

2010-11

Antarctic Automatic Weather Station Field Season

Matthew Lazzara¹, Melissa Nigro², Jonathan Thom¹, Lee Welhouse¹

Antarctic Automatic Weather Station Program

¹ Antarctic Meteorological Research Center
Space Science and Engineering Center
University of Wisconsin-Madison

² University of Colorado at Boulder



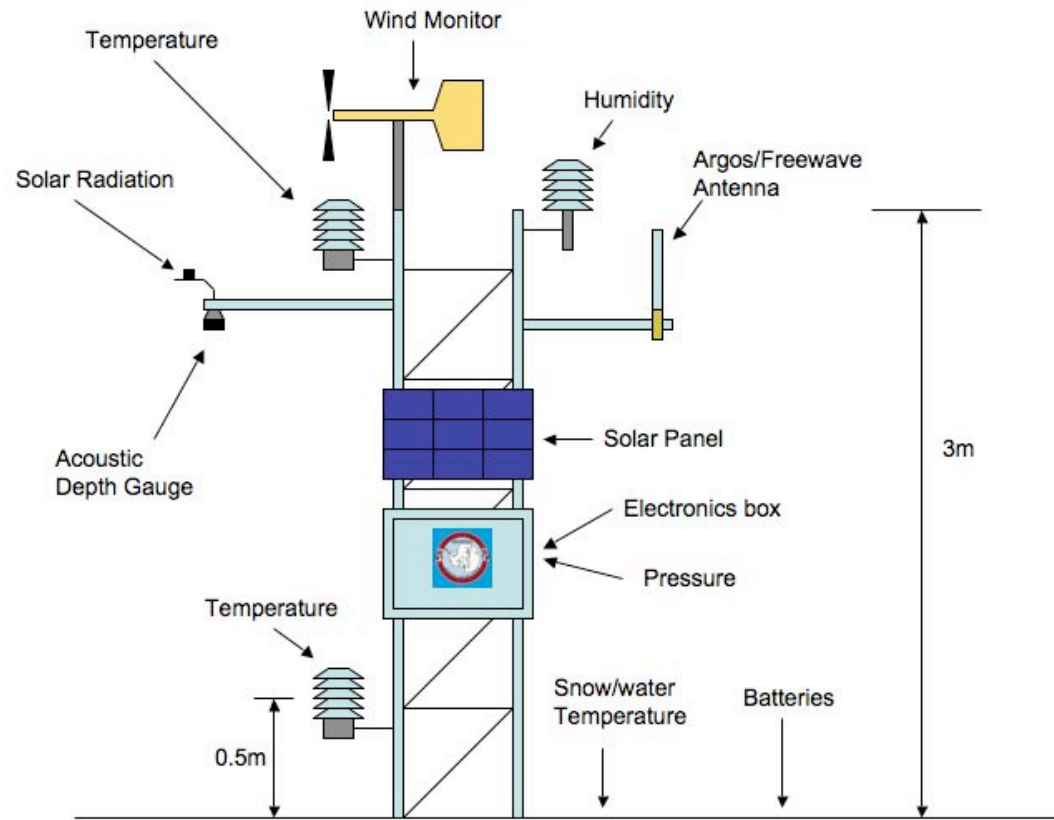
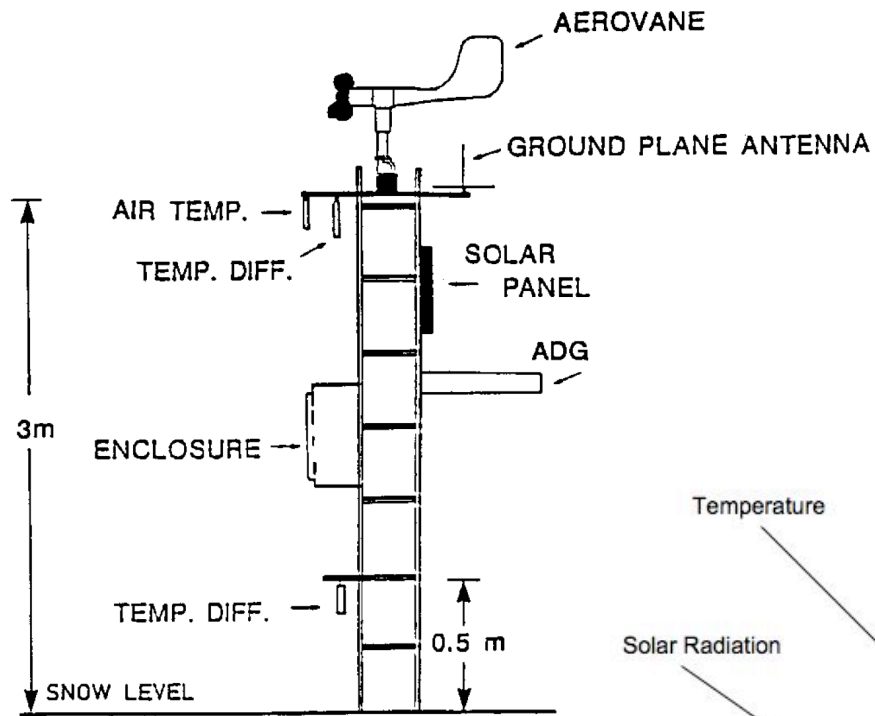
2010-11 Field Work

- *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).
- ~7 weather station removals:
 - “Mt. Friis”, “Mt. Fleming”, Mulock, Swithinbank, 3 AWS at Megadunes
- Still have > 60 Argos IDs, want to decrease to ~50.



Wisconsin 2B AWS

VS. AWS CR1000

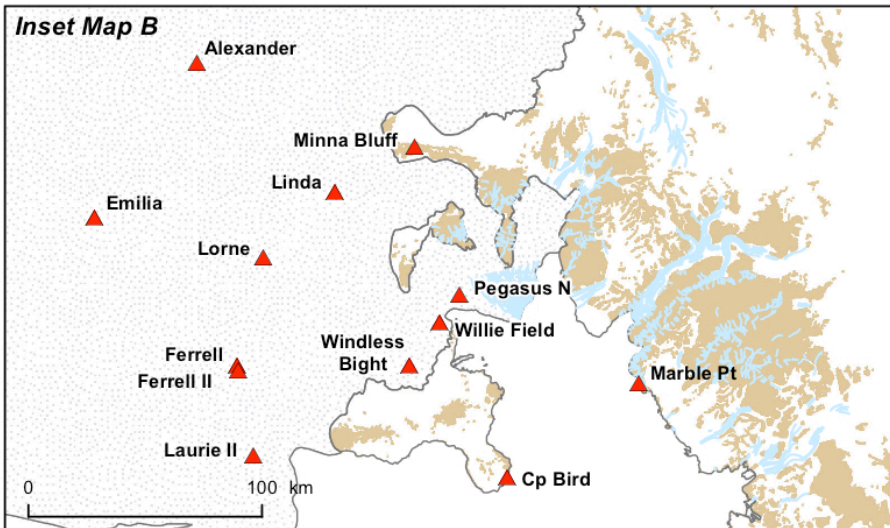
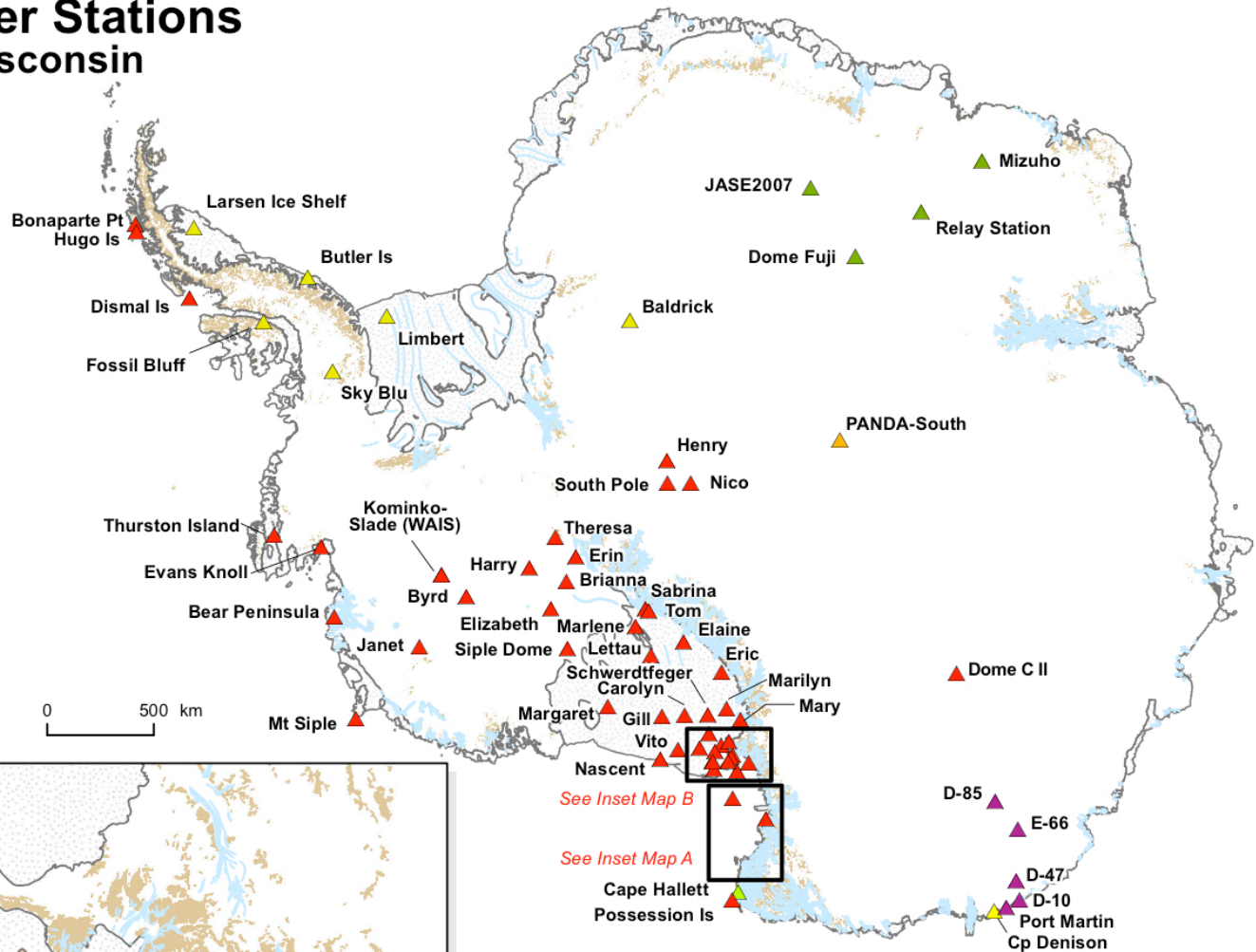
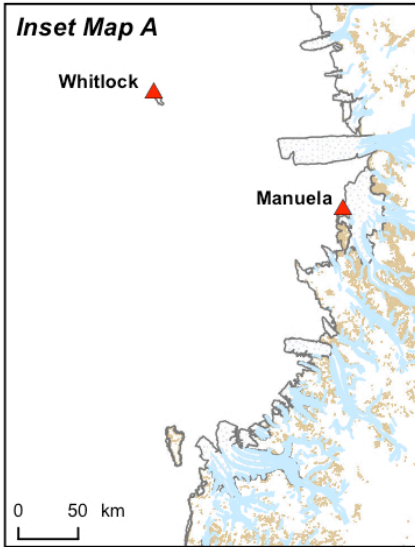


Courtesy Joey Snarski

Automatic Weather Stations

University of Wisconsin

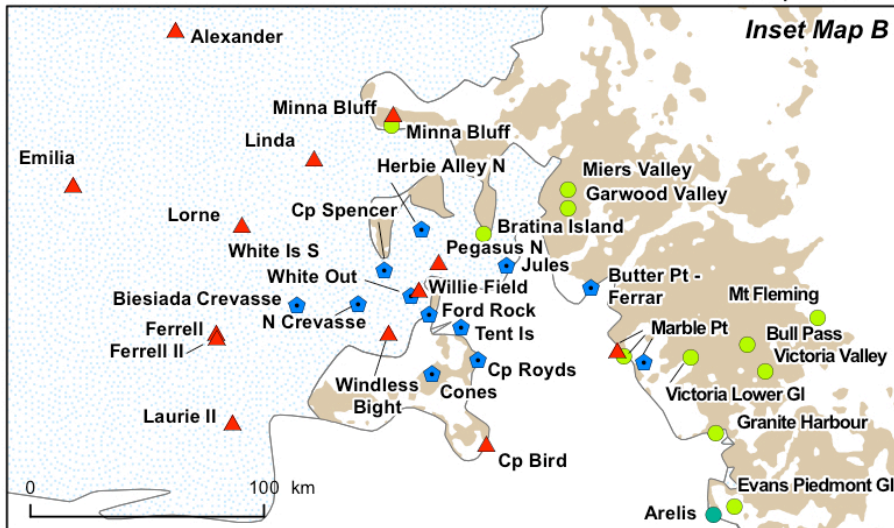
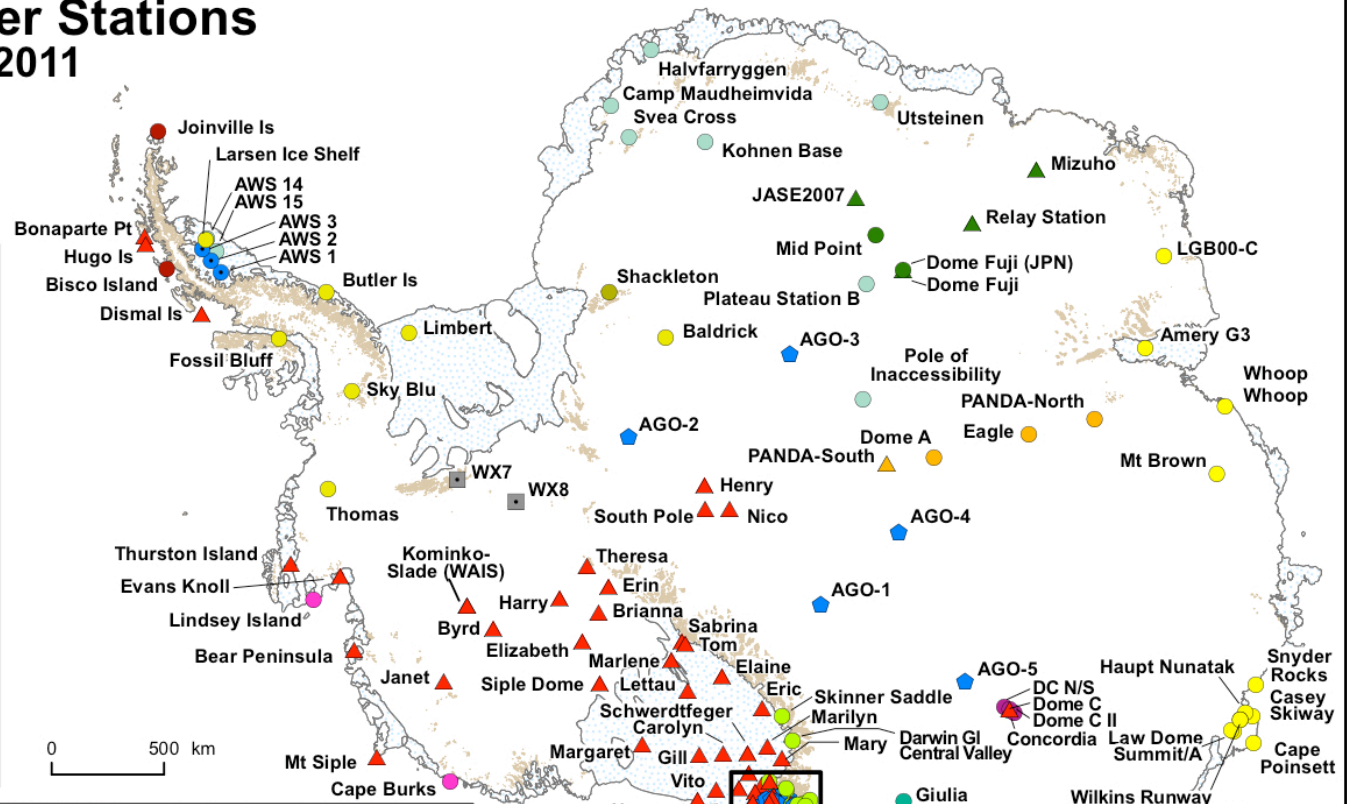
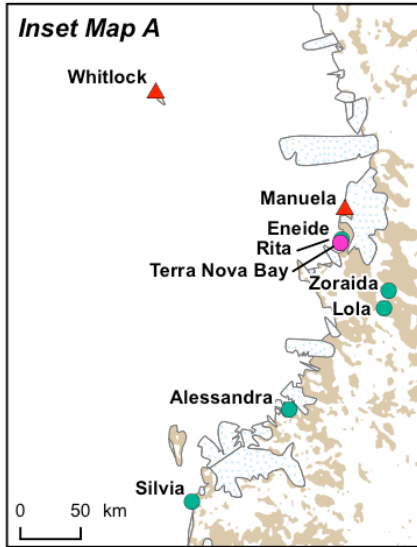
2011



University of Wisconsin AWS

- ▲ Univ. of Wisconsin (UW)
- ▲ UW / Australia
- ▲ UW / China
- ▲ UW / France
- ▲ UW / Japan
- ▲ UW / New Zealand
- ▲ UW / United Kingdom

Automatic Weather Stations Antarctica - 2011



United States AWS

- ▲ Univ. of Wisconsin (UW)
- ▲ UW / Australia
- ▲ UW / China
- ▲ UW / France
- ▲ UW / Japan
- ▲ UW / New Zealand
- ▲ AGO
- ▲ SPAWAR
- Other US

International AWS

- Australia
- Brazil
- China/Australia
- France
- Italy
- Japan
- Netherlands
- New Zealand
- Russia
- South Korea
- United Kingdom

Other AWS

- Commercial

Coastline: ADD v4.1, 2003

2011_AWS_Sites_ALL

June 2011 Sam Batzli SSEC

University of Wisconsin-Madison

National Science Foundation ANT-0944018

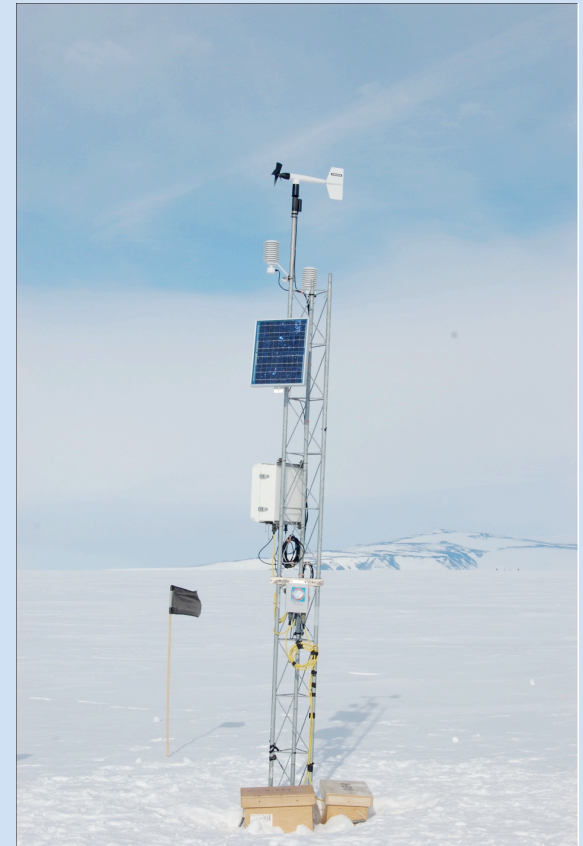
Cape Denison

- Collaboration with Mawson's Hut Foundation
- Brand new AWS installed
- Older AWS equipment removed
- Unfortunately failed
 - March ?
 - Cabling may be the cause



Willie Field

- Removed all older gear & towers
- Record-only AWS Installed (no Argos)
 - 10 Feb 2011
- Will be a freewave modem AWS in future seasons
- A test facility AWS
- Continuous record for Williams Field airfield...



Lower temp	127 cm
Electronics box	204 cm
Pressure	239 cm
Junction box	142 cm
HMP	381 cm
Upper temp	394 cm
Aerovane	435 cm

Measurements
After servicing

Sabrina AWS

- Full Station Replacement
 - 13 Jan 2011
 - Argos ID 8915
- Wind direction correction
 - Affected entire record

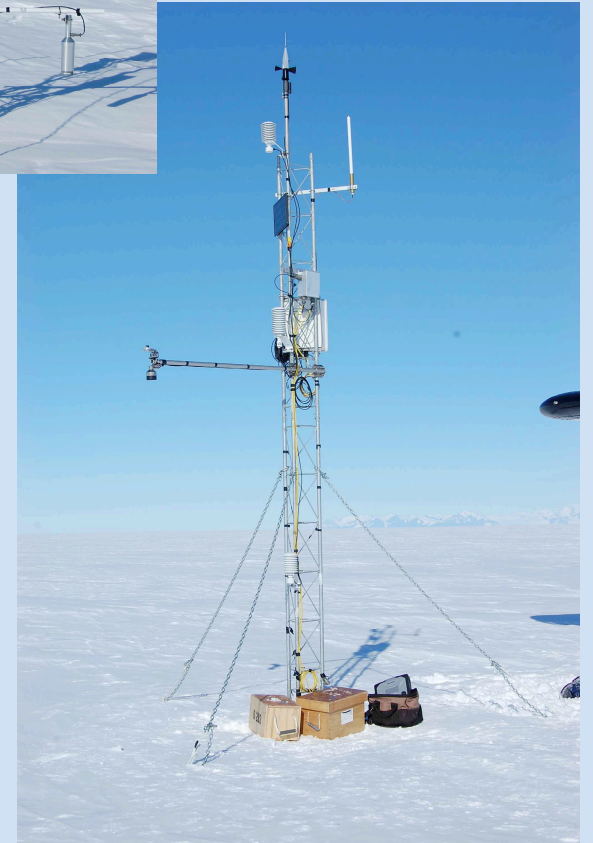


ADG	29 cm
Wind	266 cm
Lower temp	90 cm
Upper temp	266 cm
Enclosure	110 cm
J-box	82 cm
Solar panel	168 cm

Measurements
Before servicing

ADG	265 cm
Wind	521 cm
Lower temp	122 cm
Upper temp	480 cm
J-box	350 cm
Pyronometer	287 cm
HMP	216 cm

Measurements
After servicing

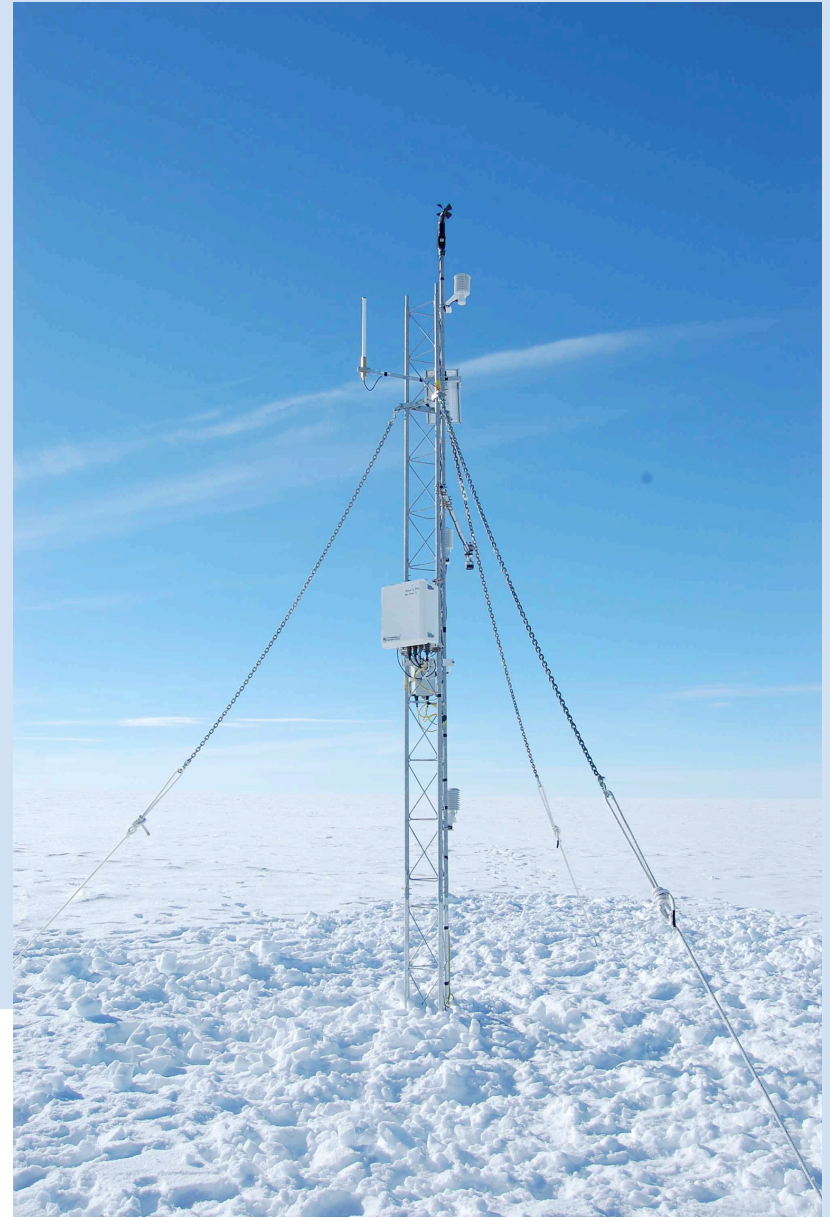


Marlene AWS

- New Installation
 - Near Sabrina AWS
 - 13 Jan 2011
 - Argos ID 8908
- Will be removed in approximately 2 years...
- Named for:
 - Marlene McCaffery/SSEC
 - Marlene McLennan/CDC

Lower temp sensor	130 cm
J-box	213 cm
Enclosure	244 cm
HMP (humidity probe)	324 cm
Boom (ADG and pyronometer)	357 cm
Upper temp sensor	521 cm
Aerovane – RM Young 05103	560 cm

Measurements
After installation

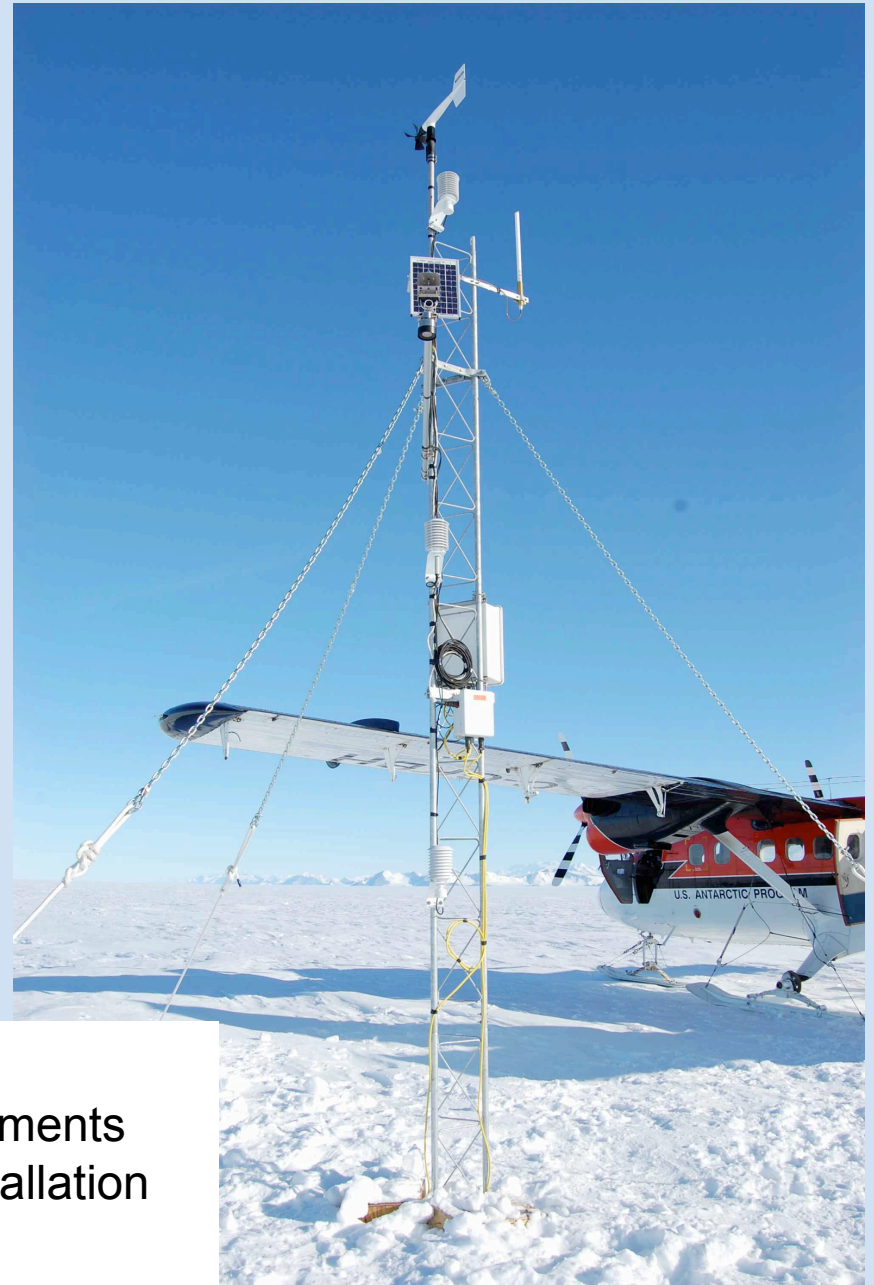


Tom AWS

- New Installation
 - Near Sabrina AWS
 - 13 Jan 2011
 - Argos ID 8919
- Will be removed in approximately 2 years...
- Named for:
 - Tom Nigro (Melissa's husband)

Lower temp	145 cm
J-box	217 cm
Enclosure	260 cm
HMP	307 cm
Boom (ADG and pyronometer)	372 cm
Upper temp	527 cm
Aerovane	560 cm

Measurements
After installation



Lettau AWS

- Full Station Replacement
 - AWS CR1000
 - 14 Jan 2011
 - Argos ID 8928
- Last station still using old style Rohn Tower



Lower temp	21 cm
J-box	63 cm
Enclosure	102 cm
Solar Panel	162 cm
Upper temp	199 cm
Boom (old style for aerovane)	218 cm

Measurements
Before servicing

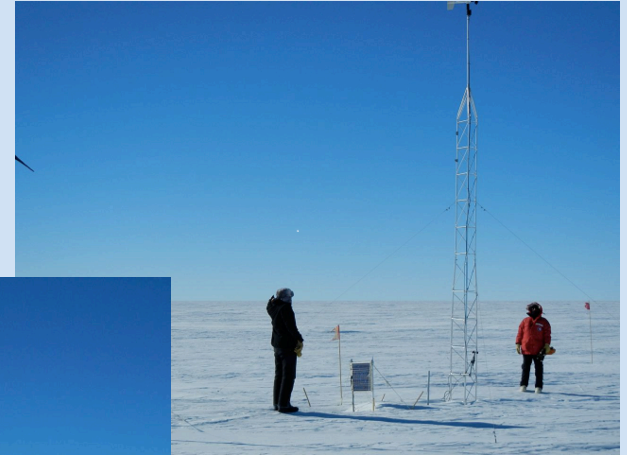
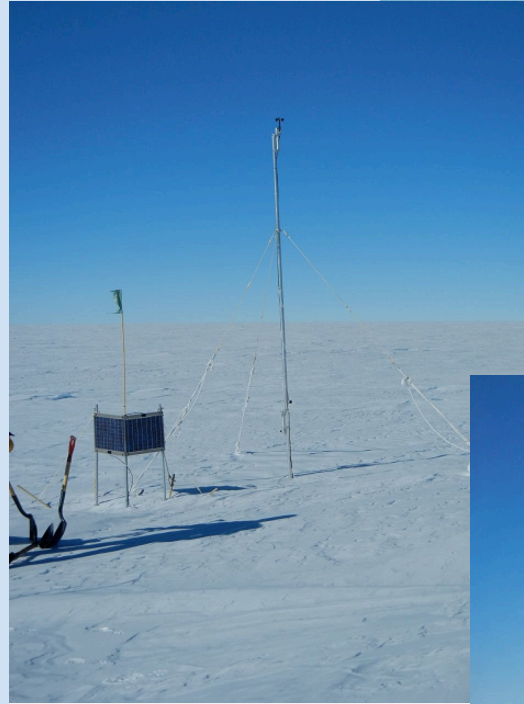
Lower temp	135 cm
J-box	220 cm
Enclosure	252 cm
HMP	310 cm
Boom (ADG and pyronometer)	380 cm
Upper temp	530 cm
Aerovane	555 cm

Measurements
After servicing



Megadunes AWS

- Removal of
 - Zoe AWS
 - Little Mac AWS
 - Un-named AWS
 - 18 Jan 2011
- No new AWS left behind
 - Will be installed at AGO-1 or AGO-2
- AWS shipped back to Mark Fahnestock...
- Recorded Data recovered



Janet AWS

- New Installation
 - 17 Jan 2011
 - Argos ID 8936
- Name for:
 - Janet Lazzara 1946-2002
(Matthew's Mom)

Lower T	125
ADG	145
Pyronometer	173
Junction box(measured from bottom)	120
Enclosure	159
Upper T	379
HMP	378
Aerovane	437

Measurements
After installation
(cm)



Byrd AWS

- AWS 2B Removed
- Replaced with CR1000 AWS
 - 18 Jan 2011
 - Same Argos ID

Boom	162 in
Solar Panel	133 in
Junction	105 in
Enclosure	65 in

Measurements
Before servicing

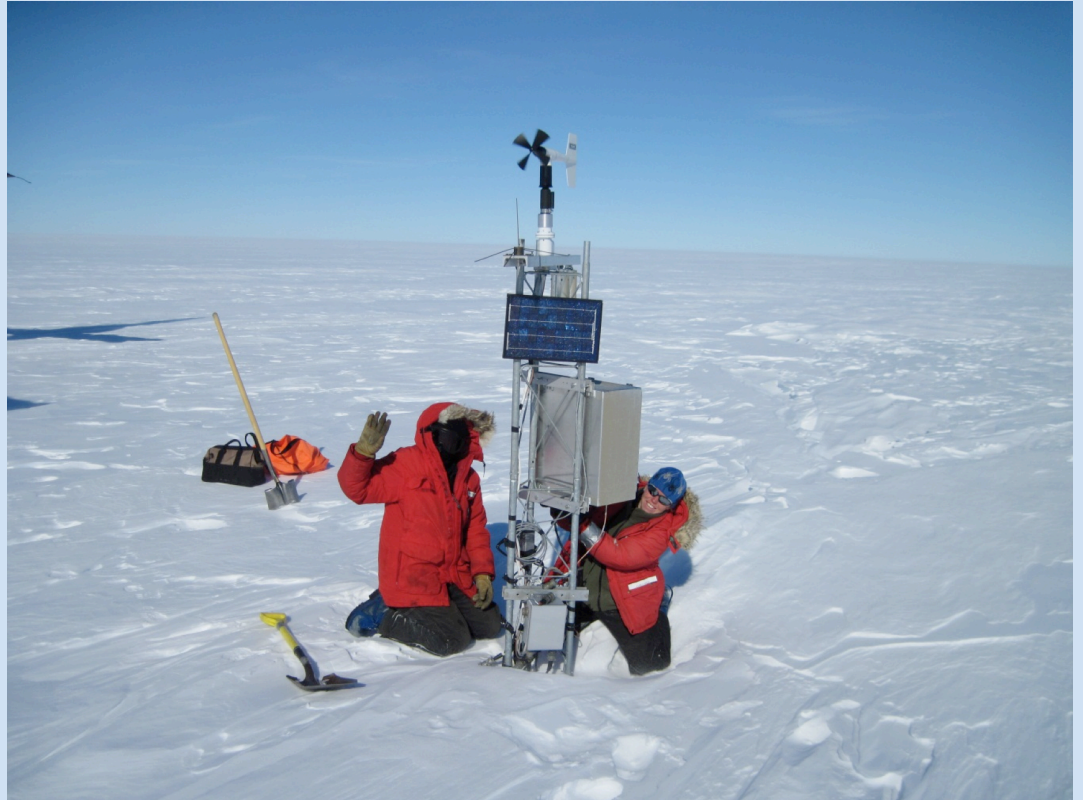
Aerovane	192 in
Upper temp	144 in
RH	144 in
Pyronometer	110 in
Lower Temp	106 in
ADG	104 in

Measurements
After Servicing



Swithinbank AWS

- Removed AWS
 - 17 Jan 2011
 - 183 cm exposed...
- Removal part of reorganizing and spreading out of AWS in West Antarctica



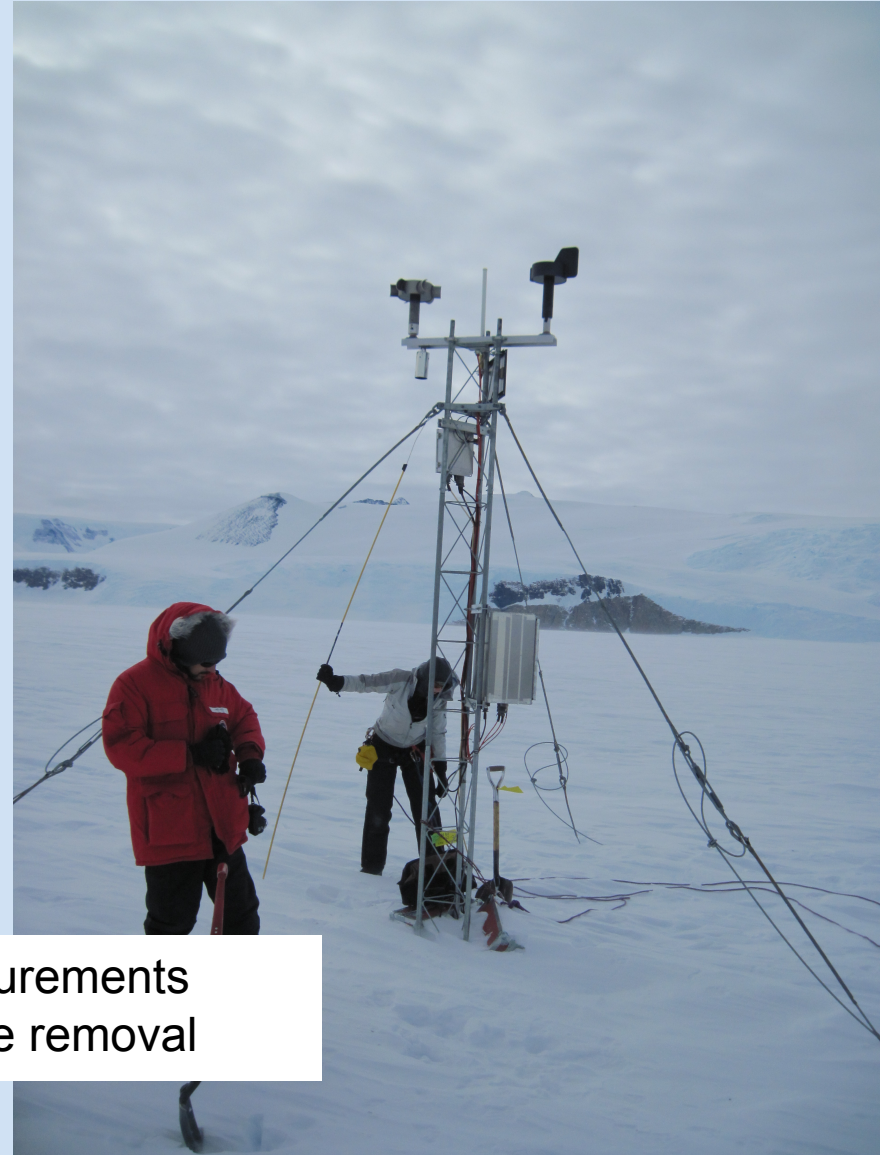
Mulock Glacier

AWS

- Removed
 - 27 Jan 2011
- Formally used by Mark Seefeldt's PhD research
- (Not operating...)

Electronics box	140 cm
Junction box	267 cm
Boom Height	343 cm

Measurements
Before removal



Whitlock AWS

- AKA Franklin Island
- Replaced AWS
 - 28 Jan 2011
 - (Former system not operating for some years)
- Requested by AMOMFW community



Measurements
Before servicing

Boom	57"
Electronics Box	-12"
Solar panel	39.5"



Measurements
After servicing

Aerovane	219"
Upper temp	204"
ADG	172"
Electronics box	92"
Lower temp	53"
RH	102"

South Pole Radiation Shield Test Facility

- Site visit
- Repair
 - 1-2 Feb 2011
- Will be removed next field season
- See Christophe's talk for more...



Gill AWS

- Raised Tower
- Replaced Instrumentation
 - 2 Feb 2011



Measurements
Before Servicing

Electronics box	24"
Solar panel	68"
Boom	99"
J-box	at the surface
Lower temp	below the surface



Measurements
After Servicing

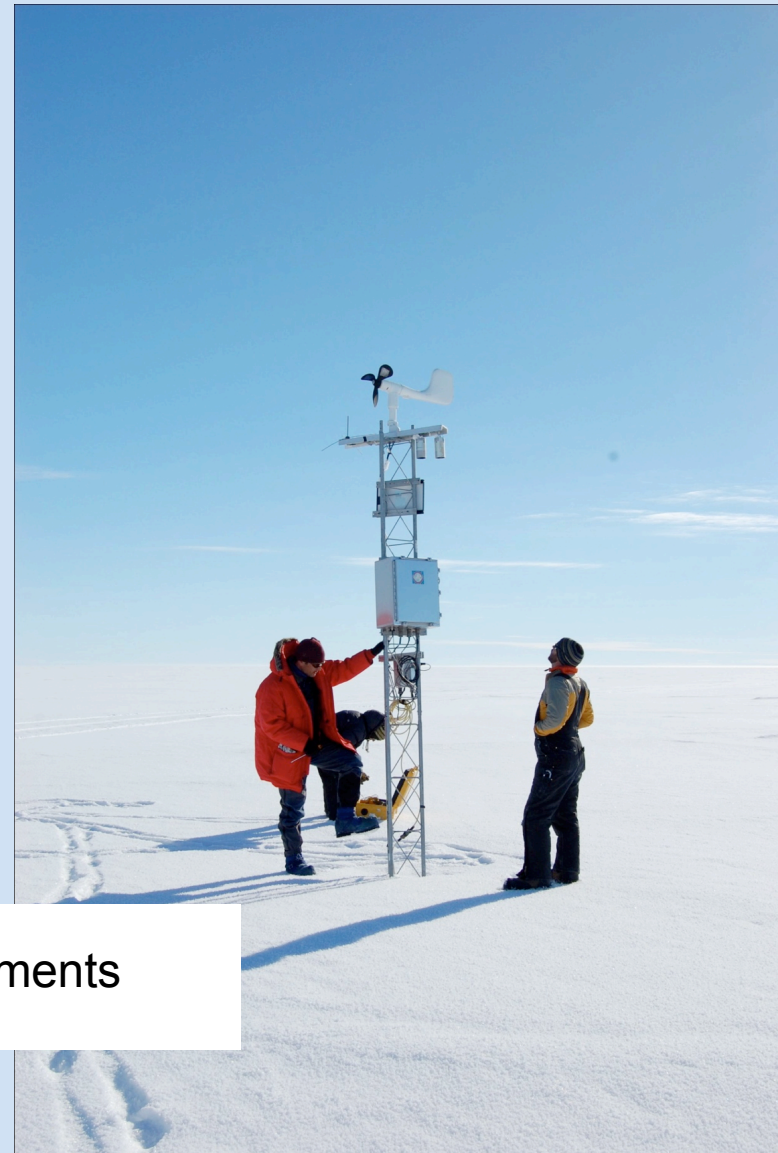
Lower temp	60"
RH	85"
Electronics box	87"
ADG	138"
Upper temp	190"
Aerovane	204"

Marilyn AWS

- Aerovane Replacement
– 3 Feb 2011

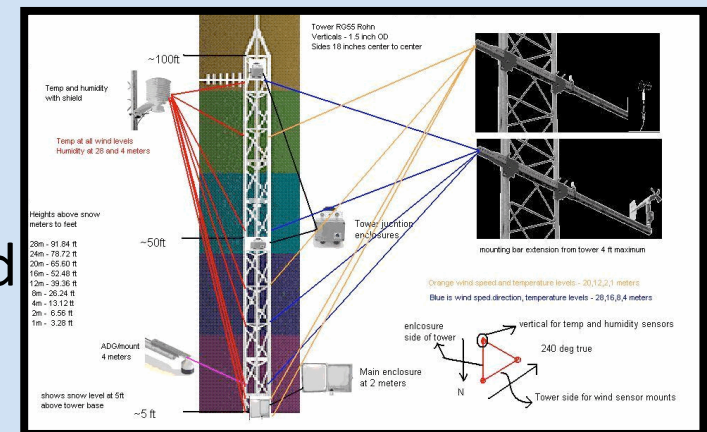
J-box	57"
Electronics box	72"
Boom	133"

Measurements



Alexander Tall Tower! AWS

- 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



Big Al's 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

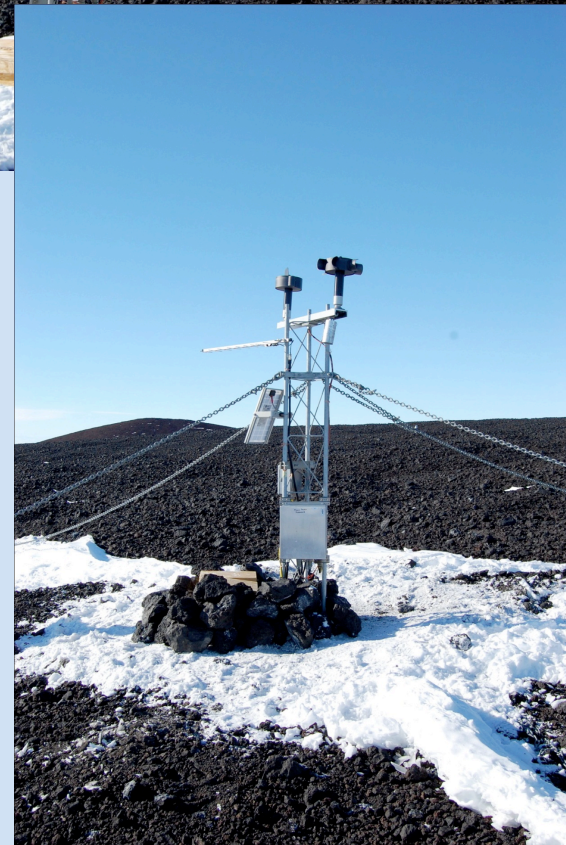
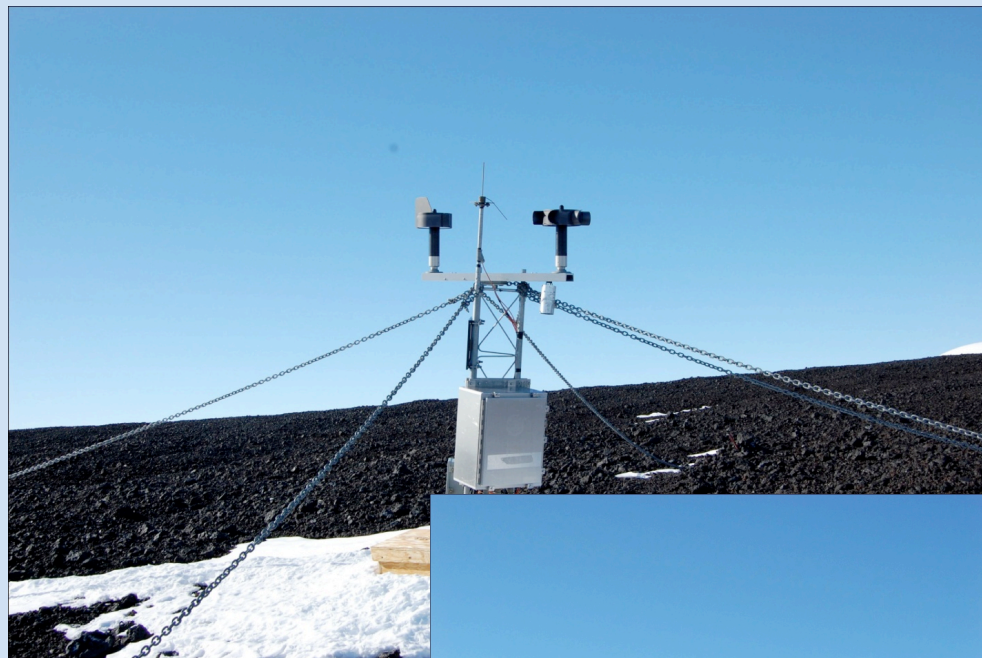


Cup anemometer level 1	52"
Temp level 1	43"
Cup anemometer level 2	93"
Temp level 2	83"
Electronics box	100"
ADG and antennae	136"

Measurements of
Non-boom sensors

Minna Bluff

- Replaced AWS
 - 4 Feb 2011
 - Freewave Modem
 - No Argos ID



Measurements Before Servicing:

Boom	60"
Electronics box	27"

Measurements After Servicing:

Boom	87"
Electronics box	22"

Ferrell AWS & Ferrell II AWS

- Raised existing AWS
- Installed new CR1000 AWS for side-by-side comparison testing

Lower temp	62 cm
ADG	60 cm
Electronics box	127 cm
ADG electronics box	53 cm
ADG solar panel	57 cm
Junction box	27 cm
Solar panel	201 cm
Boom	277 cm

Measurements
Ferrell I

Lower temp	102 cm
J-box	207 cm
Electronics box	240 cm
ADG and pyronometer	432 cm
Solar panel	365 cm
Upper temp and HMP	524 cm
Aerovane	568 cm

Measurements
Ferrell II



Evans Knoll AWS

- New AWS Installation
 - By David Holland
 - Dual purpose
 - In support of Pine Island Glacier activities
 - Possible long term climatology studies ?



Bear Peninsula AWS

- New AWS Installation
 - By David Holland
 - Dual purpose
 - In support of Pine Island Glacier activities
 - Possible long term climatology studies
- Historically requested AWS site by the oceanography community



Thurston Island

AWS

- New AWS Installation
 - By David Holland
 - Dual purpose
 - In support of Pine Island Glacier activities
 - Possible long term climatology studies
- Long desired by the AMOMFW community



D-10 AWS

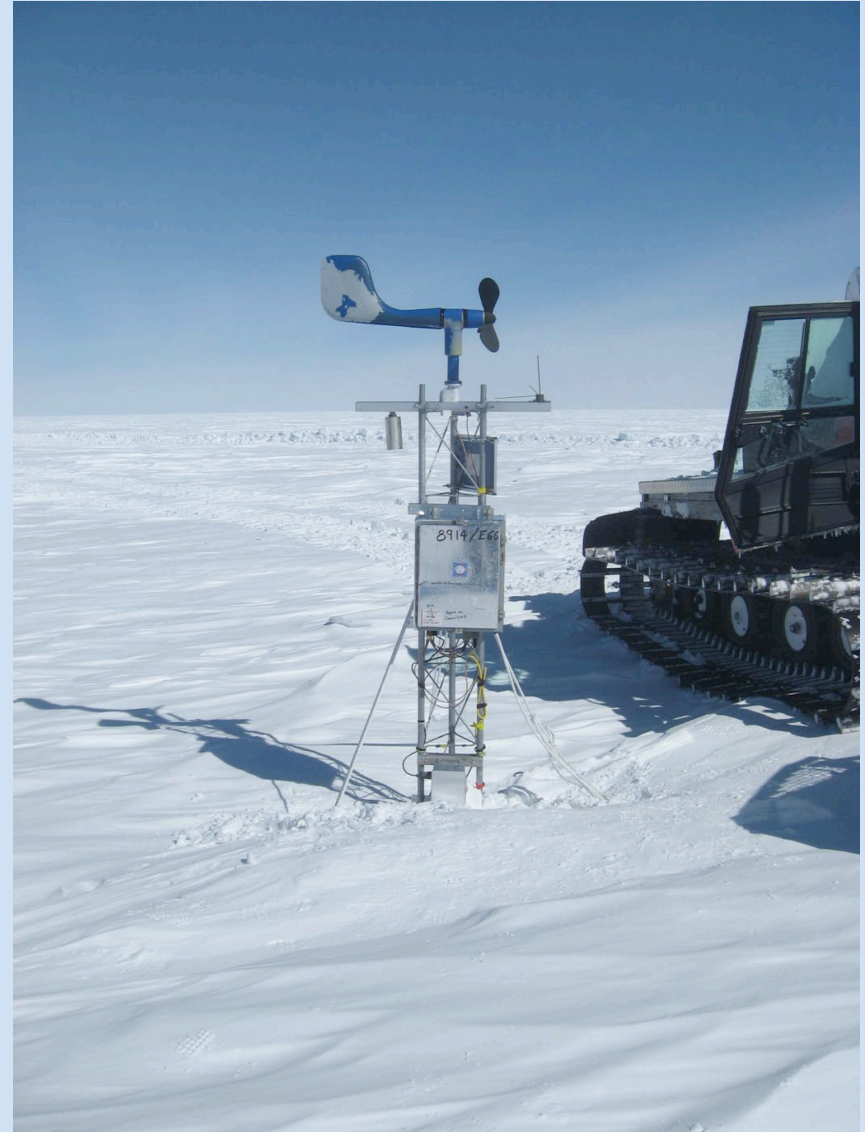
- Tower Straightened
– 18 Feb 2011



File photo: 2004 Christophe Genthon

E-66 AWS

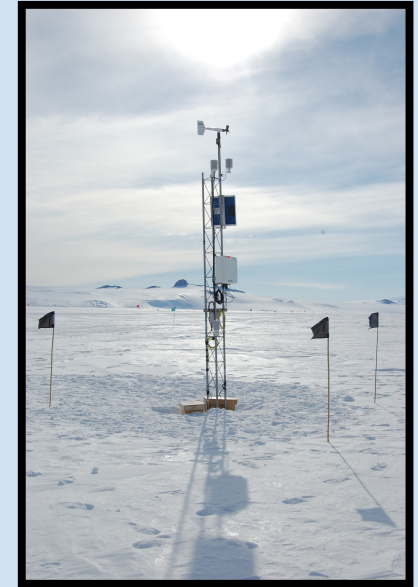
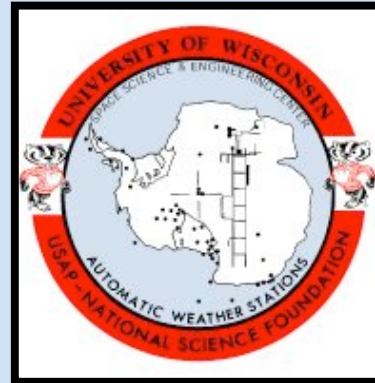
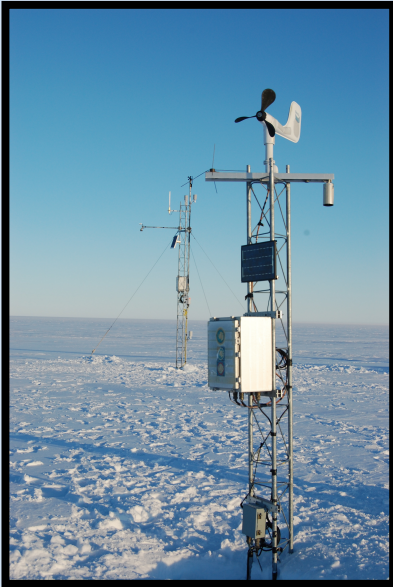
- Replaced electronics
 - 7 December 2010



D-85 AWS

- Replaced electronics
 - 22 January 2011





Thank you!

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

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National Science Foundation, Office Polar Program
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AWS Photos by Melissa Nigro, Jonathan Thom, and Lee Welhouse