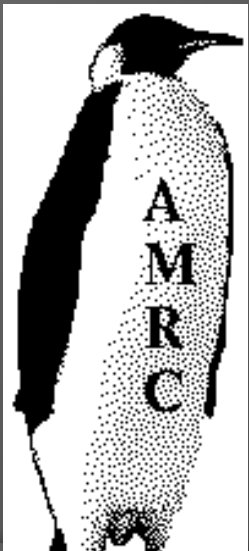# ANTARCTIC METEOROLOGICAL RESEARCH CENTER'S MCIDAS USAGE AND FUTURE CYBERINFRASTRUCTURE

Carol Costanza, Dave Mikolajczyk, and Matthew Lazzara

AMRC – SSEC

University of Wisconsin-Madison

McIDAS User Group Meeting 2015

History

- ◆ Funded by the Division of Polar Programs, Geoscience Directorate of the National Science Foundation
- ◆ AMRC began in 1992
  - ✕ A "marriage" between the SSEC McIDAS group and the Antarctic Automatic Weather Station project (AWS started in 1980 with currently ~58)
- ◆ Included:
  - ✕ Satellite composite creation
  - ✕ Meteorological data archive
  - ✕ Forecasting (the "AMFC" – ended ~1998)
- ◆ Group vs. the Grant…
  - ✕ The AMRC as a grant is ending…
  - ✕ Transition: Cyberinfrastructure…

AMRC Introduction

◆ Study & display the weather in Antarctica in multiple ways using McIDAS in the toolbox
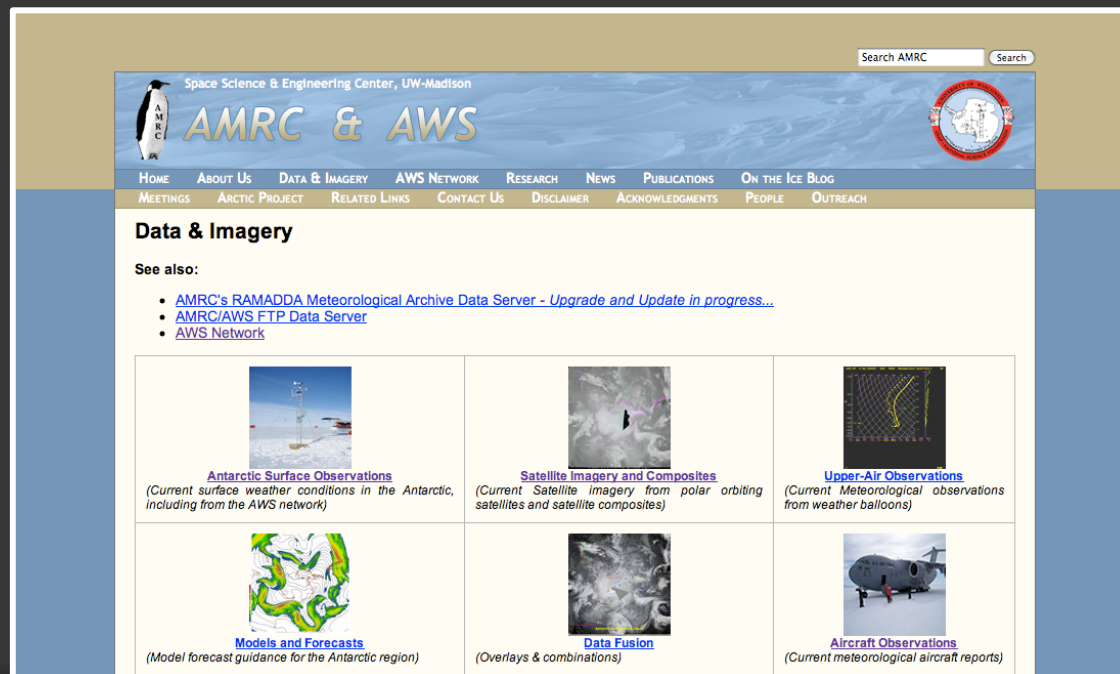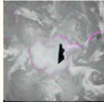
◆ AMRC project contributes to McIDAS-XRD

ANTARCTIC IR COMPOSITE 2 JUN 15 AT 11 UTC AMRC:(SSEC:UW-MADISON)

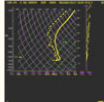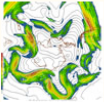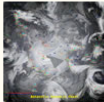SFC T[c] at 14 UTC on 02 Jun 2015
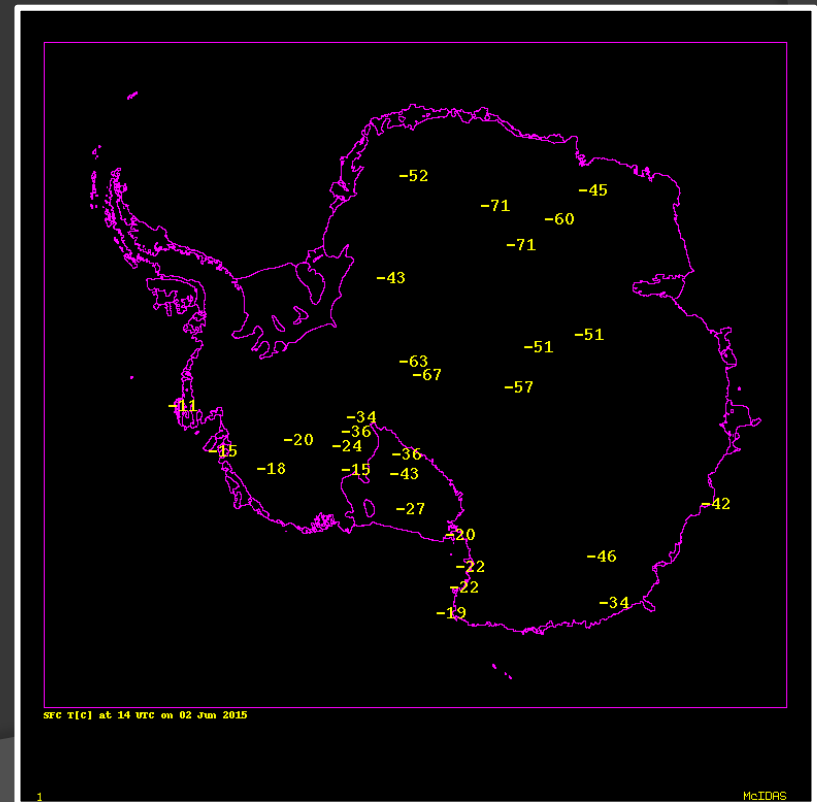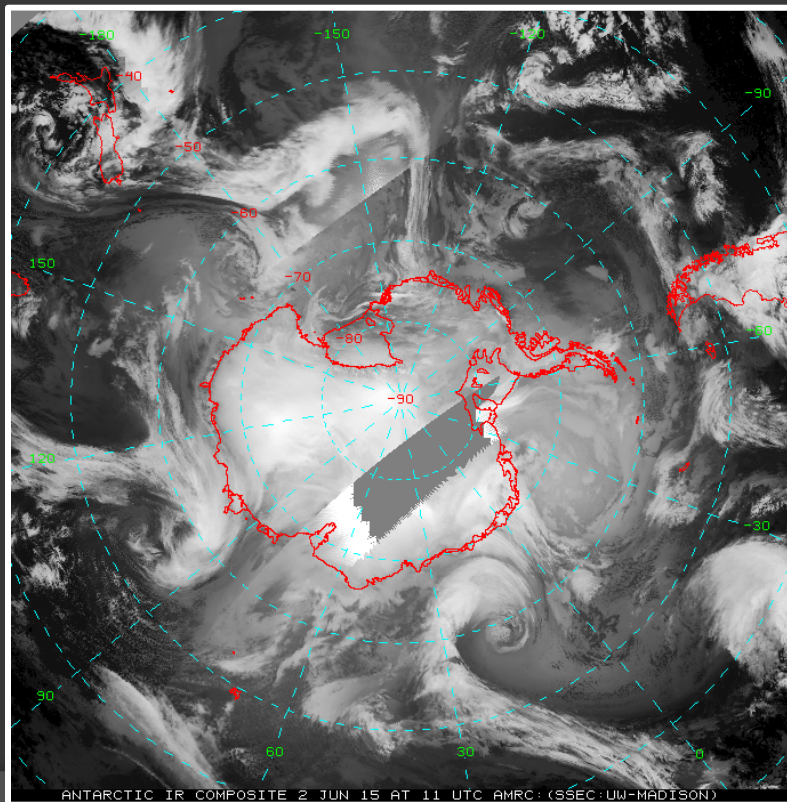
AMRC Historic SDI Usage

- AMRC Automatic Weather Station - Real-time
- **<u>Original</u>** SDI (running under Solaris 10)
  - 2 - McMurdo Station, Antarctica
  - 1 - Palmer Station, Antarctica
- Software to breakout NOAA DCS (Argos)
  - Hexidecimal AWS data via ADDE text server
  - Only working through NOAA-18
  - Running on SDI-104 in SSEC Data Center
- AMRC future usage pending with NSF

AMRC Website

◆ McIDAS is utilized to create AWS meteorograms, AWS hex and text listings, AWS obs plots, satellite composites, hodographs, skew-t, synoptic model data displays, aircraft obs, etc.
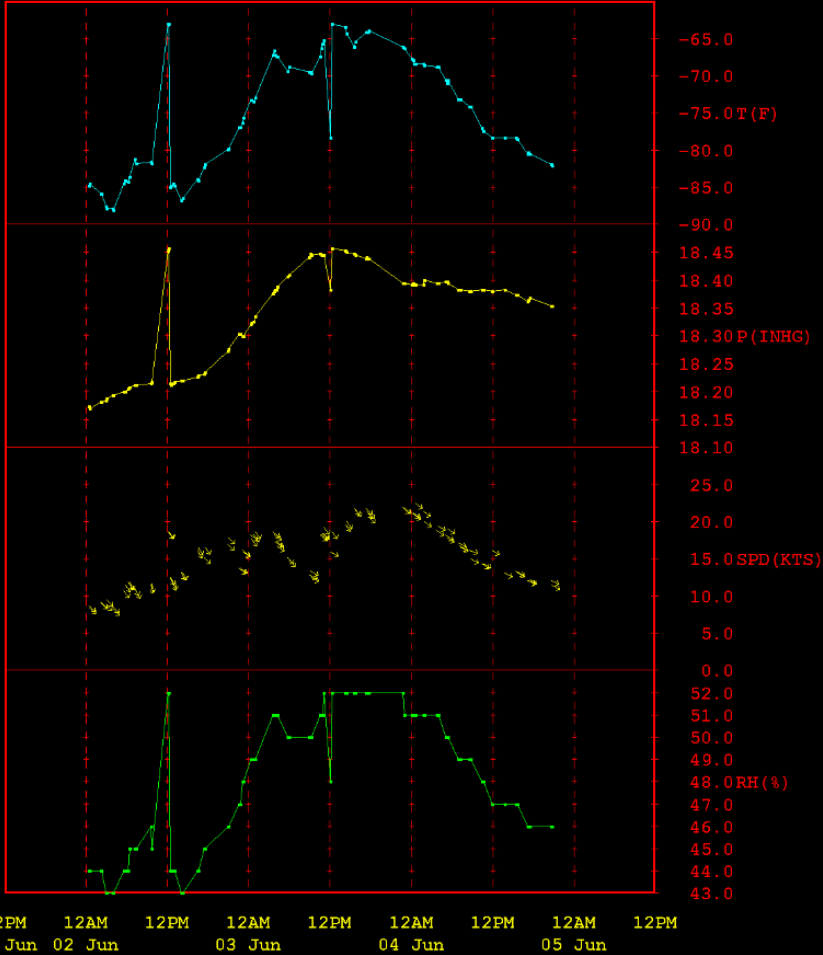
OWL: SSEC's On-line Weather Looper!

AWS Map Displays

Model Data Fusion

Antarctic and Arctic Composites

◆ Infrared, Longwave, Shortwave, Water Vapor, Visible, and Pseudo-Color (only Antarctic)

◆ Published Kohrs et al., 2014

◆ Composites created hourly at a 4km resolution using polar orbiting and geostationary satellites data that is available within the hour
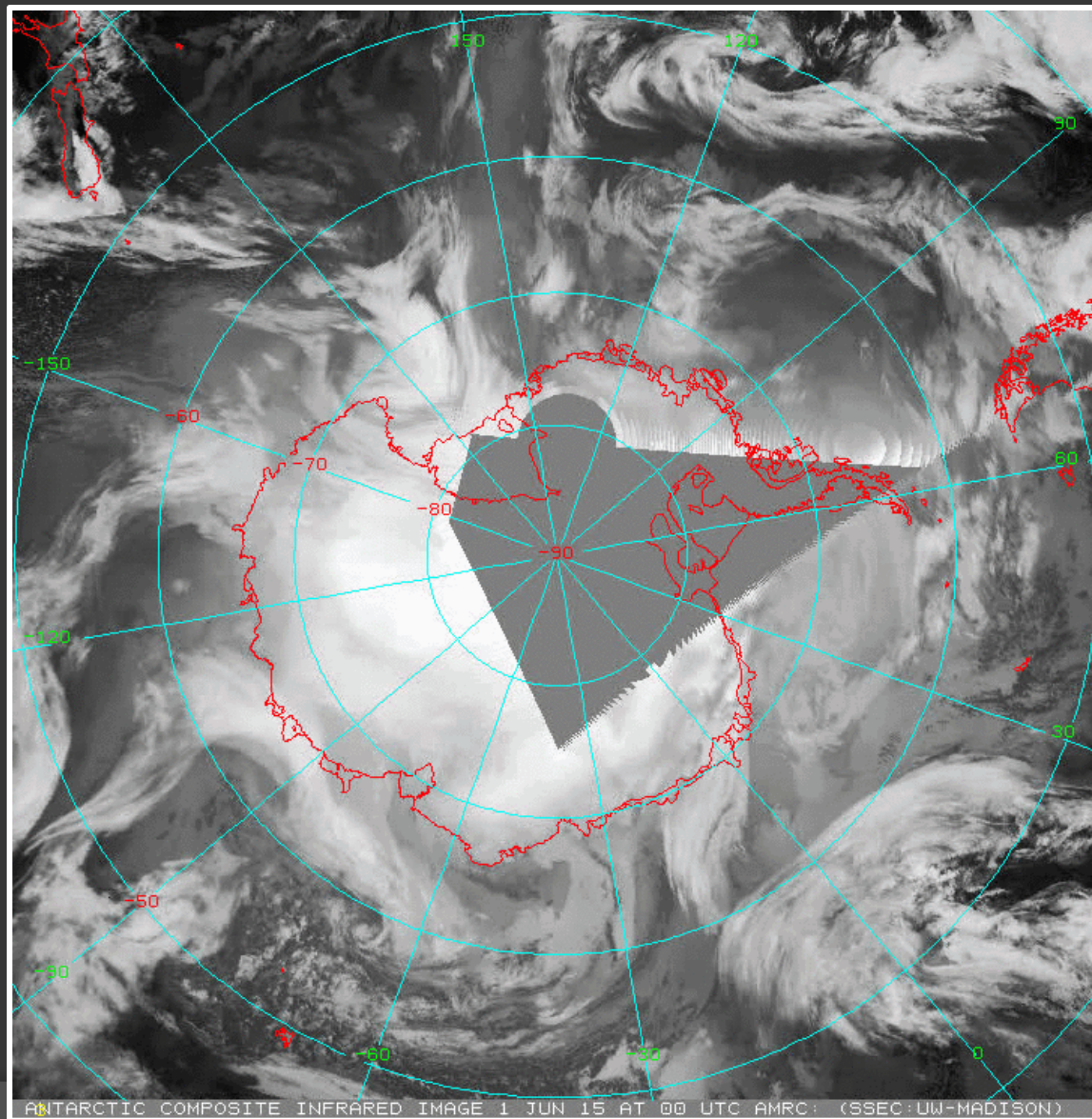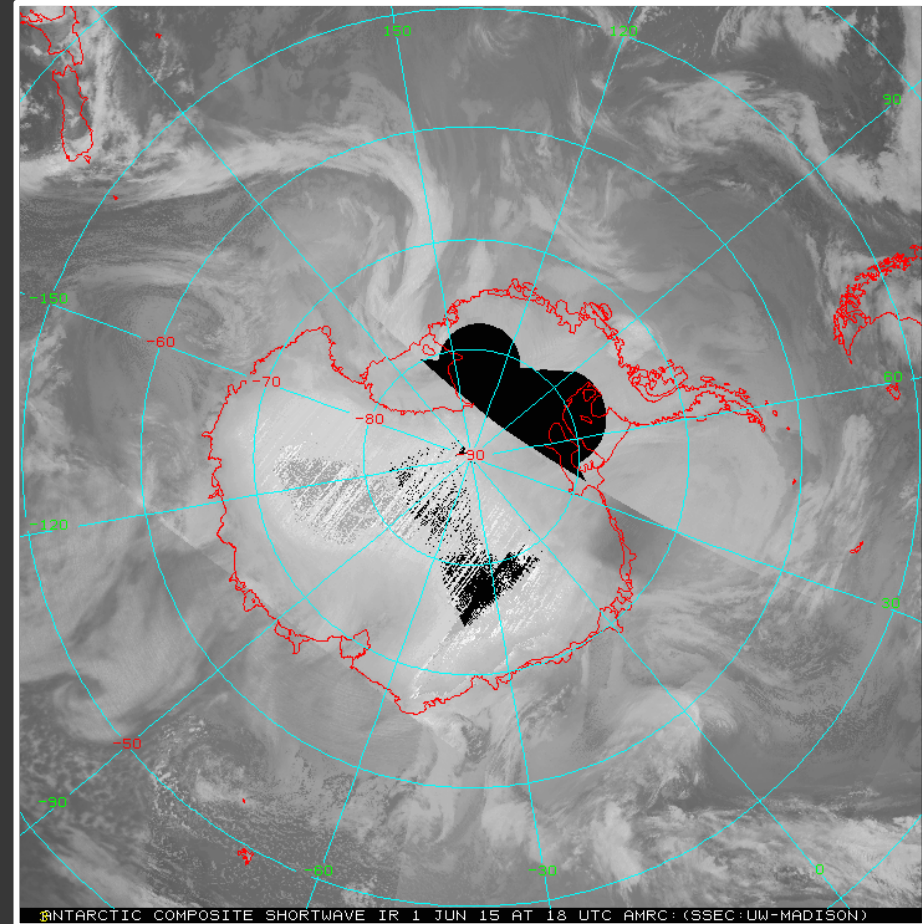
◆ Use McIDAS to create area files, multiple sized gif images, and animations

Antarctic Infrared Animation

ANTARCTIC COMPOSITE INFRARED IMAGE 1 JUN 15 AT 00 UTC AMRC: (SSEC:UW-MADISON)

Antarctic Longwave and Shortwave
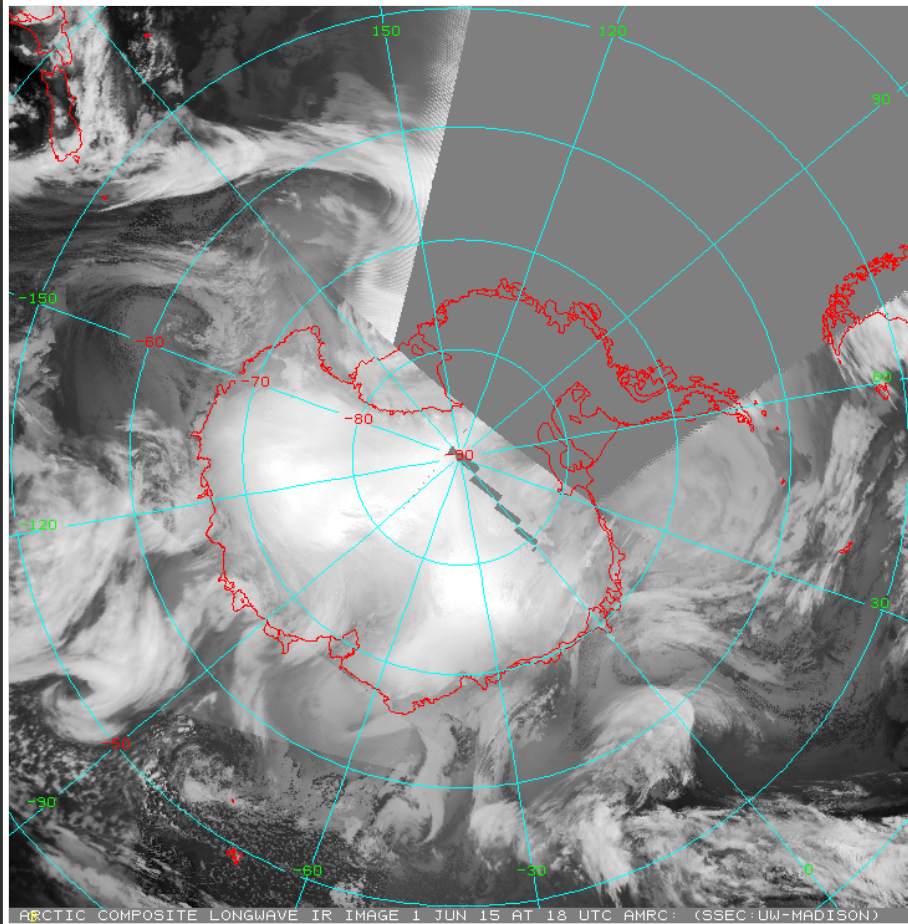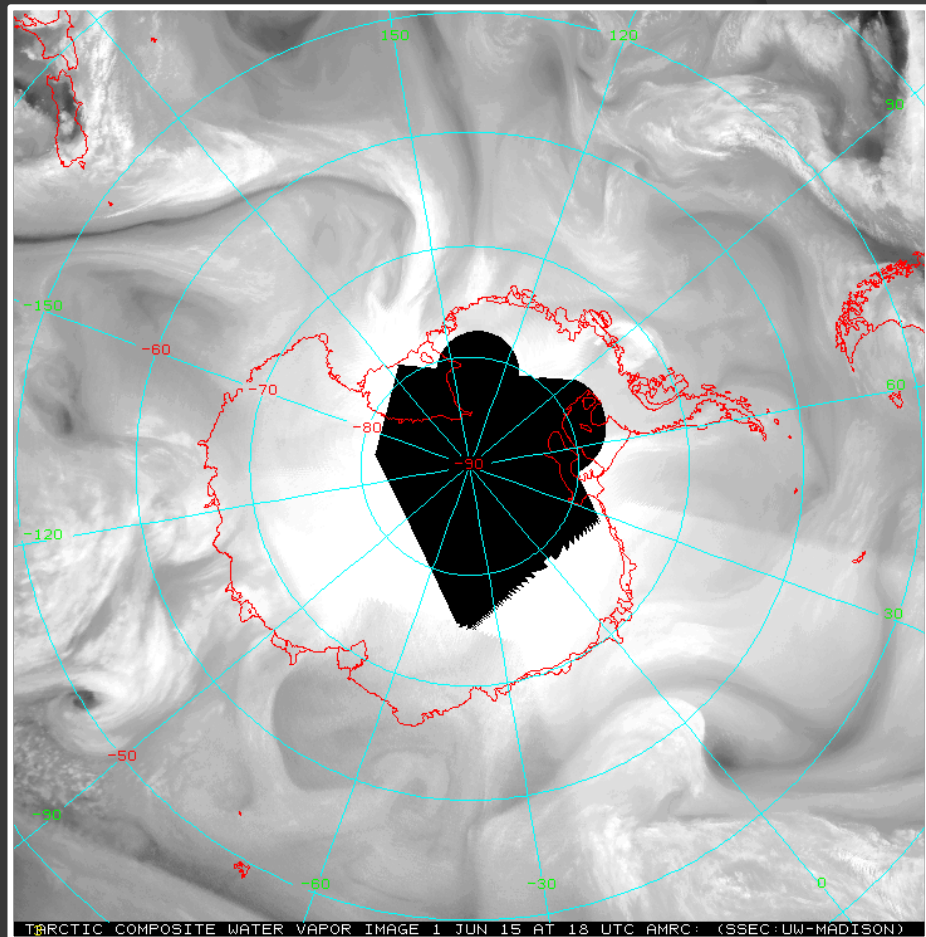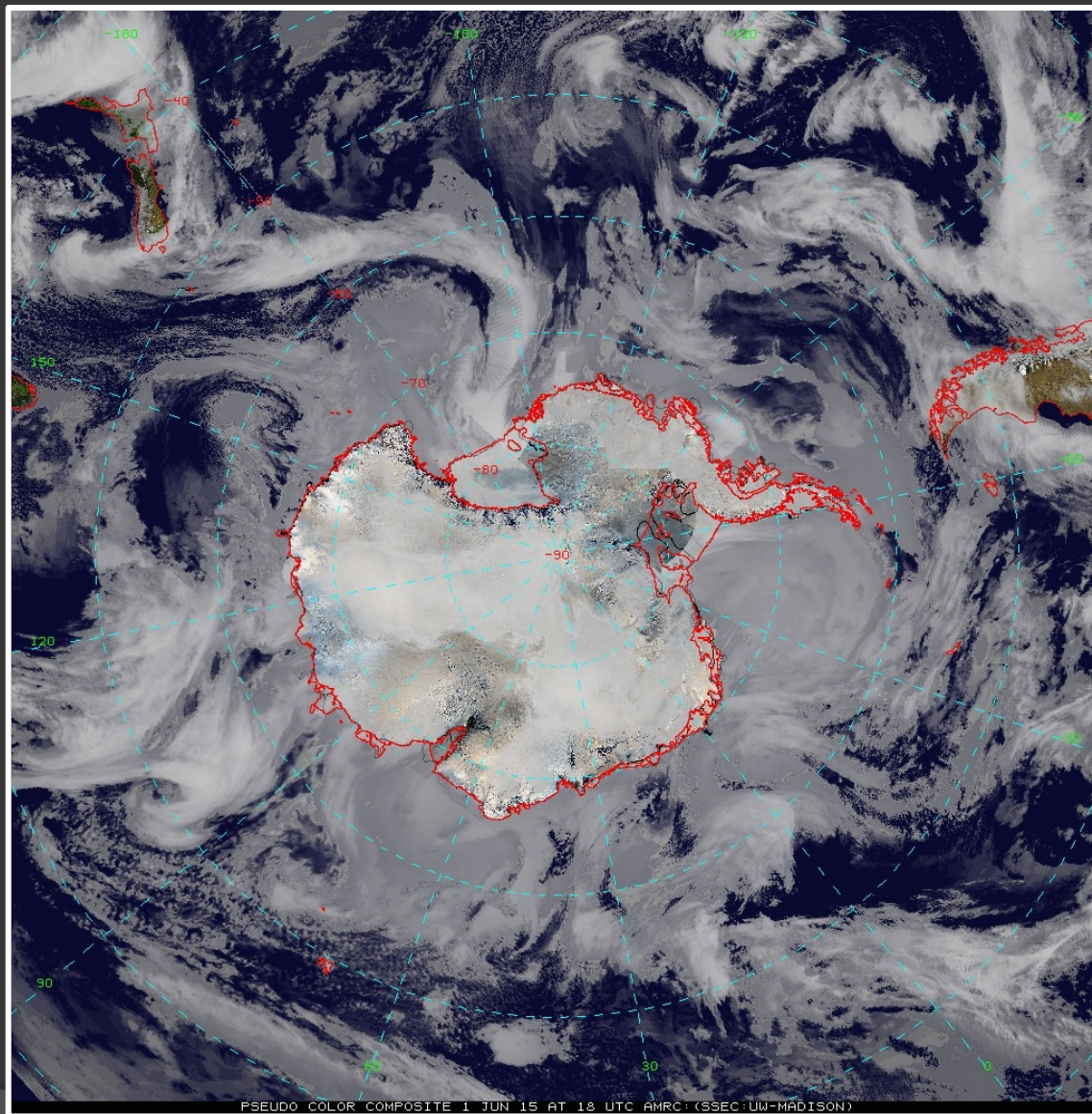
Antarctic Visible and Water Vapor

Antarctic Pseudo-Color

PSEUDO COLOR COMPOSITE 1 JUN 15 AT 18 UTC AMRC:(SSEC:UW-MADISON)
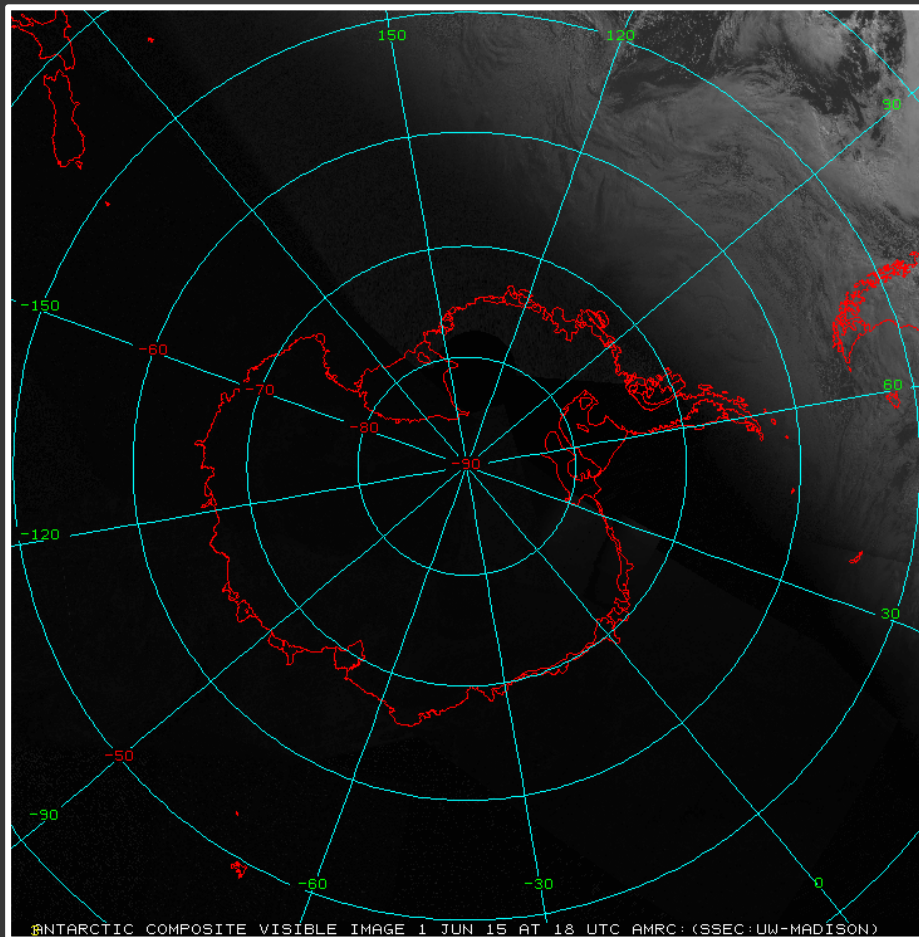
Arctic Infrared Animations

ARCTIC COMPOSITE INFRARED IMAGE 1 JUN 15 AT 00 UTC AMRC: (SSEC:UW-MADISON)
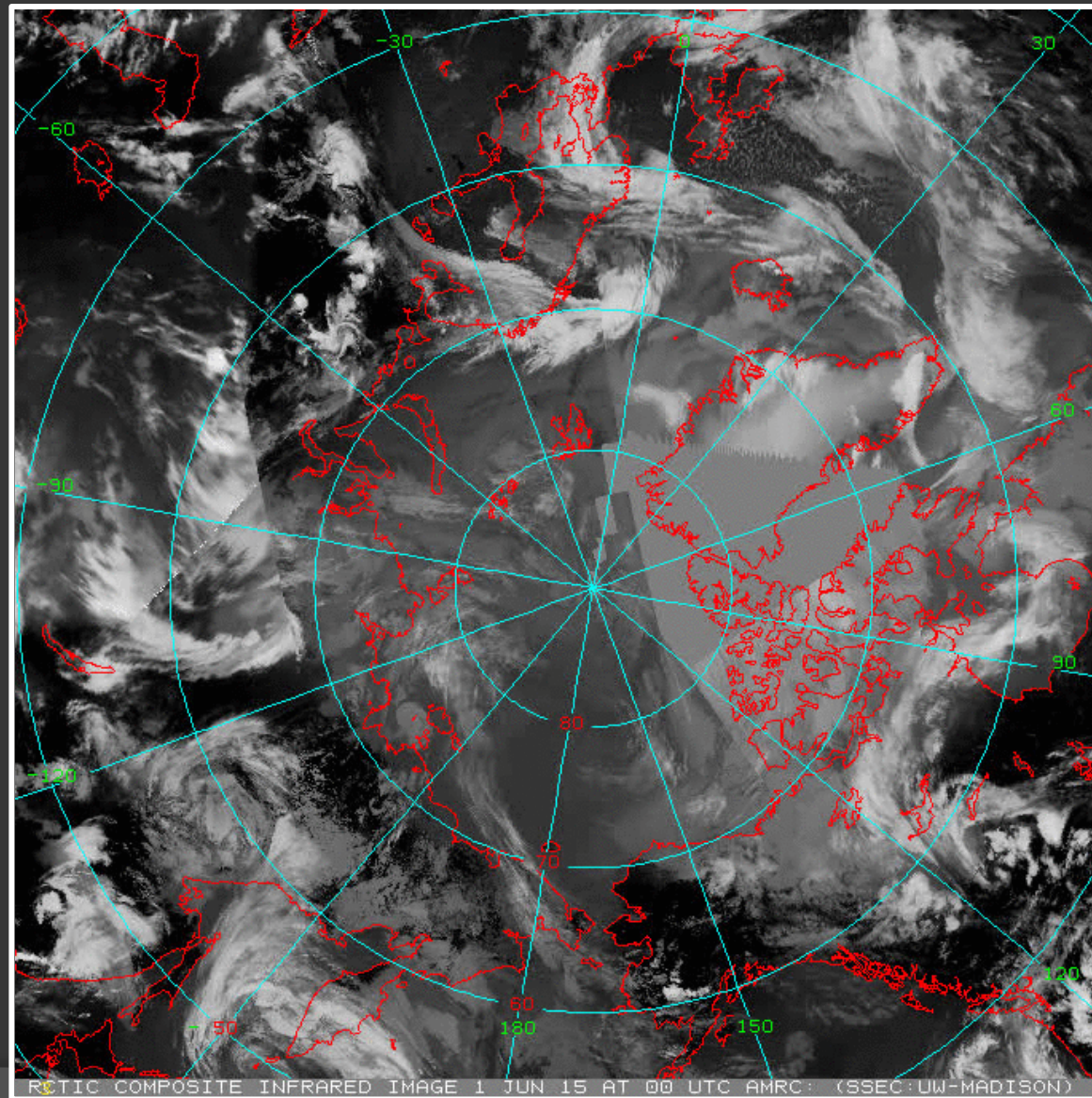
Ardic Longwave and Shortwave
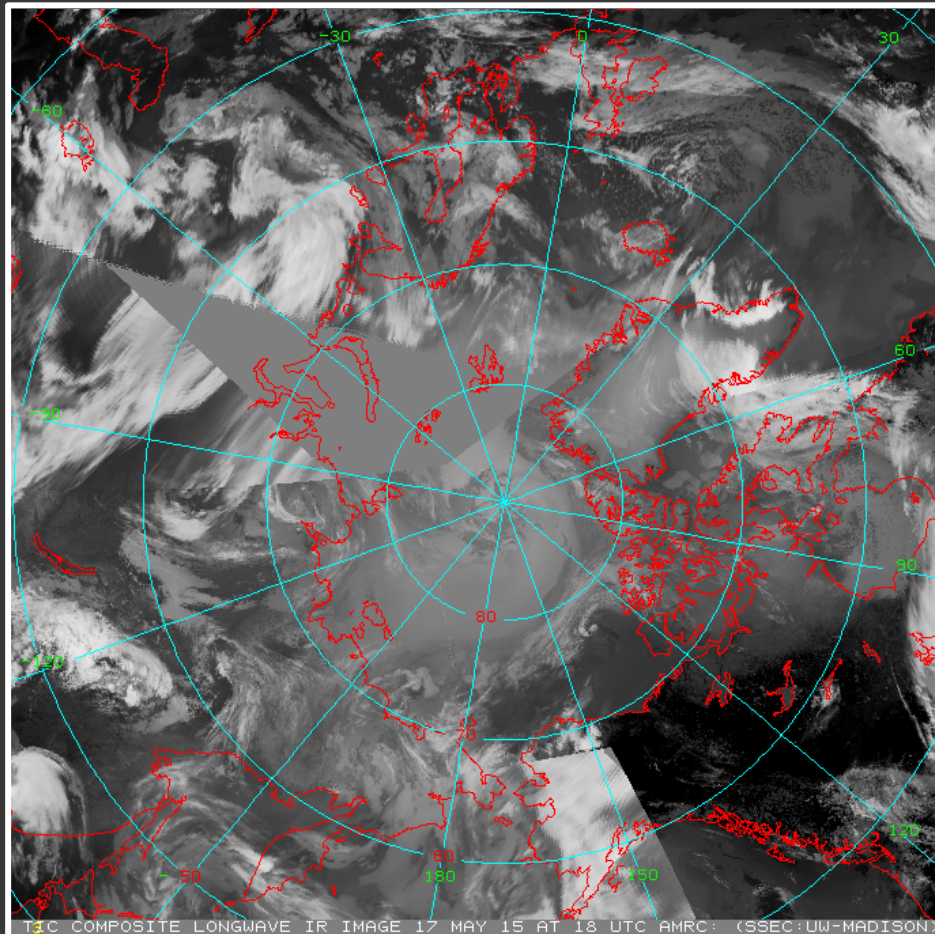
TC COMPOSITE LONGWAVE IR IMAGE 17 MAY 15 AT 18 UTC AMRC: (SSEC:UW-MADISON)

3ARCTIC COMPOSITE SHORTWAVE IR 17 MAY 15 AT 18 UTC AMRC:(SSEC:UW-MADISON)

Arctic Visible and Water Vapor

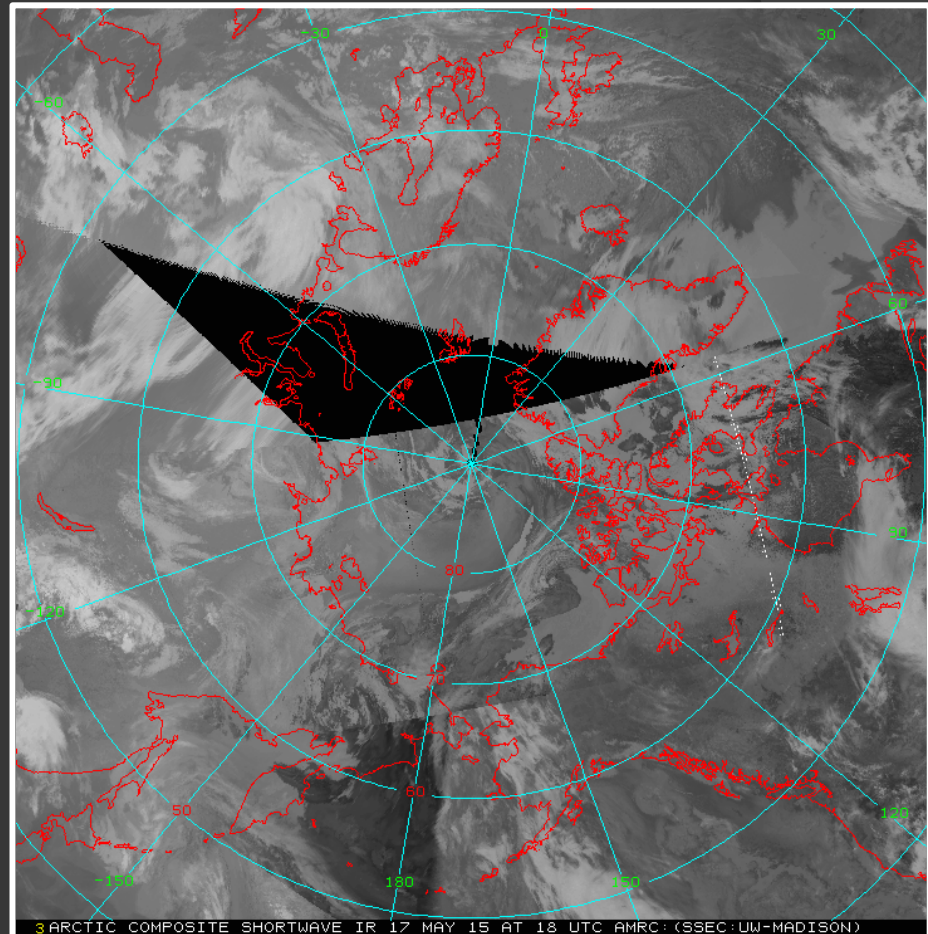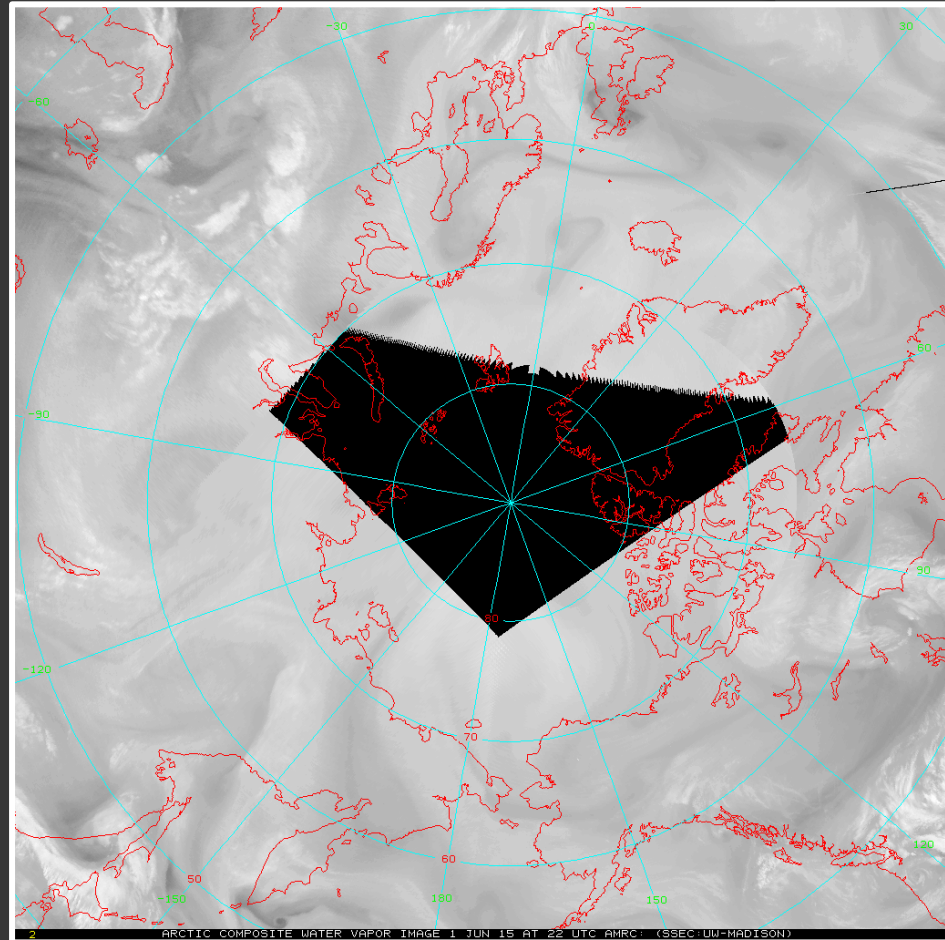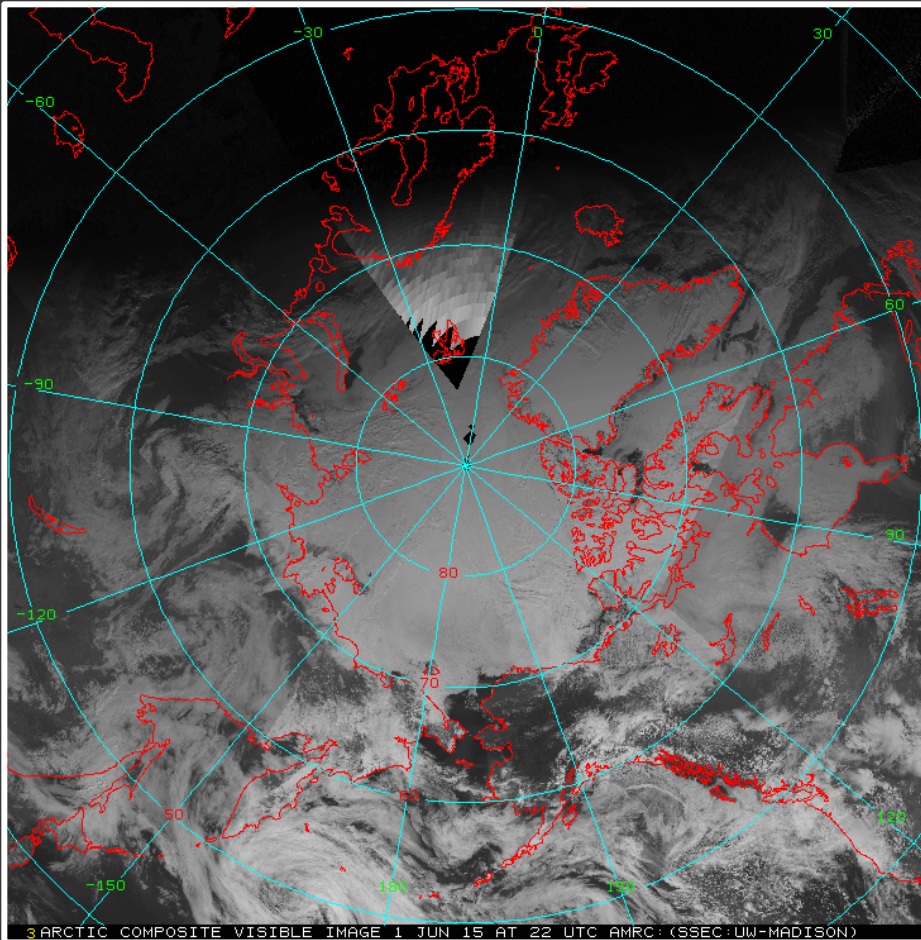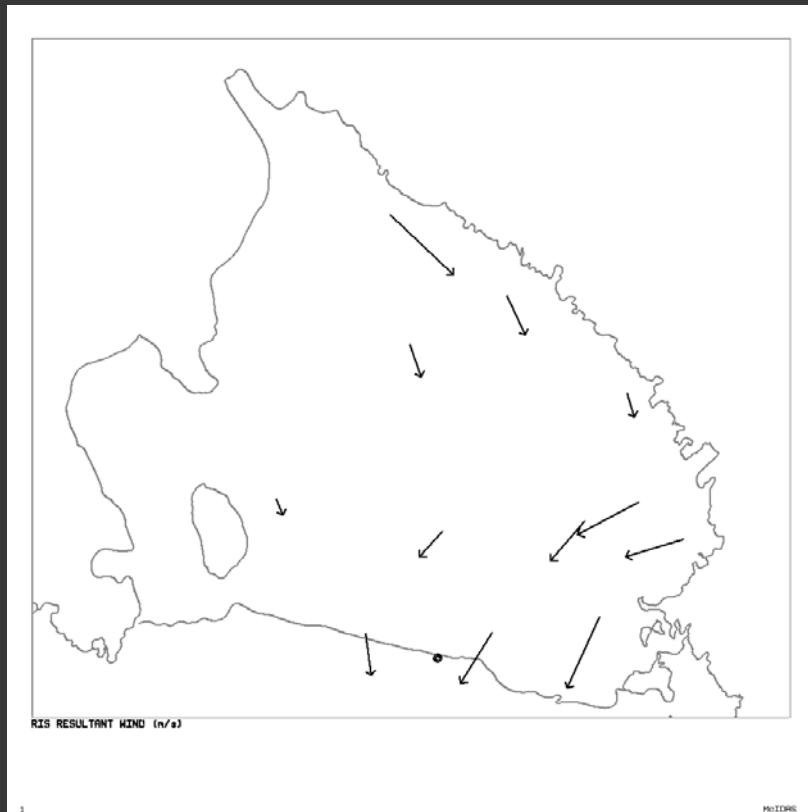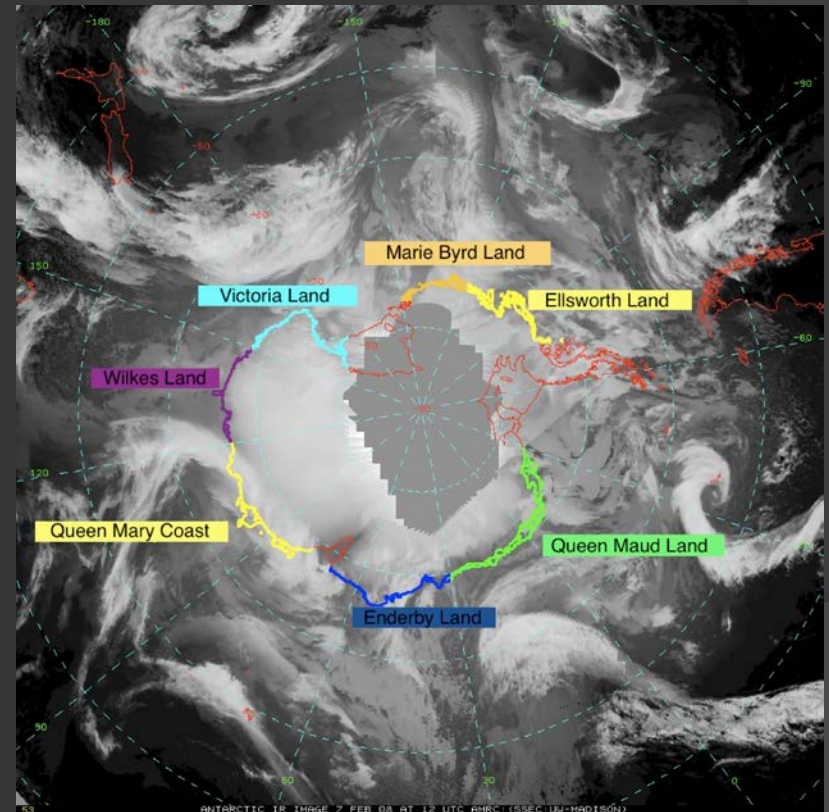# Using McIDAS for Research AWS and Satellite Composites

Climatology by C. Costanza

Cloud Mass Transport by J. Nettesheim

Cyber-Infrastructure

- Archive of nearly 35 years of data could use an update of better cyber infrastructure

- Need to create a database for both internal and external users

- About to be funded to engage a task force for advice on best ways to continue the creation and management of Antarctic meteorological datasets – ***Sustainability!!***

Future

- Future tasks are unclear and still taking shape:
  - Real time AWS, displays, and composites future is pending with NSF's Antarctic Infrastructure and Logistics section
  - Cyberinfrastructure will maintain some essential elements for approximately 2 years
  - Beyond that will be task force recommendation dependent
- McIDAS-V
  - More routine implementation
  - Improved displays ?

Thank You!

Questions?