

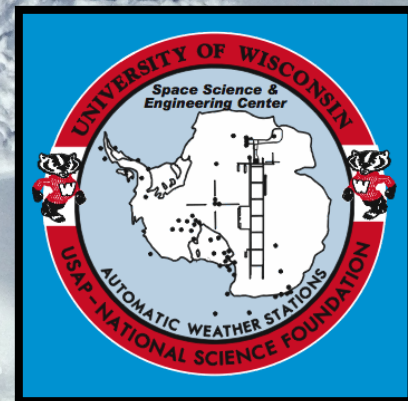
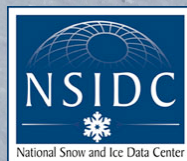
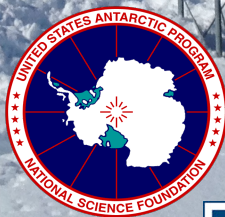
THE UW-MADISON ANTARCTIC AUTOMATIC WEATHER STATION NETWORK: A 3-YEAR UPDATE

**Matthew Lazzara¹, Lee Welhouse¹, David Mikolajczyk¹, Linda Keller^{1,2},
Jonathan Thom¹, George Weidner², Melissa Nigro³ & John Cassano³**

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

²Dept. of Atmospheric and Oceanic Sciences, University of Wisconsin-Madison

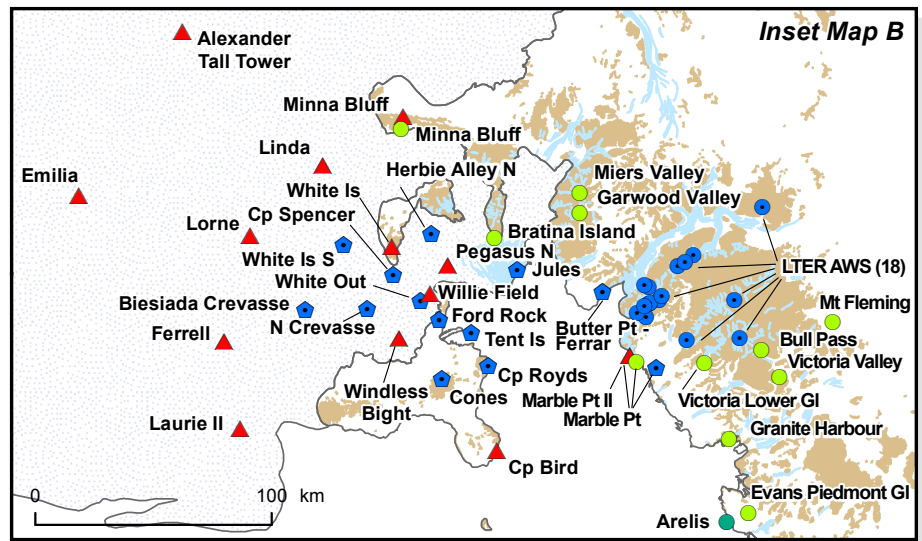
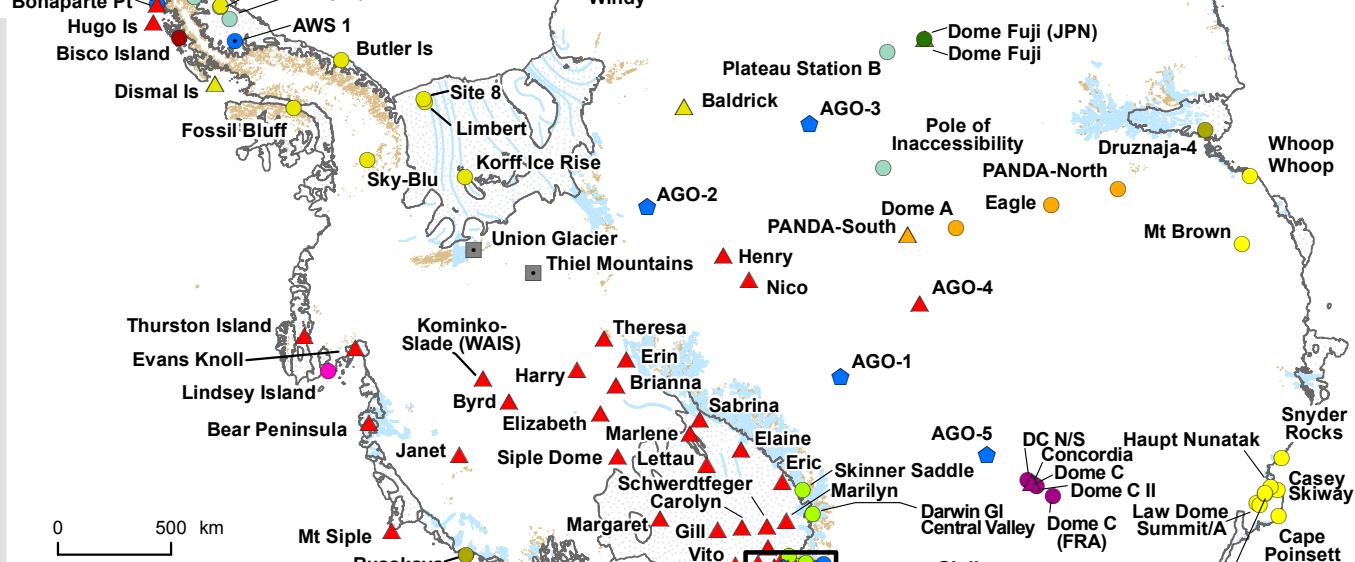
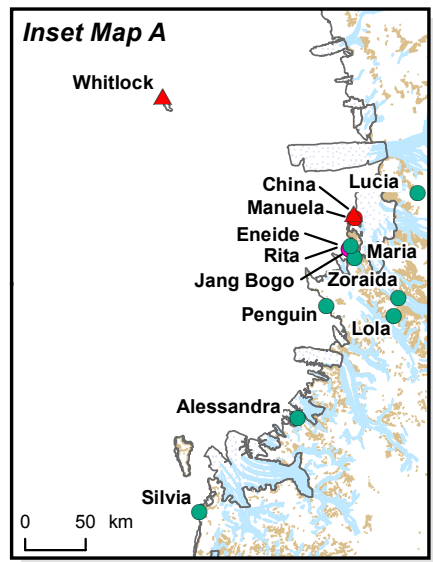
*³Cooperative Institute for Research in Environmental Sciences and Dept. of
Atmospheric and Oceanic Science, University of Colorado-Boulder*



Outline

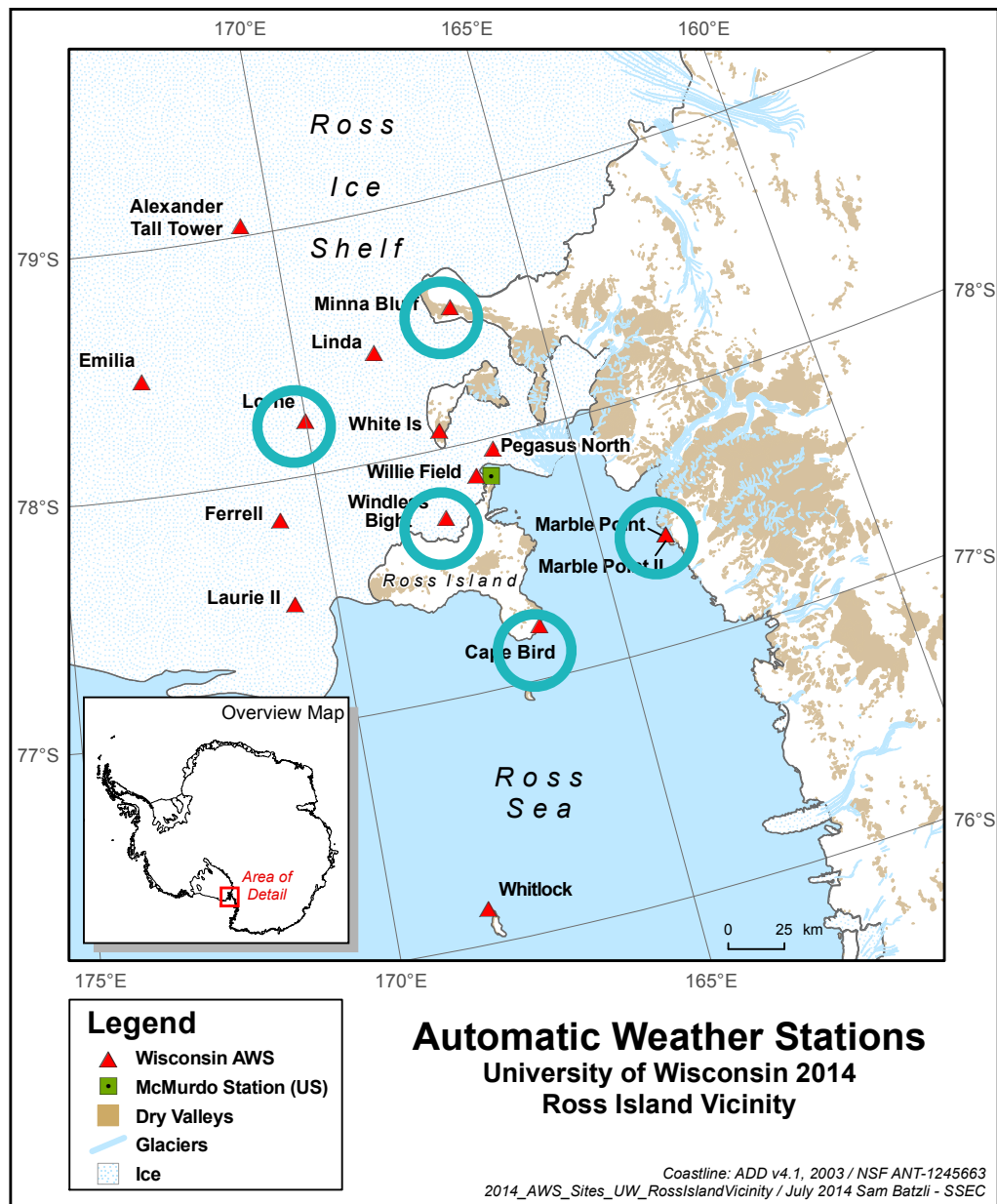
- Current AWS network
- Ozone Network: Collaboration with Lars Kalnajs
- 2014-15 Field Season
 - McMurdo and Ross Ice Shelf
 - Amundsen-Scott South Pole Station
 - WAIS Field Camp
- Shortcomings this field season
- Comparing the past three field seasons
- AMRC Data Stewardship and Public Outreach

Automatic Weather Stations Antarctica - 2014

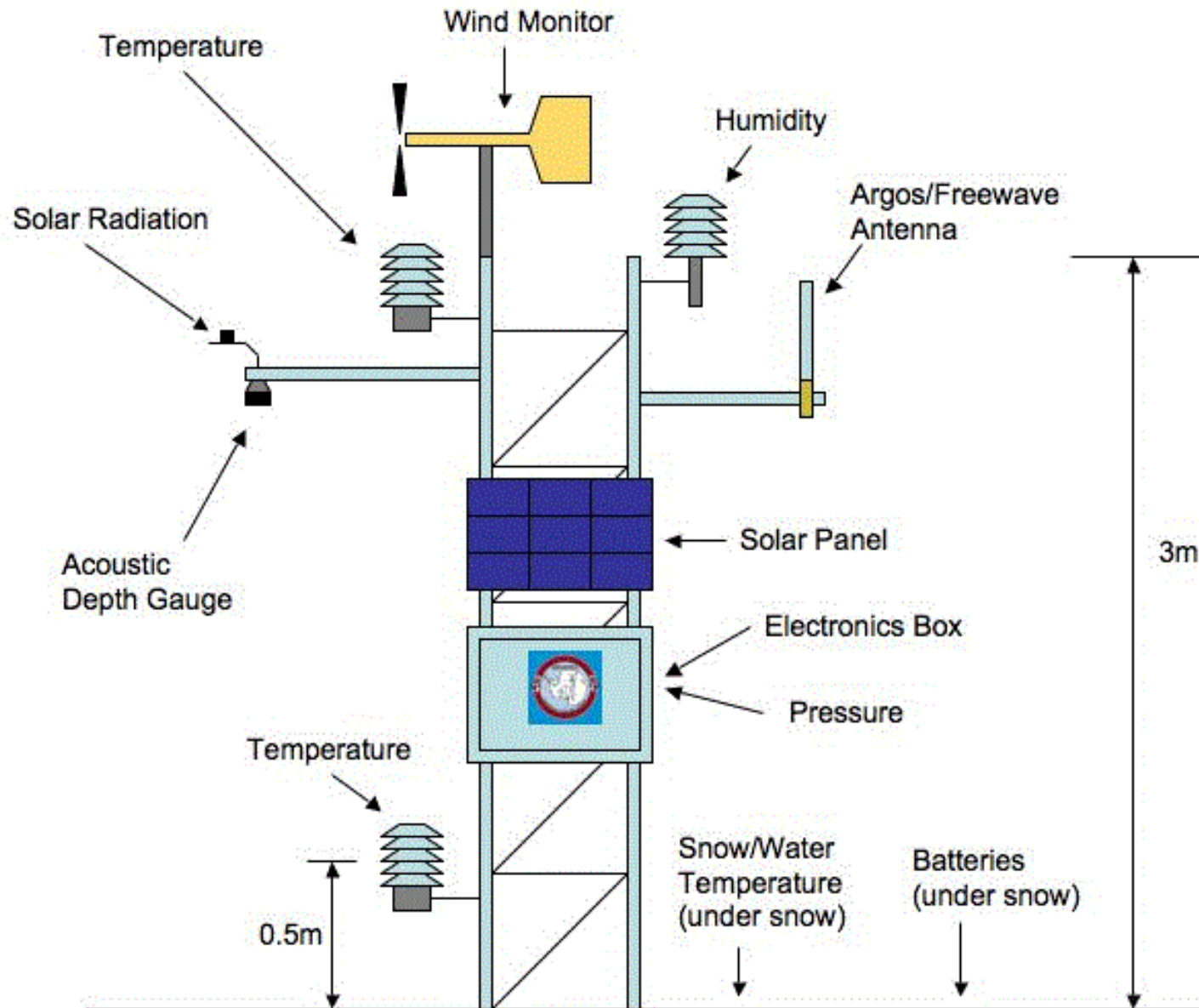


- | <u>United States AWS</u> | | <u>International AWS</u> | |
|---------------------------|-----------------------|--------------------------|--|
| ▲ Univ. of Wisconsin (UW) | ● Australia | ● Netherlands | |
| ▲ UW / Australia | ● Belgium/Netherlands | ● New Zealand | |
| ▲ UW / China | ● Brazil | ● Norway | |
| ▲ UW / France | ● China | ● Russia | |
| ▲ UW / Japan | ● China/Australia | ● South Korea | |
| ▲ UW / New Zealand | ● Finland | ● United Kingdom | |
| ▲ UW / United Kingdom | ● France | | |
| ● AGO | ● Germany | | |
| ● SPAWAR | ● Italy | | |
| ● Other US | ● Japan | | |
| | | <u>Other AWS</u> | |
| | | ■ Commercial | |

Collocated Ozone Network



AWS Diagram

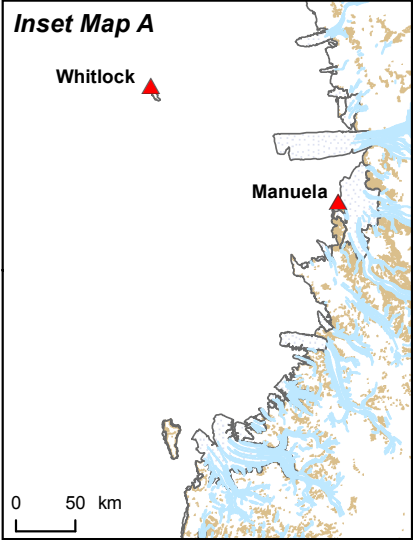


Automatic Weather Stations

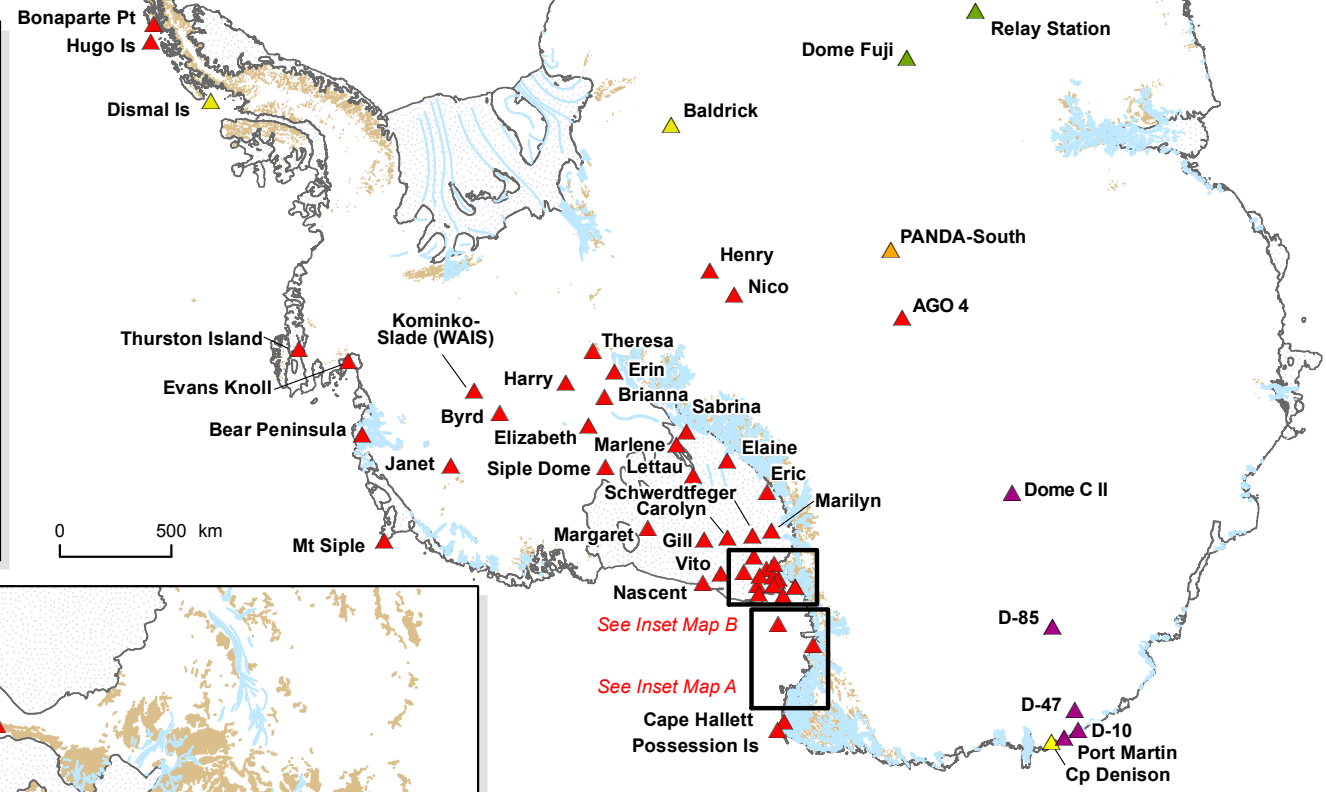
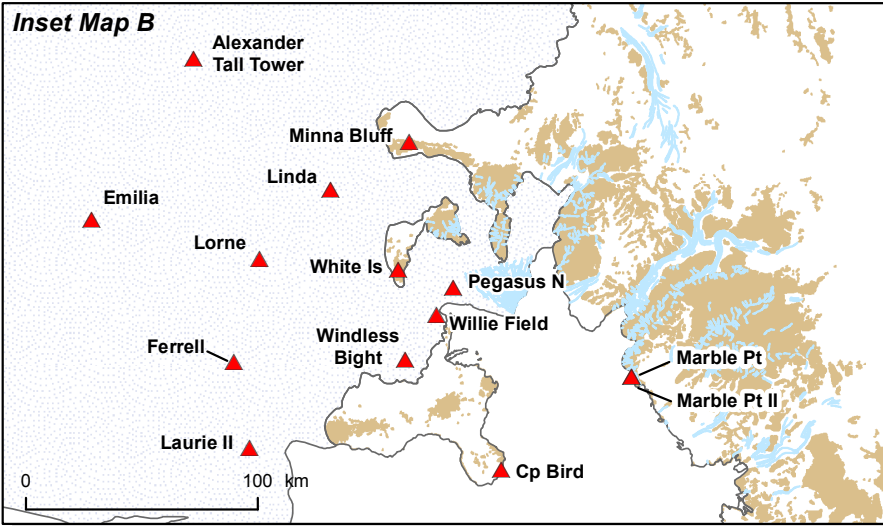
University of Wisconsin

2014

Inset Map A



Inset Map B



See Inset Map B
See Inset Map A

- University of Wisconsin AWS**
- ▲ Univ. of Wisconsin (UW)
 - ▲ UW / Australia
 - ▲ UW / China
 - ▲ UW / France
 - ▲ UW / Japan
 - ▲ UW / United Kingdom

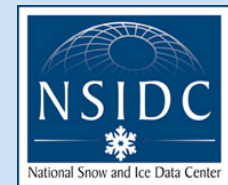
Typical Current AWS Instrumentation

- Campbell Scientific CR1000
- R.M. Young Wind monitor
- Thermometric/R.M Young temperature sensors
- Campbell Scientific Digiquartz Pressure Transducer/Vaisala PTB110 Pressure Sensor
- Vaisala HMP155 Humidity Sensor
- Campbell Scientific SR50A Acoustic Distance Guage
- Hukseflux LP02 Pyranometer

ANTARCTIC FIELD SEASON 2014-2015



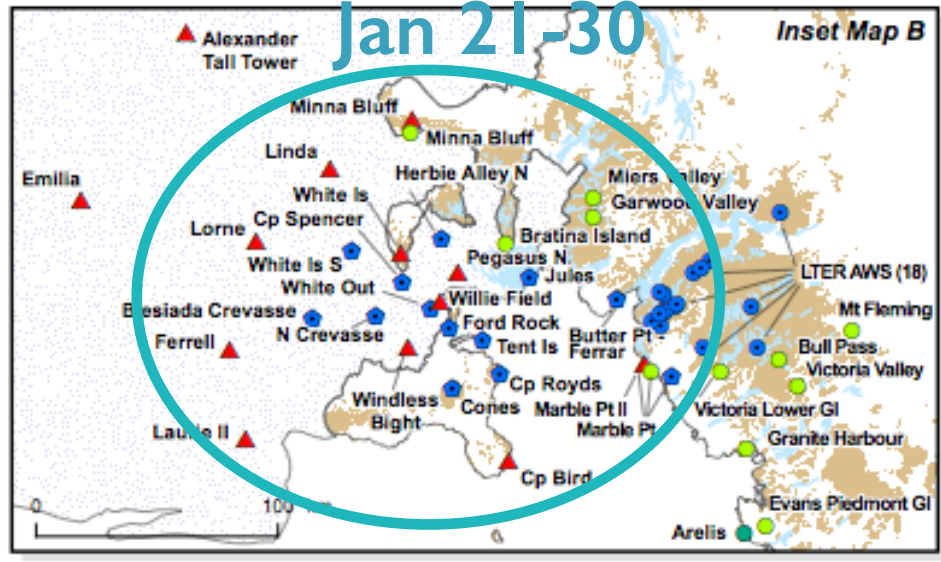
Drew Slater



Dave Mikolajczyk, Lee Welhouse, Carol Costanza, Elin McIlhattan



Automatic Weather Stations Antarctica - 2014



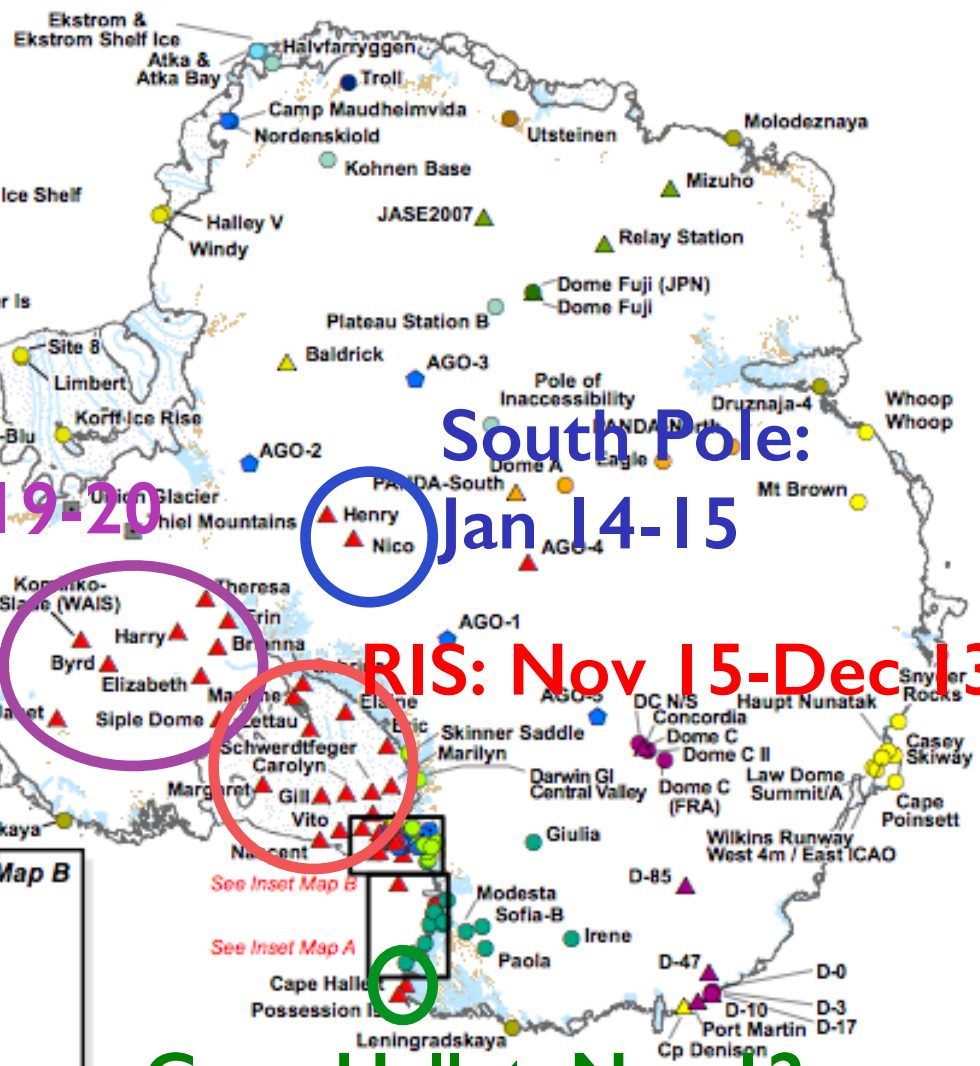
WAIS: Jan 19-20

South Pole:
Jan 14-15

McMurdo:
Dec 27-30 and
Jan 21-30

RIS: Nov 15-Dec 13

Cape Hallett: Nov 12



- | United States AWS | | International AWS | |
|---------------------------|-----------------------|-------------------|------------------|
| ▲ Univ. of Wisconsin (UW) | ● Australia | ● Netherlands | ● New Zealand |
| ▲ UW / Australia | ● Belgium/Netherlands | ● Norway | ● Russia |
| ▲ UW / China | ● Brazil | ● China | ● South Korea |
| ▲ UW / France | ● China/Australia | ● Finland | ● United Kingdom |
| ▲ UW / Japan | ● UW / New Zealand | ● France | |
| ▲ UW / United Kingdom | ● AGO | ● Germany | |
| ● SPAWAR | ● Other US | ● Italy | |
| | | ● Japan | |
| Other AWS | | | |
| ■ Commercial | | | |

NOV 12 – 22



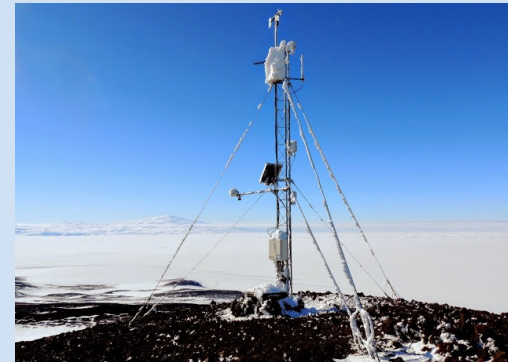
Cape Hallett AWS



Marlene AWS



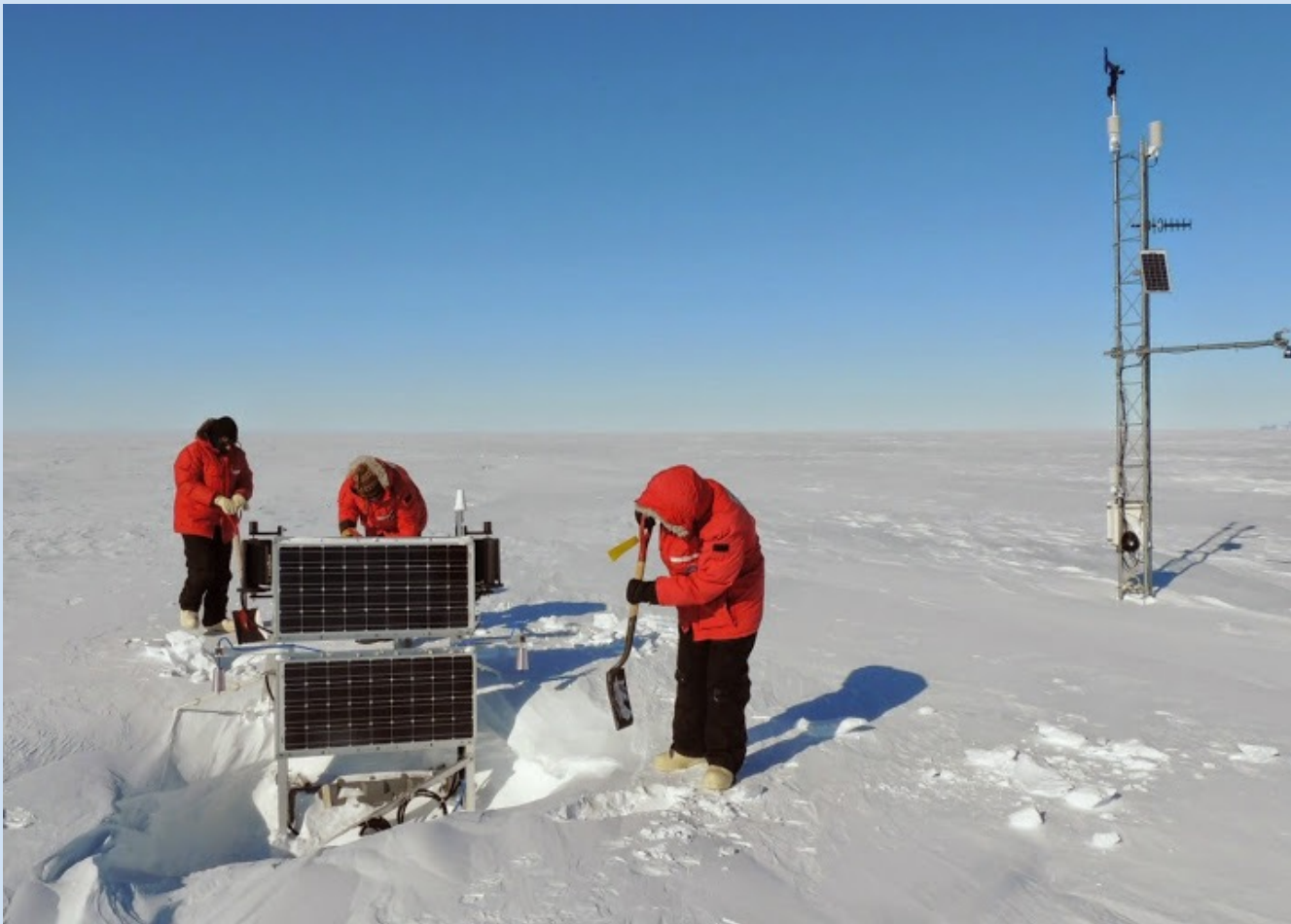
Eric AWS



White Island AWS

3 removals - Marlene, Eric, and Carolyn AWS

Nov 21 - Lorne AWS – Collocated with Ozone station

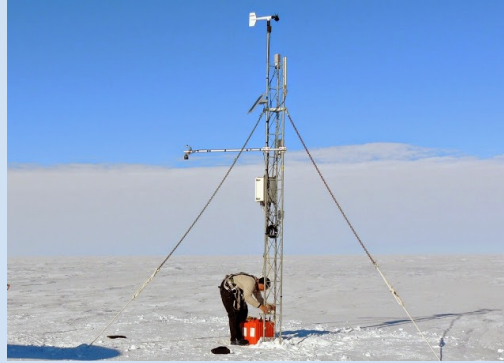


Lorne

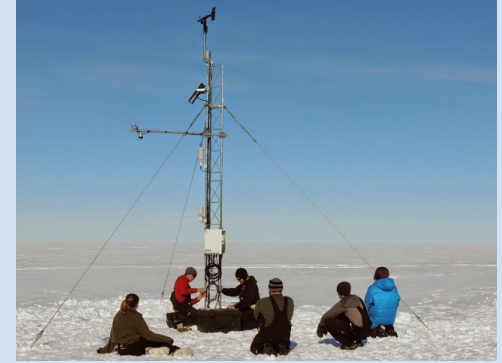
NOV 28 - DEC 13



Vito AWS



Emma AWS



Marilyn AWS

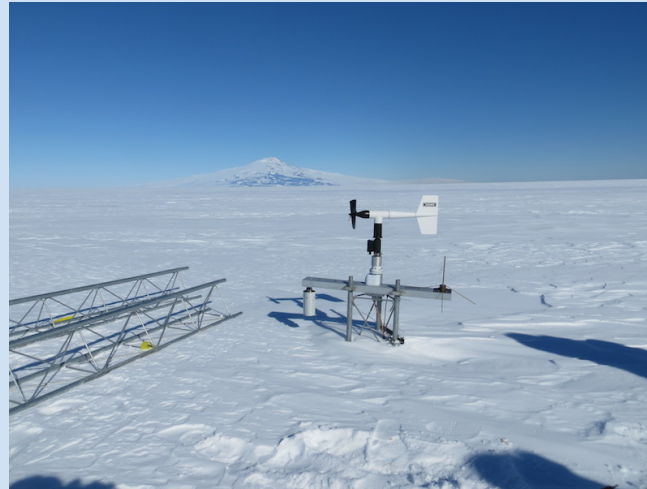


Emilia AWS

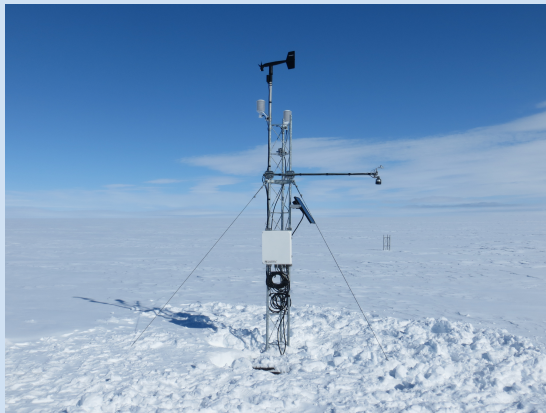


Alexander Tall Tower! AWS

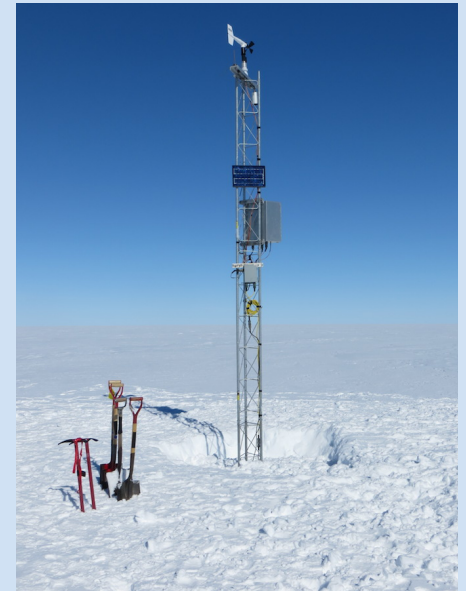
DECEMBER 27TH - 30TH



Laurie II AWS



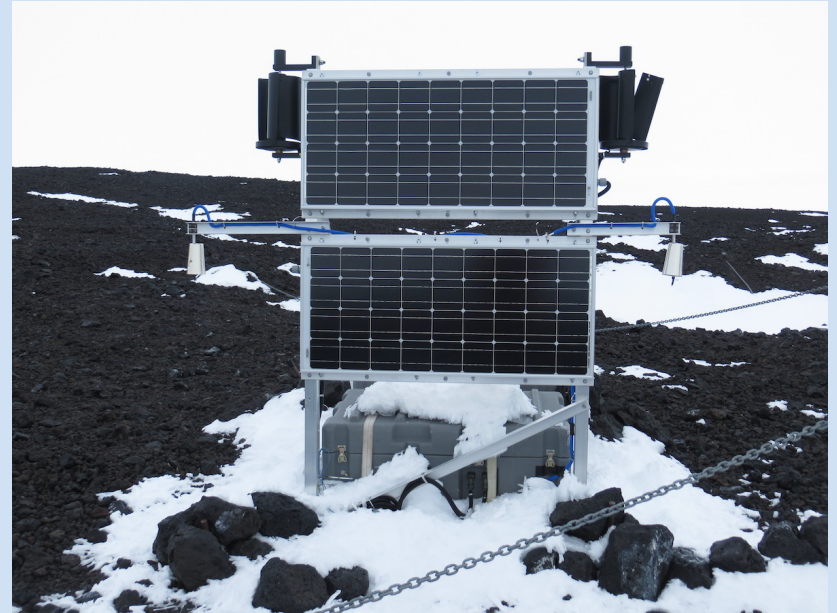
Ferrell AWS



Dec 30 – Minna Bluff AWS – Collocated with Ozone station



Minna Bluff AWS



Ozone equipment

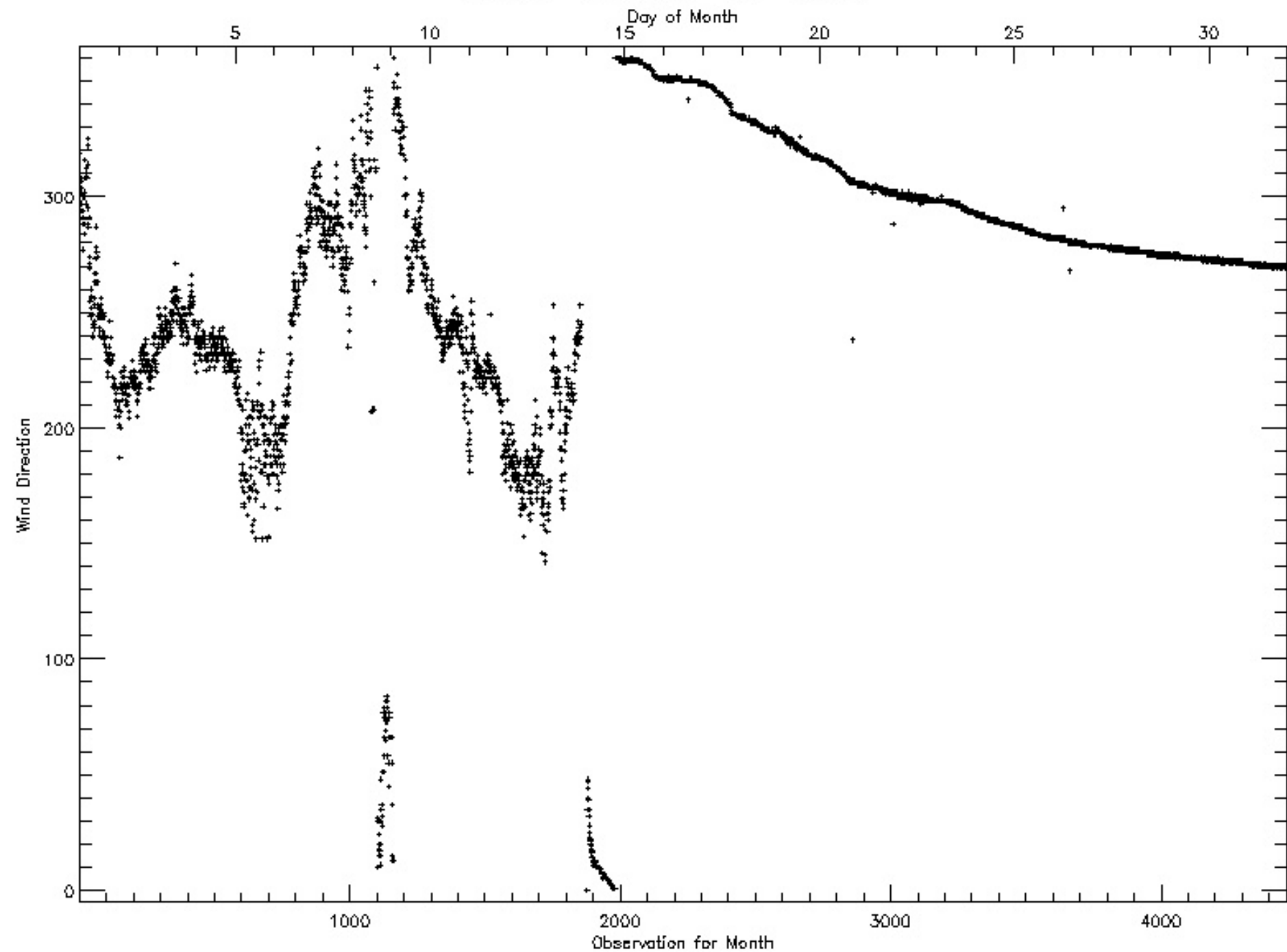
JAN 14 - 15



Nico AWS



Henry AWS



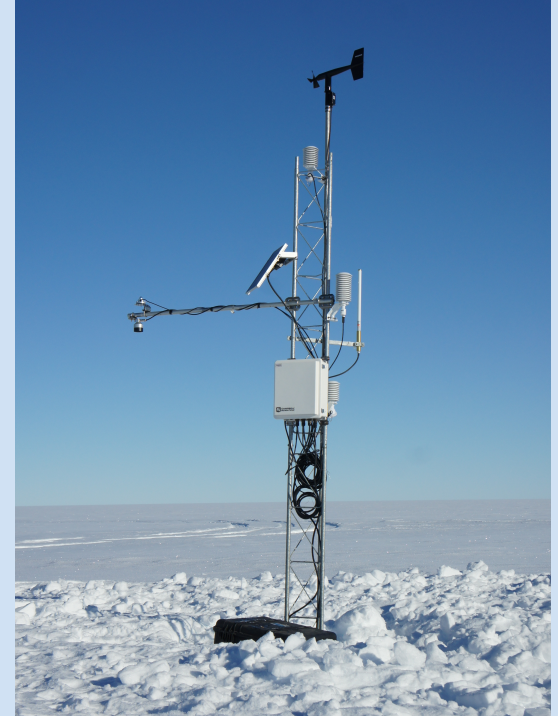
JAN 19 - 20



Kominko-Slade (WAIS) AWS

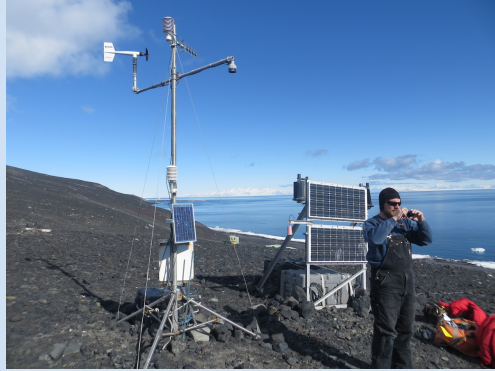


Elizabeth AWS



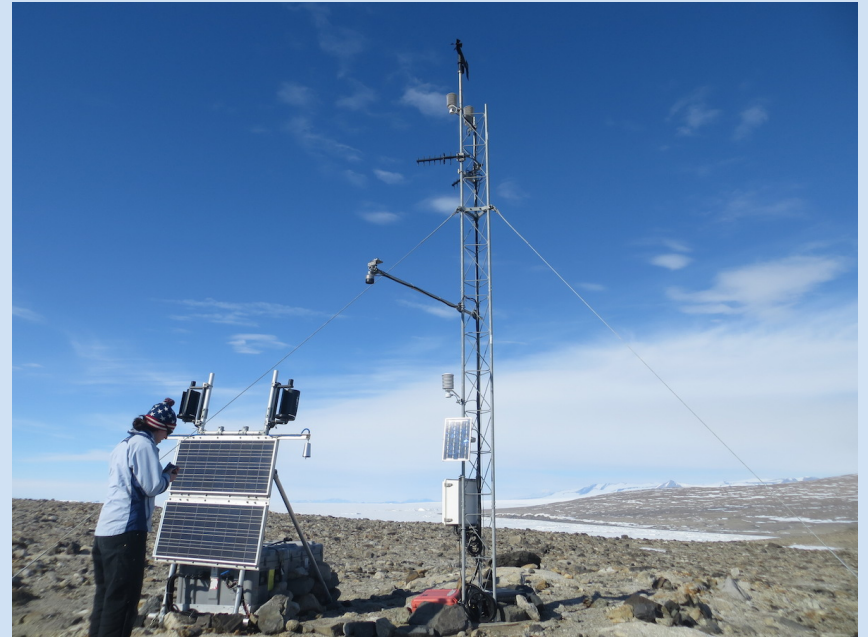
Theresa AWS

Jan 23 - Cape Bird – Collocated with Ozone station



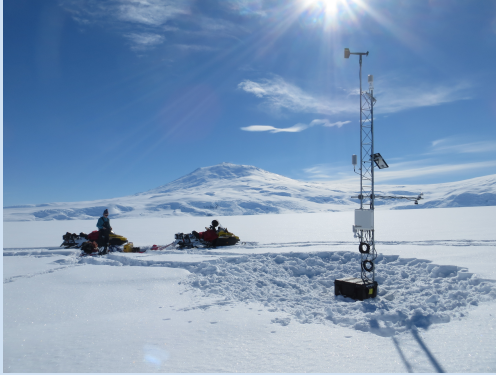
Cape Bird

Jan 27 – Marble Point – Collocated with Ozone station



Marble Point II AWS

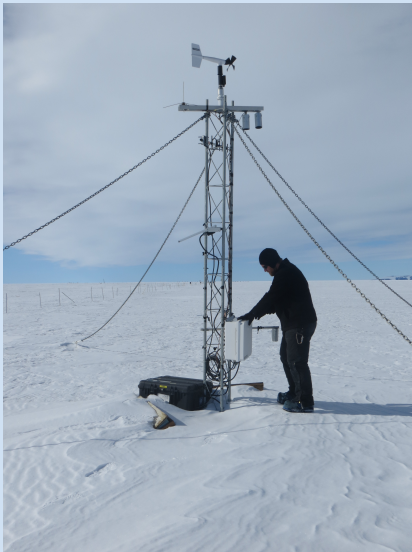
JAN 21 - 30



Windless Bight AWS



Siple Dome AWS



Pegasus North AWS



Wille Field AWS



Review of 2014-15 Field Season

What Worked

- 2 crews
 - Early season/Late Season
- Twin Otter work completed on Ross Ice Shelf
- 25 of 31 AWS visited: 81% !!
- 3 station removals means the possibility to install 3 more
- 2 AWS “rescued” from a snow burial



Laurie II AWS



Elizabeth AWS

Complications

- Timing of cargo arrival
- Work at WAIS
 - Poor weather
 - Two new stations unable to be installed
- Work at Pole
 - 8 days of waiting due to scheduling conflicts/poor weather


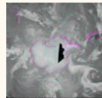
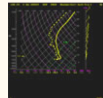
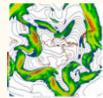
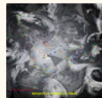

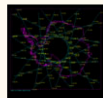

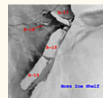
AMRC Data Stewardship

- Web: <http://amrc.ssec.wisc.edu>
 - Realtime AWS data
 - Satellite composite imagery
- Archive
 - <ftp://amrc.ssec.wisc.edu>
- Data Relay
 - LDM

Data & Imagery

See also:

- [AMRC's RAMADDA Meteorological Archive Data Server - Upgrade and Update in progress...](#)
- [AMRC/AWS FTP Data Server](#)
- [AWS Network](#)

 <p>Antarctic Surface Observations (Current surface weather conditions in the Antarctic, including from the AWS network)</p>	 <p>Satellite Imagery and Composites (Current Satellite imagery from polar orbiting satellites and satellite composites)</p>	 <p>Upper-Air Observations (Current Meteorological observations from weather balloons)</p>
 <p>Models and Forecasts (Model forecast guidance for the Antarctic region)</p>	 <p>Data Fusion (Overlays & combinations)</p>	 <p>Aircraft Observations (Current meteorological aircraft reports)</p>
 <p>Satellite Navigation (Expected tracks of polar orbiting satellites)</p>	 <p>USAP Stations (Historical surface observation database)</p>	 <p>Iceberg Images (Current and past images)</p>

AMRC Public Outreach

- Facebook <https://www.facebook.com/AMRCAWS?ref=hl>
- Twitter: @ANTMET
- Blog: amrc.ssec.wisc.edu/blog
- Tours
- Public Events



2014 Wisconsin State Fair

On the Ice

[← Older posts](#)

End of AWS Field Season 2014-2015
Posted on [February 27, 2015](#) by [Carol Costanza](#)


Hi Everyone!

Sorry to leave you all hanging for the past month! We left the continent 3 February, then took some time off and got back to the office about 2 weeks ago, but I figured I should finish explaining the end of the season. I left off on 23 January when we went to Cape Bird AWS, so I will basically be explaining our last week on the ice.

In this last week we had plans to take Twin Otter flights to both Siple Dome AWS and Vito AWS, helo flights to Ferrell AWS and both of the Marble Point AWS, and then drive out to the airfields for Willie Field AWS and Pegasus North AWS. We knew this was a lot of work to finish up in the end, but if weather and scheduling was on our side we would be able to get it all done before we left.

Tuesday 27 January we had our first chance to fly, and we had actually been scheduled for both a Twin Otter flight to Siple Dome and helo flights to Ferrell AWS and Marble Point AWS. We took this opportunity to divide and conquer, so Lee and Elin headed to Siple Dome for the day and Dave and I went on the helo flight later that afternoon. At Siple Dome AWS, Lee was able to verify that the pressur sensor was working properly and complete a general check of the station.

Dave and I headed out on the A-Star helo in the afternoon. This was easily my favorite helo ride of season because I got to sit in the front with the huge windows! Before we got to Marble Point, the pilot had us stop on the sea ice to check for something that had fallen. Dave got out of the helo and tried to get the black material off the ice. It turns out it was a snowmobile cover, and he couldn't get it out because the straps were too frozen in the ice to pull it out.



Home

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- [South Pole Telescopes, SPICECORE, and Henry AWS](#)
- [Getting to South Pole and visiting Nico AWS](#)
- [I launched a weather balloon!](#)

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- [Chris](#) on [On Ice](#)
- [Char](#) on [Delayed](#)

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- [November 2012](#)
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Plans for Future Field Seasons

- 2 new installs in West Antarctica
- Service at least 6 AWS in W. Antarctica
- Test Iridium transmitters at more AWS

Acknowledgments

- **Antarctic AWS Observations:**
The authors appreciate the support of the University of Wisconsin-Madison Automatic Weather Station Program for the data set, data display, and information, NSF grant numbers ANT-0944018 and ANT-1245663.
- Thanks to NSF, ASC, 109th NY Air National Guard, Ken Borek Air, PHI Helicopters, Antarctic community, data users.

Thank You!

