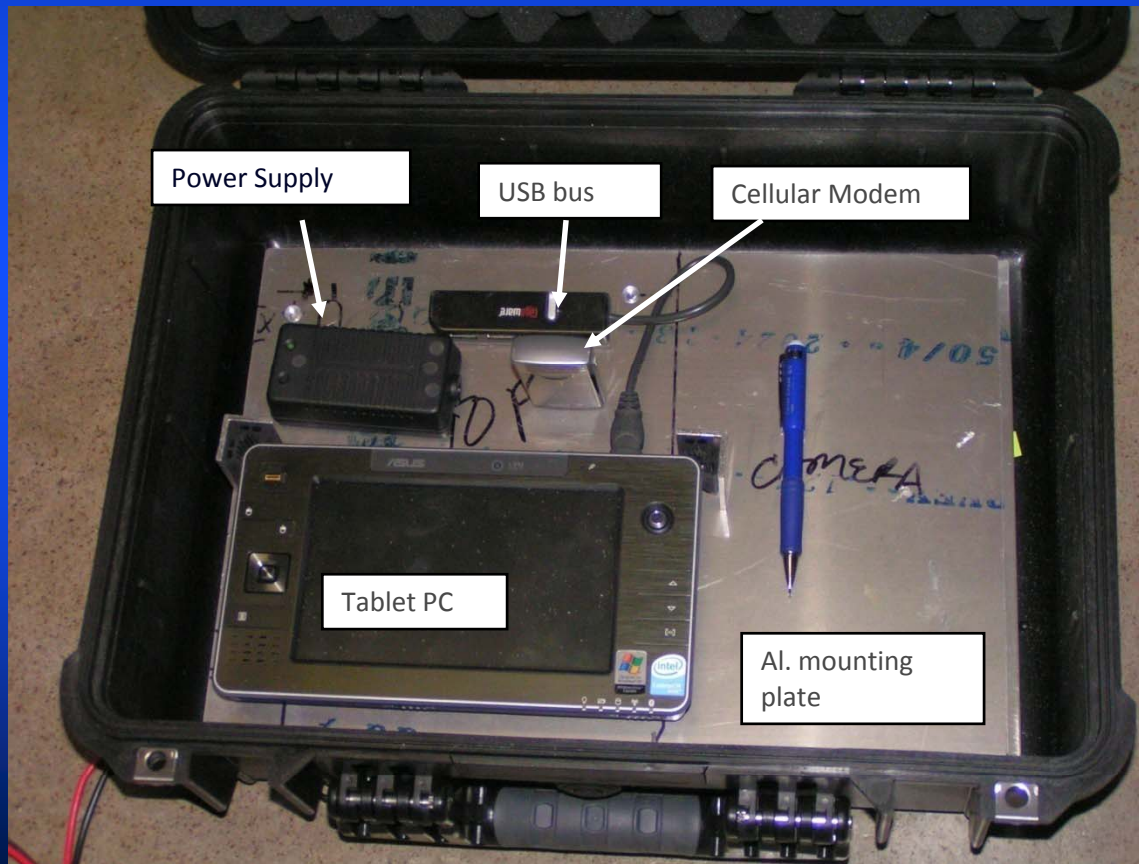


Development of Field Data Acquisition System (FDAS)

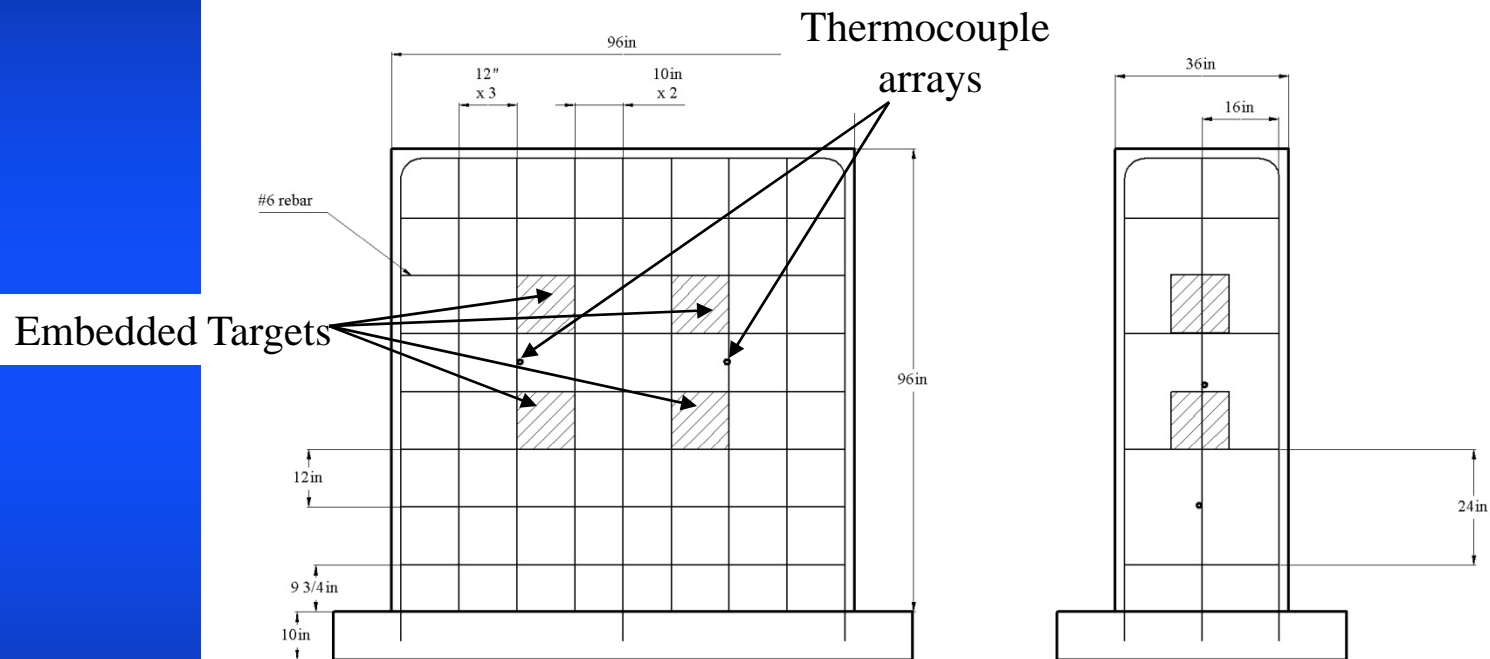
- Accomplishments:
 - Finalized web access data
<http://medbio.cecs.missouri.edu/~tetsuya/metar/>
 - Completing the manufacturing of prototype FDAS
 - Integrating cellular modem w/ GPS, USB bus, tablet PC, vehicle power (12V) sytem



FDAS Prototype



Test Block



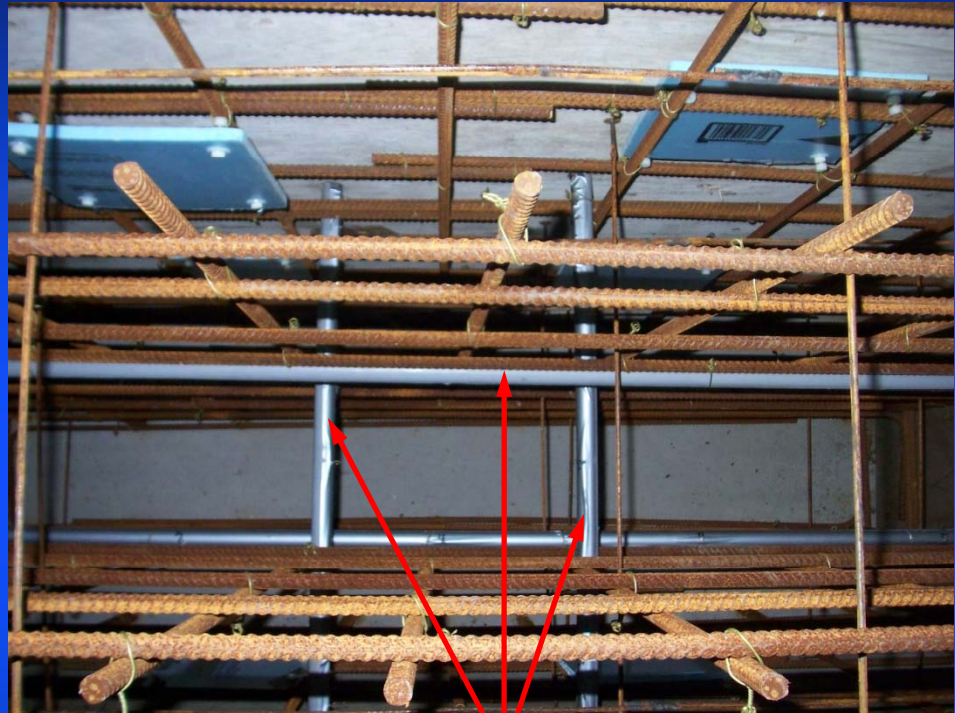
Test Block Site



Forming



Targets



Thermocouple arrays



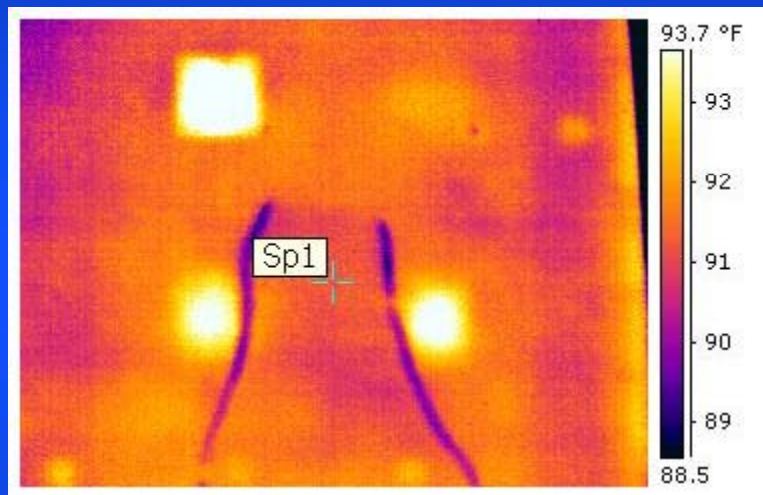


Test Block

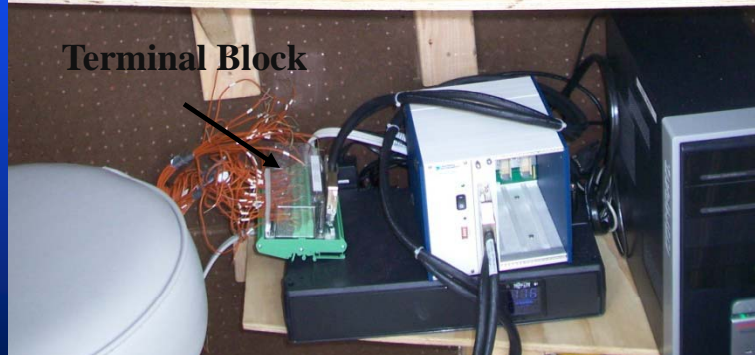
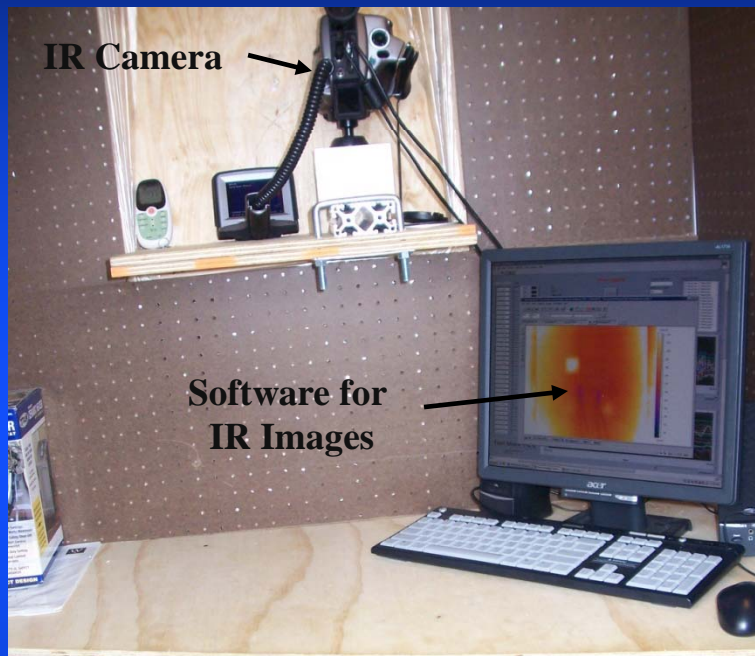


Repair

Thermal Images of Test Block



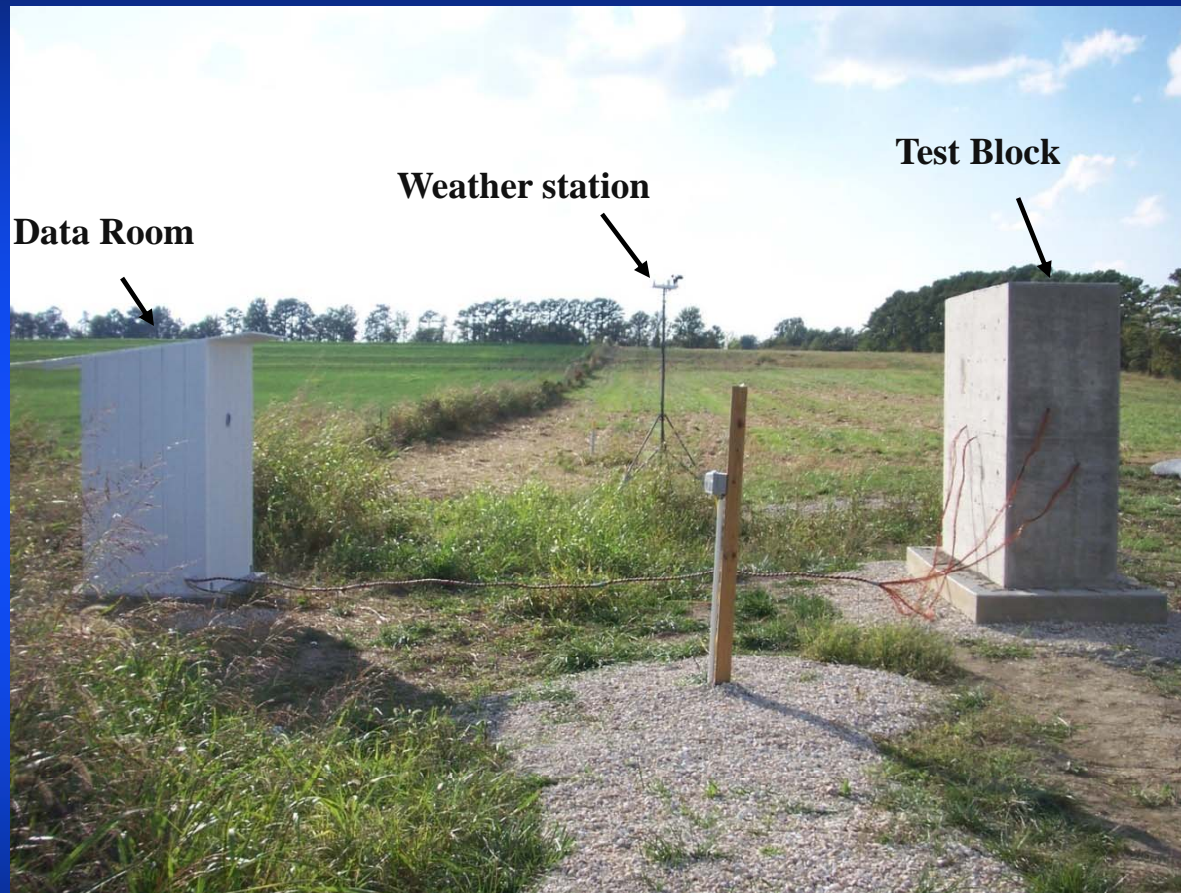
DATA ACQUISITION



- Thermal images of the block are taken for every 10 min.
- The thermocouple readings are taken for every minute.
- The surrounding weather data is being collected every minute from the weather station that is installed in the field



TEST SITE



Data Processing

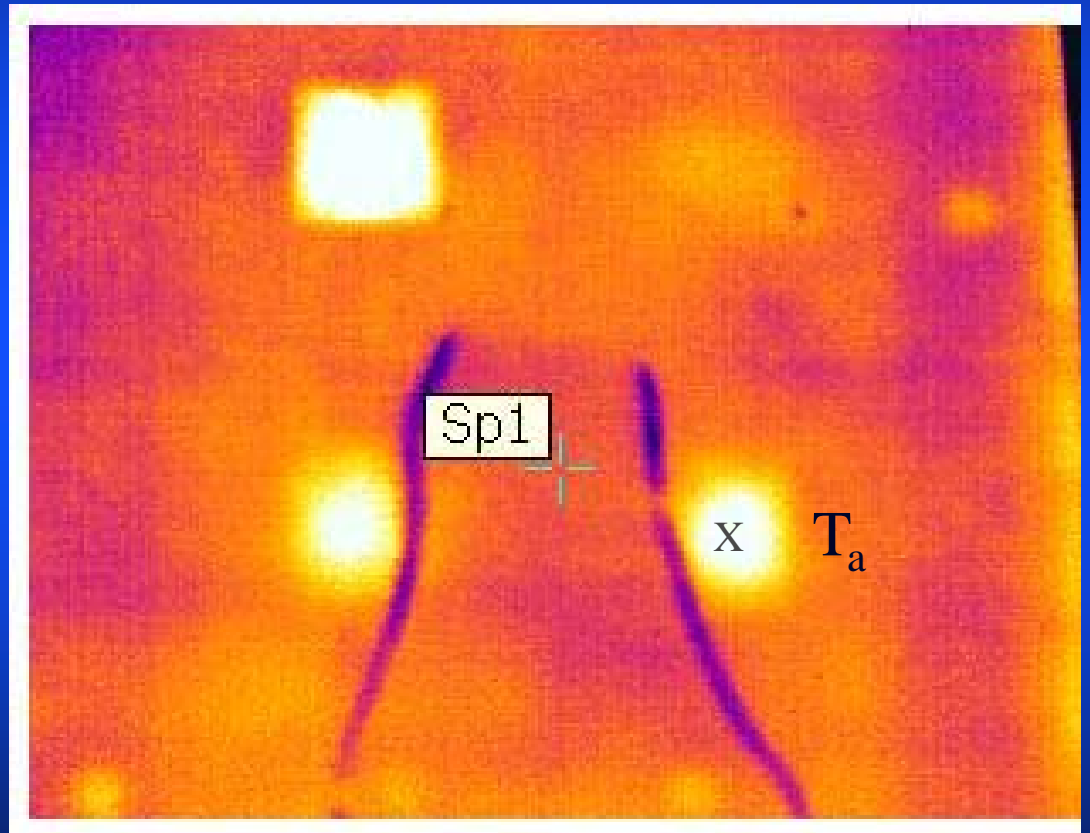
- Data collected and analyzed includes
 - Wind speed
 - Ambient temperature
 - Solar loading
 - Relative Humidity
 - Thermocouple temperatures (through block)
 - Differential IR temperature measurements

Contrast



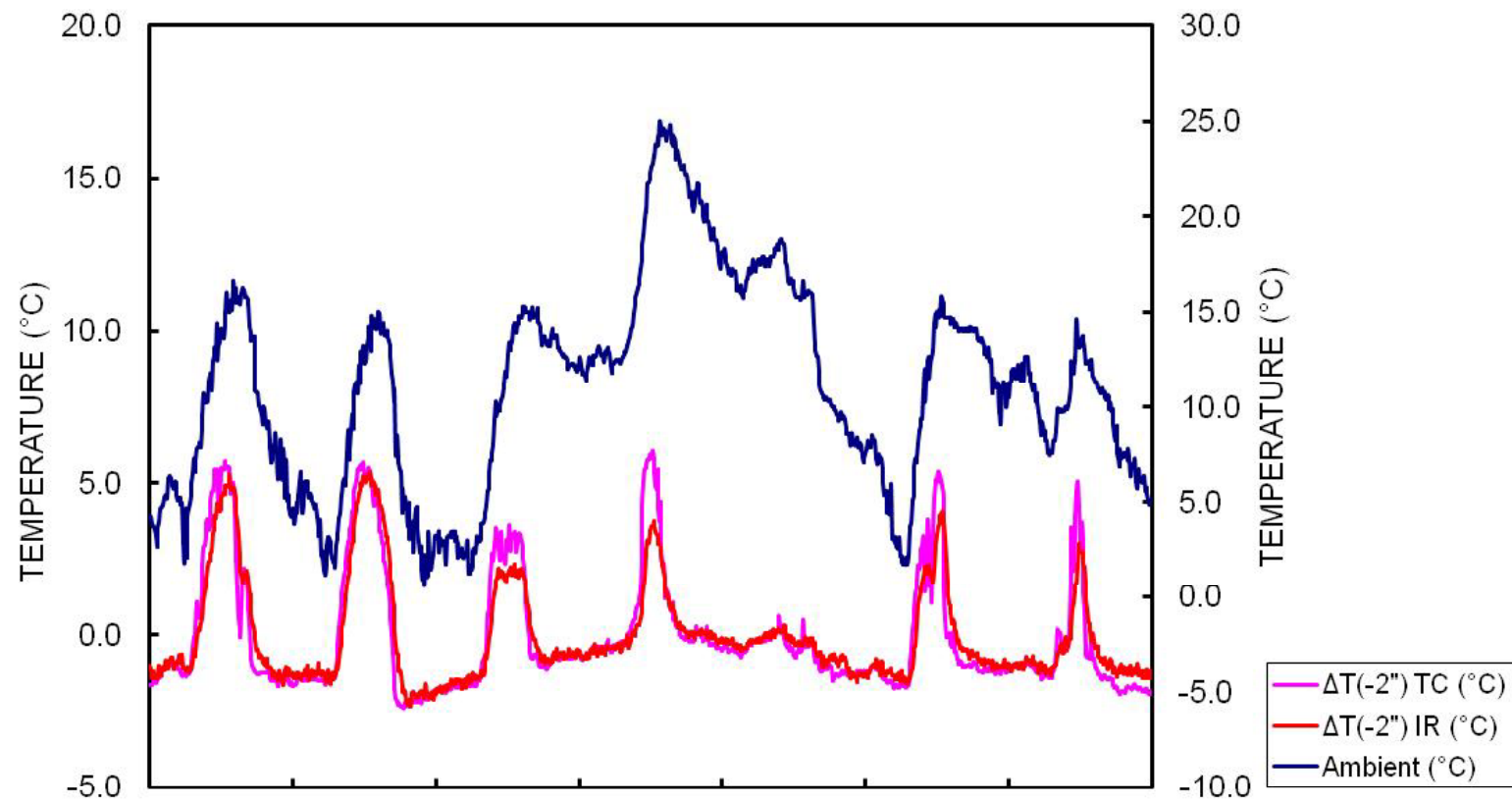
Differential IR Temperatures

- $T_a - Sp1$
- $Sp1$ – pixel surface temp. in acreage
- T_a = pixel value over 2" deep target
- Thermocouple
 - Surface – 2" deep



Weekly Data – Ambient Temp.

November 8-14, 2007

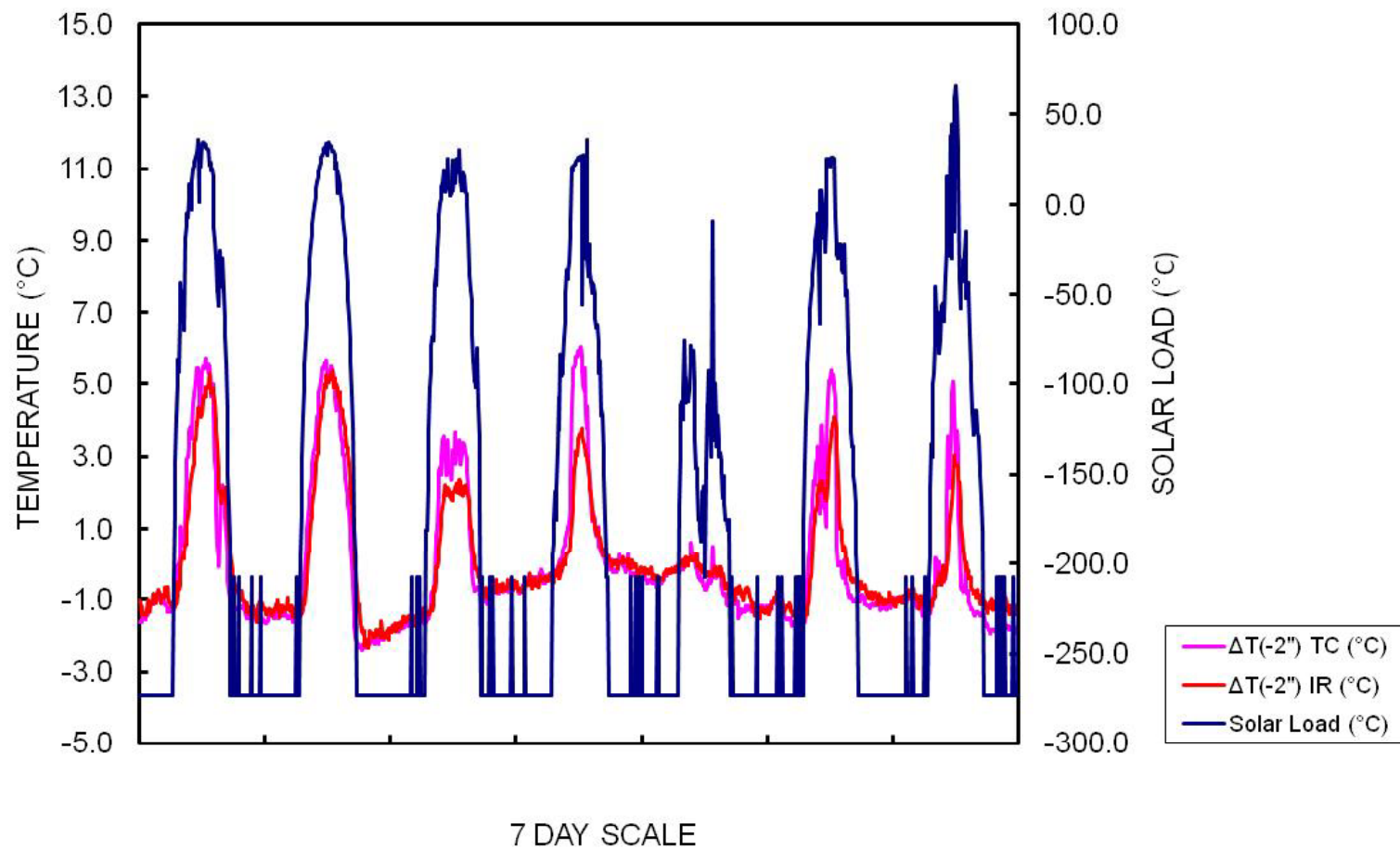


7 DAY SCALE

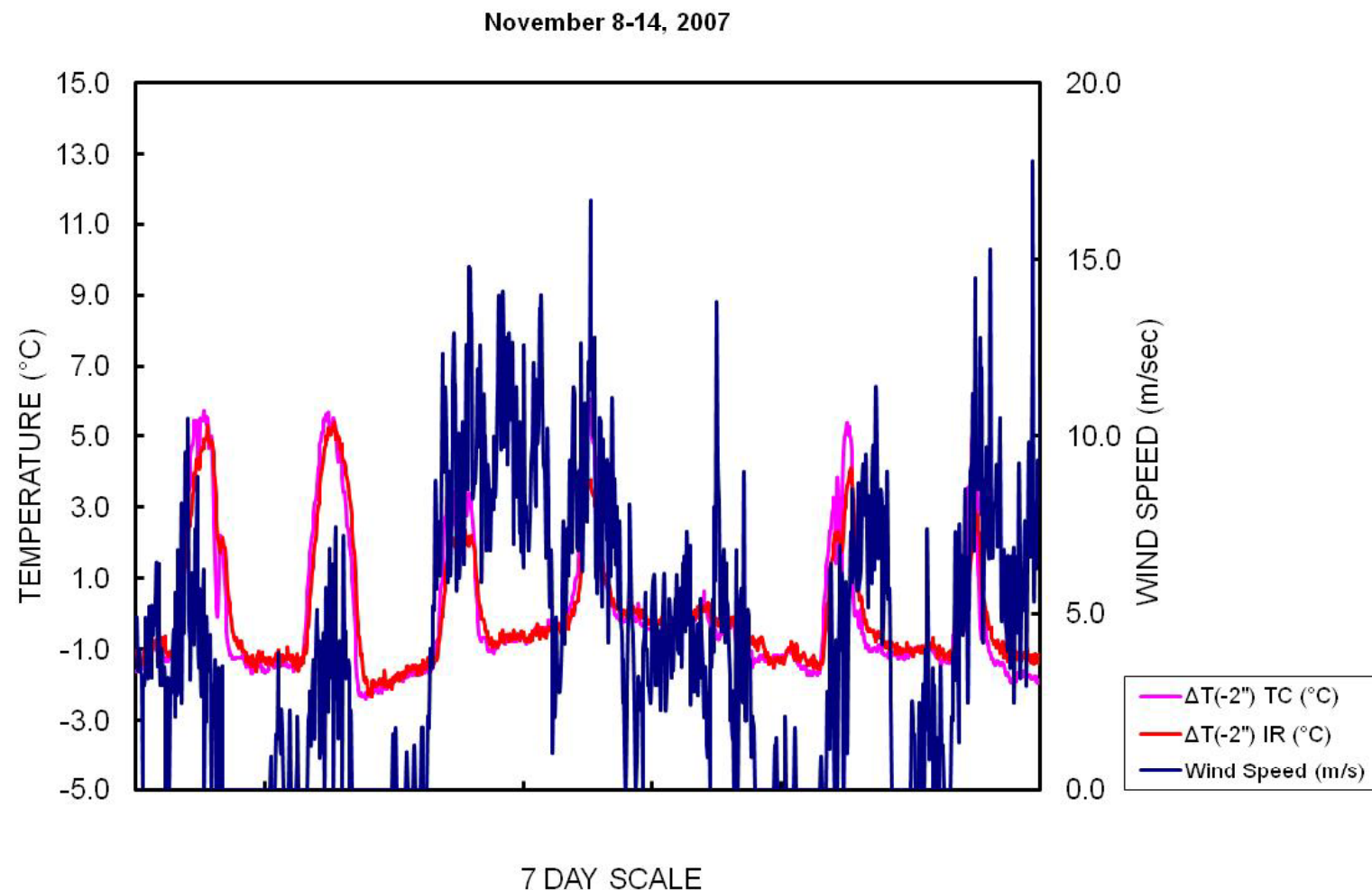


Weekly Data - Solar

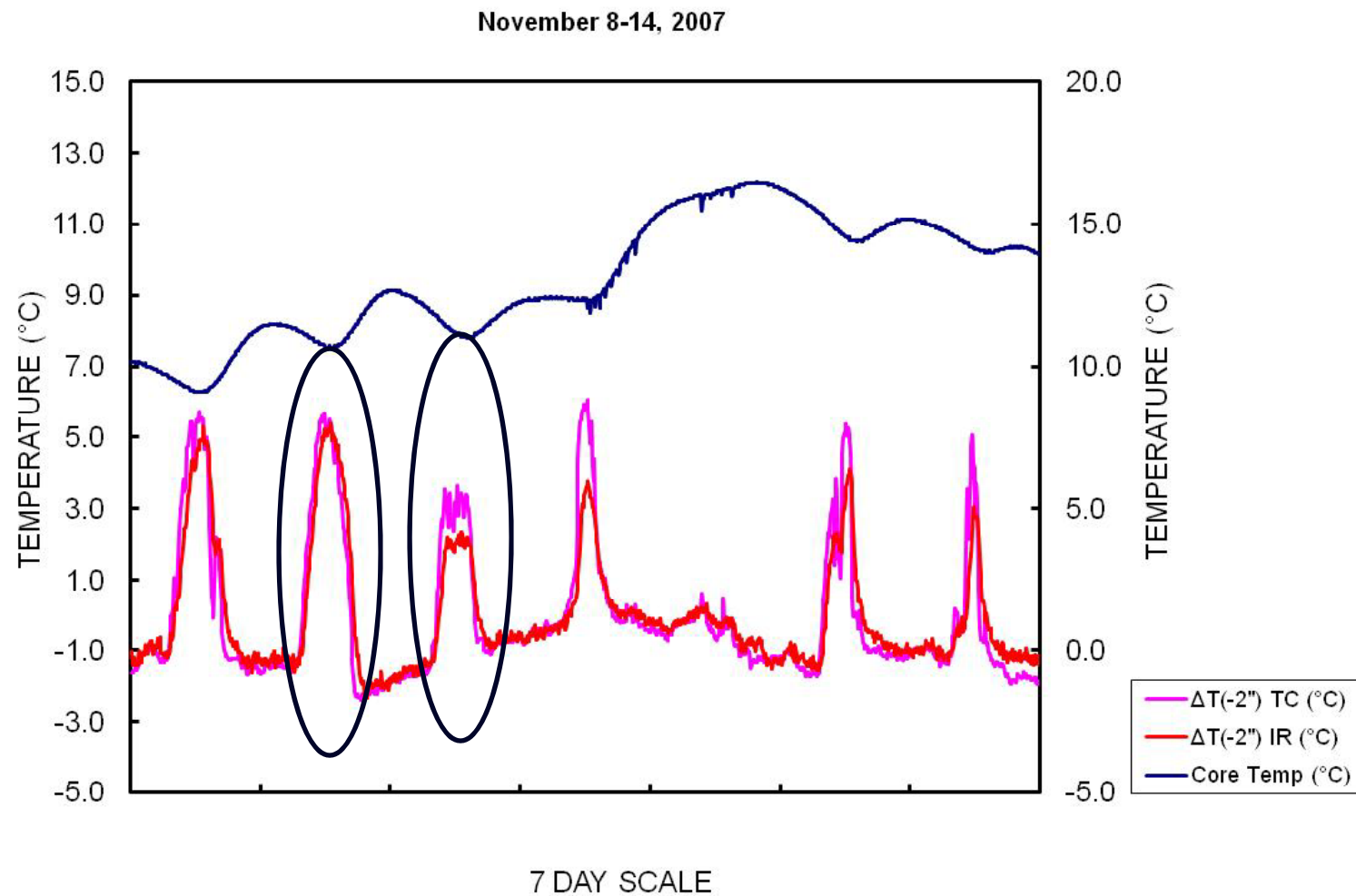
November 8-14, 2007



Weekly Data – Wind Speed

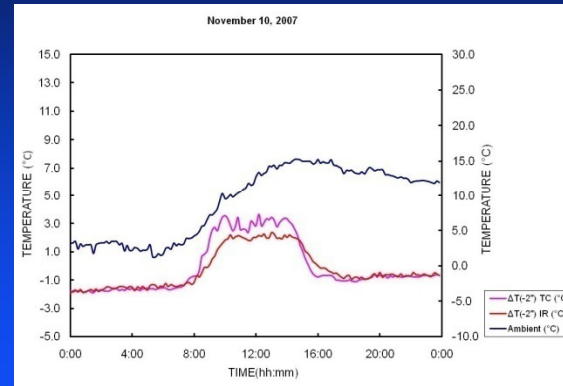
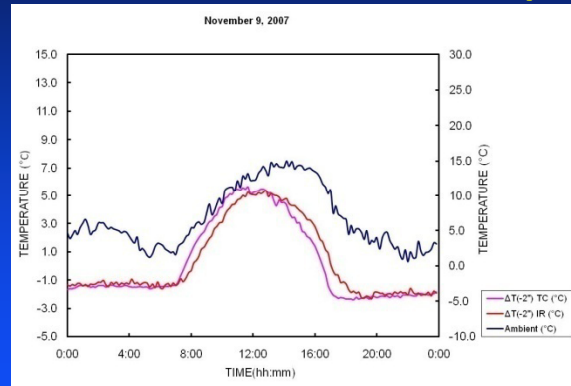


Weekly Data - Core

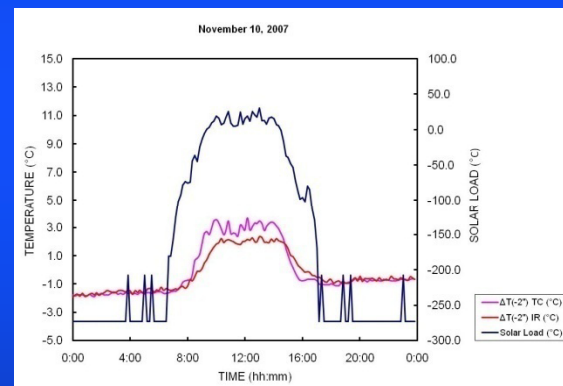
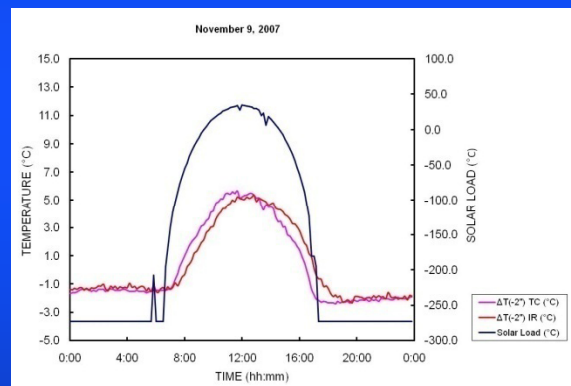


Daily Data

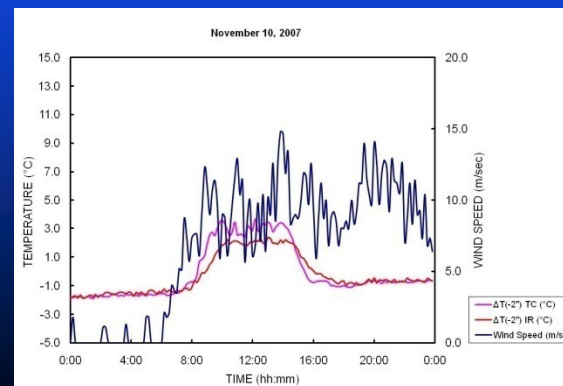
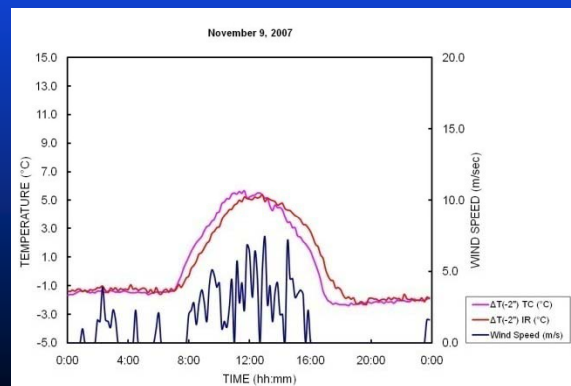
Ambient



Solar



Wind Speed



Cameras

- B400 Cameras
- Delivery – week of Dec. 17, 2007
- Training and delivery to follow
- Budget impact TBD



Schedule

- Approximately 2 months behind schedule

		Months																							
	Tasks	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J
1	Preliminary Study Development																								
2	Controlled Testing of Concrete Specimen																								
3	Operational Testing																								
4	Final Report																								



Questions?

