

2010-11 Antarctic Automatic Weather station field season and technical plans for the future

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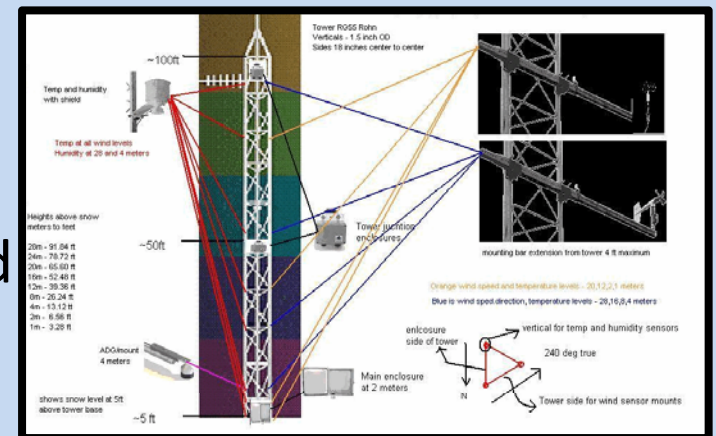
2010-11 Field Work

- *Shockingly* successful season
- 16 stations visited
 - 6 additional by collaborators
- Utilized the Oden icebreaker to repair the AWS on Franklin Island.
- 6 new installations (2 on Ross Ice Shelf, 4 in West Antarctica).
- 5 weather station removals.
- Still have > 60 Argos IDs, want to decrease to ~50.



Tall Tower!

- Finally installed after 3 years.
- 100 ft tower located on the Ross Ice Shelf (~160 km from McMurdo)
- Installed for surface wind and energy balance studies
- Instrumentation
 - 30 m: wind, temperature, humidity, net radiation
 - 15 m: wind, temperature
 - 8 m: wind, temperature, humidity
 - 4 m: wind, temperature
 - ~3 m: acoustic depth gauge is installed
 - 2 m: wind speed, temperature
 - 1 m: wind speed, temperature



Tall Tower!

- Groups are welcome to propose to install instrumentation at this site.
- Tower installed and maintained by USAP contractor.
- Power provided by a UNAVCO 5 W power system



Equipment, instrumentation

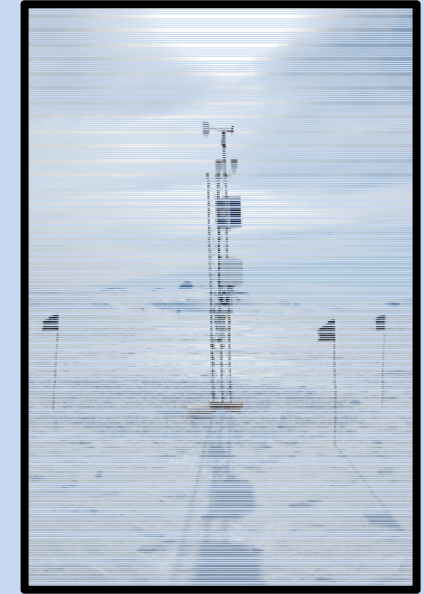
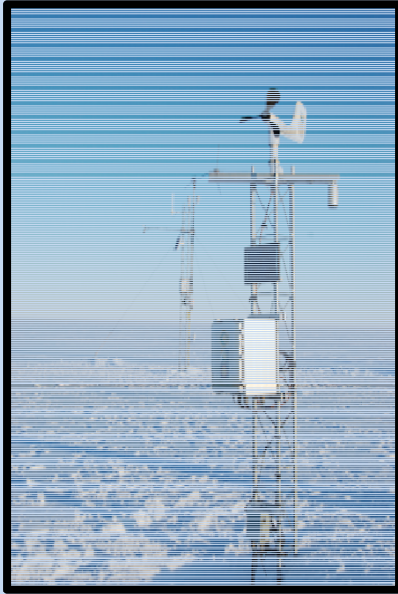
- We are currently transitioning to Campbell Scientific CR1000 datalogger systems
 - Continue to use Wisconsin AWS 2B
- Side-by-side testing of CR1000 based system and old UW AWS system at Ferrell site (occupied since 1980)
- Some new (for us) instrumentation testing
 - Transition to Freewave in McMurdo area
 - Radiation sensors
 - On station data recording
 - Aspirated radiation shields on some future stations.

Issues with COTS

- Takes a long time to transition our network.
- Is the Campbell system the best choice?
 - These are systems built for many different types of data acquisition.
 - We are a relatively small customer of Campbell hardware.
 - We do not have any say in development.
 - Have limited knowledge of datalogger update cycle and how it will affect us.
 - Potentially operating outside CSI's temperature specs in some locations.
 - Chamber tested CR1000 to -65C measuring a precision resistor, PRT, and HMP155.
 - CR1000 operated during the entire test.
- Instrumentation has been consistent.
 - Vaisala humidity sensors.
 - R. M. Young wind sensors
 - Platinum resistance thermometers
 - Paroscientific pressure gauges

Future work . . . Collaborations

- Working with PASSCAL and UNAVCO to provide a weather station component with their installations.
- Likely working with ARRO/AGO to install weather station component.
- Future funding for AWS project will include collaborative proposals that target specific scientific questions.



Thank you!

<http://amrc.ssec.wisc.edu>

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AWS Photos by Melissa Nigro and Jonathan Thom