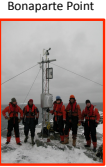




Antarctic Climatology using Automatic Weather Stations

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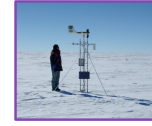
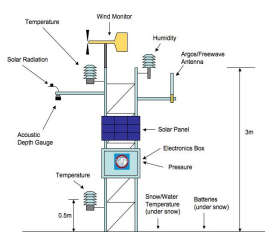
Dismal Island

Palmer Land

- Warmest area in Antarctica due to its coastal geography
- Temperatures similar to Madison WI's winter (0-40 °F)
- Warming already discovered (Turner et al., 2005, "Antarctic Climate Change")



Hugo Island



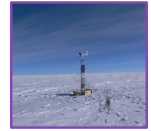
Dome C II



AGO-4

High Polar Plateau

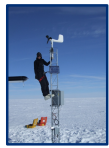
- High Elevation ~3500 m
- Low Pressure ~600-700 mb
- Produces Extremely Cold Temperatures
- Minimum Temperature Record: -84.6 °C or -120.3 °F at Dome C in August 1982



Dome F (Fuji)



JASE2007



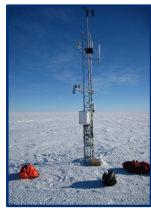
Henry

West Antarctica

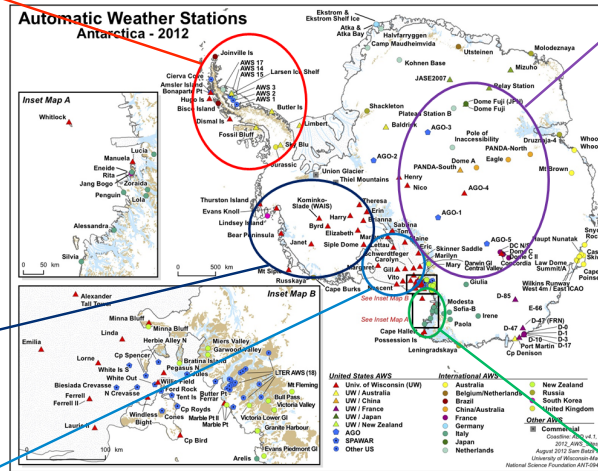
- Currently most active research area
- Studies of 3 km deep ice cores help us to understand past climate and stability of the atmosphere
- Affected by El Nino



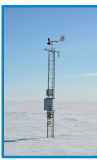
Janet



Byrd



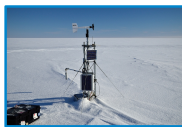
Abstract:
 In 1980, UW-Madison installed their first six Automatic Weather Stations (AWS) in Antarctica. Currently, there are roughly 120 AWS in Antarctica and UW-Madison is associated with about half of them. Thus, this data creates a 31-year history of weather in Antarctica and the perfect platform for Antarctic climatology research. Both individual stations and regional areas were evaluated using variables such as temperature, pressure, wind speed, and wind direction. One regional area to consider is the four stations, Gill, Schwerdtfeger, Carolyn, and Marilyn, which are located in the Ross Ice Shelf along the 80S latitude line. This region is significant due to the complex meteorology of the region including polar lows/mesocyclones, synoptic storm influences, maritime intrusions, Ross Ice Shelf Air Stream, katabatic and barrier winds to name a few phenomena. Future work will include studying the climate in other regions of Antarctica, which will help with engineering, planning, and logistics in Antarctica.



Schwerdtfeger

Ross Ice Shelf

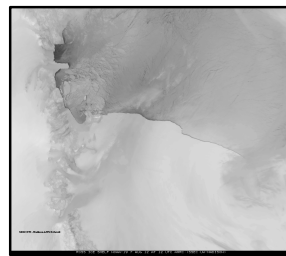
- Low Potential Temperature (temperature if air is lowered to standard pressure)
- Location of ~40% of UW's AWS
- Katabatic Flow



Carolyn



Gill



Katabatic Flow



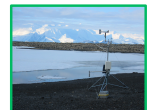
Whittlock

Victoria Land

- High Wind Speed
- Record: Manuela June 2012, 72.1 m/s or 161.2 mph
- Equivalent wind speed to a Category 5 hurricane
- Manuela Average Wind Speed for June 2012, 31.3 m/s or 70 mph



Manuela



Cape Hallett

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