

FUTURE WISCONSIN AWS FIELD SEASON 2019-2020

Matthew A. Lazzara^{1,2}, Lee J. Welhouse^{1,2}, David E. Mikolajczyk¹, Marian Mateling³, Josh Thorsland⁴, John J. Cassano⁵, Ted Scambos⁵, and Taylor P. Norton^{1,3}

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

²Department of Physical Sciences, School of Arts and Sciences, Madison Area Technical College, Madison, WI

³Atmospheric and Oceanic Sciences Department, University of Wisconsin-Madison, Madison, WI

⁴Department of Electrical Engineering Technology Department, Madison Area Technical College, Madison, WI

⁵ Cooperative Institute for Research in Environmental Sciences, University of Colorado-Boulder, Boulder, CO, USA

⁶Atmospheric and Oceanic Sciences, University of Colorado-Boulder, Boulder, CO, USA

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

1. OVERVIEW

A successful 2018-2019 field season leads into the 2019-2020 field season which represents the final season for the current Automatic Weather Station (AWS) grant and the first field season for the upcoming West Antarctic Tall Tower project. This field season will be focused in three areas, McMurdo area, Ross Ice Shelf, and West Antarctica. West Antarctic work will be based primarily out of Byrd Field camp and will involve the deployment of up to 4 team members, with 2 deploying for the Tall Tower work, and up to 3 deploying for the AWS field season. The work will take place from mid-November through late January, and will focus on a combination of new installations, AWS maintenance, the installation of new Polar Climate and Weather Stations (PCWS). Future plans beyond the 2019-2020 season will be discussed, and community feedback is welcome on all aspects.

2. WEST ANTARCTICA

The 2019-2020 field season saw significant work done within this region. However, due to the placement of some stations in high accumulation regions, station raises are required at Kathie and Austin AWS. Further, the installation of high wind speed systems at

Thurston Island and Bear Peninsula are to be completed. This season will also include the installation a new tall tower AWS at Byrd Field Camp. The tower will have a nominal height of 30 meters, with observation levels found in figure 1.

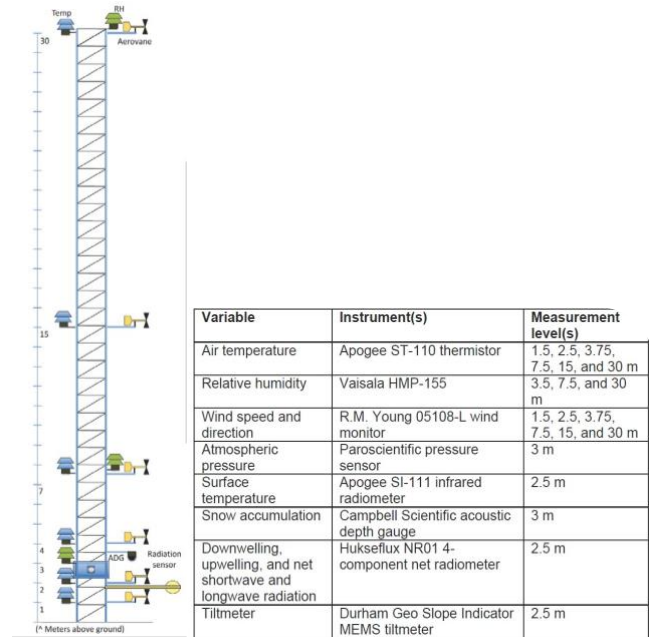


Figure 1. Diagram of the tall tower to be installed at Byrd Field Camp.

The new tall tower station will not replace the current Byrd AWS system,

* Corresponding Author: Matthew A. Lazzara
AMRC, SSEC, UW-Madison, Madison, WI
E-mail: mattl@ssec.wisc.edu

3. ROSS ICE SHELF

A number of sites need maintenance in the Ross Ice shelf region. Of primary importance, is Margaret AWS as it has not been visited in over four years and will need raising and general maintenance. Further, the raise of Alexander Tall Tower! was not completed during the 2018-2019 field season, though staging and preparations were made to allow for the raise to occur this field season. Finally, a few PCWS systems will be installed and collocated with current AWS stations as a test case for these new systems.

4. MCMURDO AREA

The transition from 900Mhz UHF radios to Iridium short data burst (SBD) modems has been completed in this region, and has been mostly successful. These stations will be visited for minor maintenance, power system updates. A PCWS station will also be collocated with White Island AWS, during routine maintenance at the site to test the system's ability to capture high wind speed events.

5. FUTURE PLANS

Future activities with the AWS network are pending. Proposed efforts will focus on the variability of Austral winter in Antarctica, cold pools of low-temperature air over East Antarctica and the impact of time varying height of AWS sensors above the surface on long-term climate trends. Of course, continued

maintenance of the network will remain a constant future need for the network (Lazzara et al., 2012; 2015).

6. ACKNOWLEDGEMENTS

This material is based upon work supported by the National Science Foundation, Directorate for Geosciences, Office of Polar Programs, under Grant ANT-1848710 and 1543305.

6. REFERENCES

- Lazzara, M.A., G.A. Weidner, L.M. Keller, J.E. Thom, J.J. Cassano, 2012: Antarctic automatic weather station program: 30 years of polar observations. *Bull. Amer. Meteor. Soc.*, **93**, 1519-1537, doi:10.1175/BAMS-D-11-00015.1.
- Lazzara, M.A., L.J. Welhouse, D.E. Mikolajczyk, M. Tsukernik, J.E. Thom, L.M. Keller, G.A. Weidner, J. Snarski, J.J. Cassano, and L. Kalnajs, 2015: Automatic weather station (AWS) program operated by the University of Wisconsin-Madison during the 2012-2013 field season: challenges and successes. *Antarctic Record*, **59**, 73-86.

Corrections, updates and additions to the AWS map (see next page) are requested by all meeting attendees for AWS installations by all nations and groups.

Automatic Weather Stations Antarctica - 2018

