

ARM Mobile Facility

Tom Ackerman
University of Washington

What is it?

- Re-locatable ARM ground-based remote sensing facility
- Typically deployed for a year at a time
- All deployment expenses paid by DOE ARM
- Data collected and archived by DOE
- Second facility now being constructed

<http://www.arm.gov/sites/amf.stm>



Instrument complement

- Can vary from deployment to deployment based on experiment
- Probably want to ask for full complement of cloud and aerosol instruments

<http://www.arm.gov/sites/amf/instruments.stm>



Why do we want the AMF?

- Radiative fluxes and heating rate profiles
 - Relevant to land surface coupling
 - Impact on atmospheric stability and convection
- Cloud properties
 - Frequency of occurrence
 - Microphysical properties
- Comparison with data from ARM SGP

Niamey, Niger



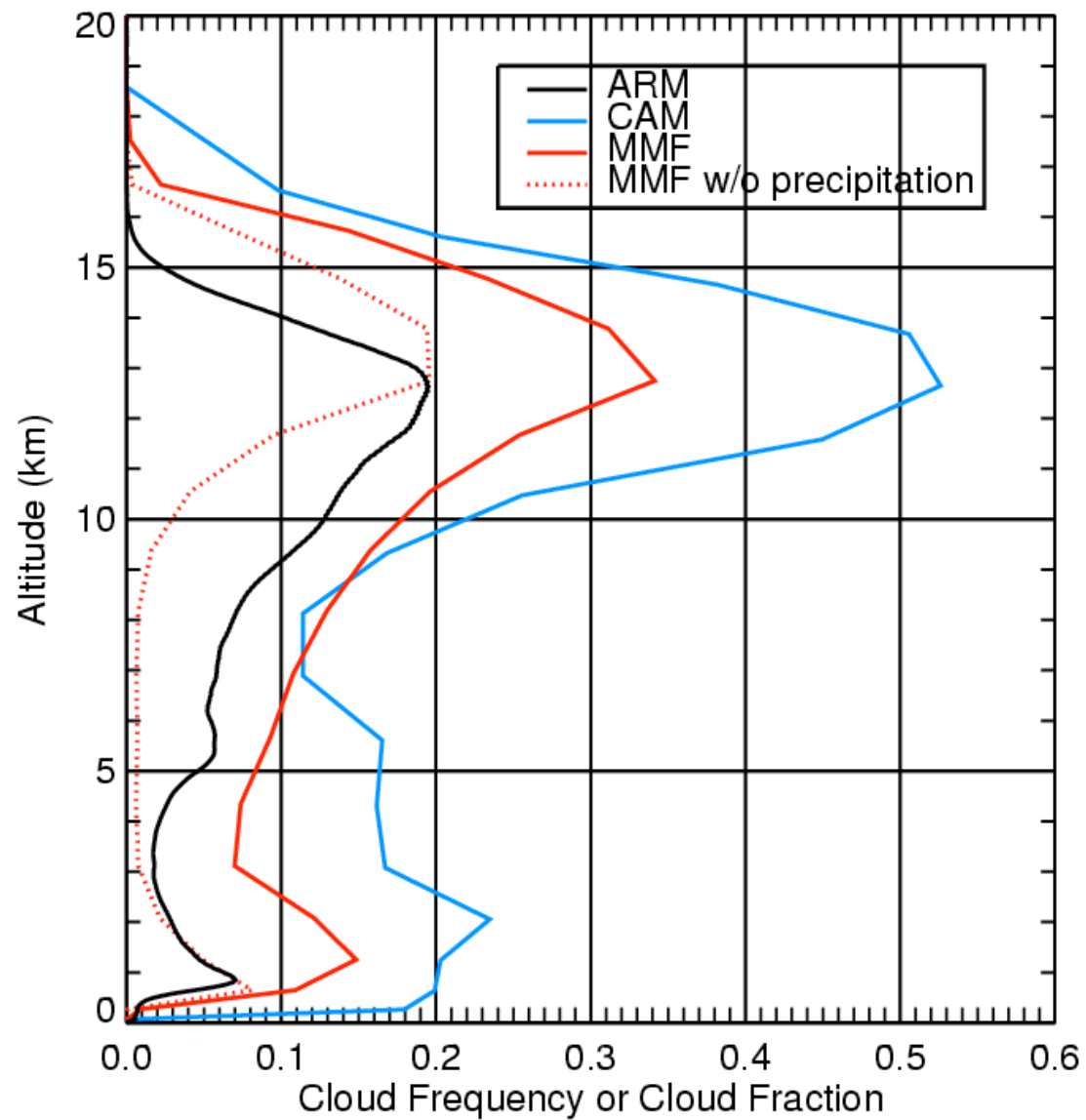
Deployed instruments



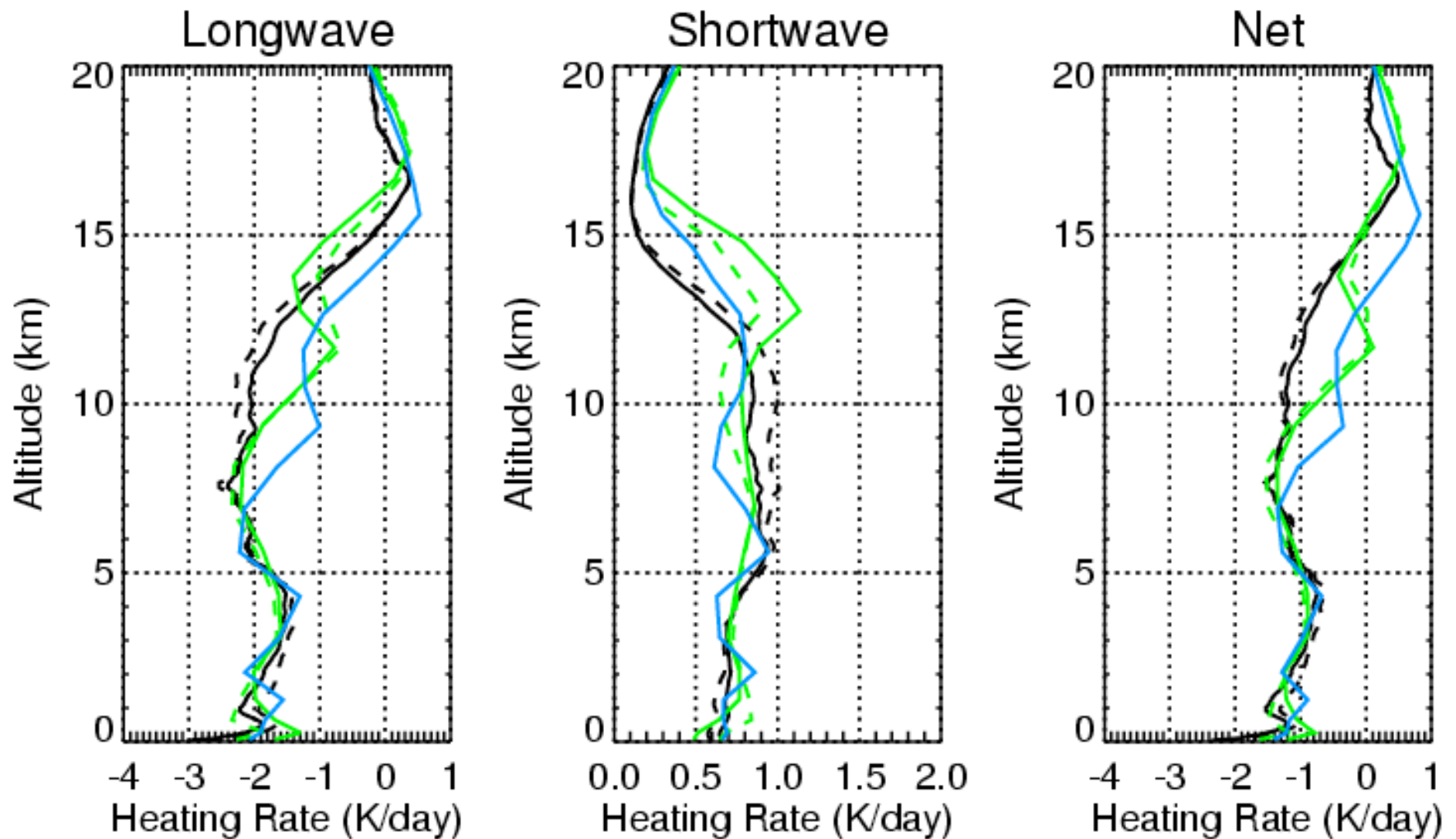
W-band radar antenna



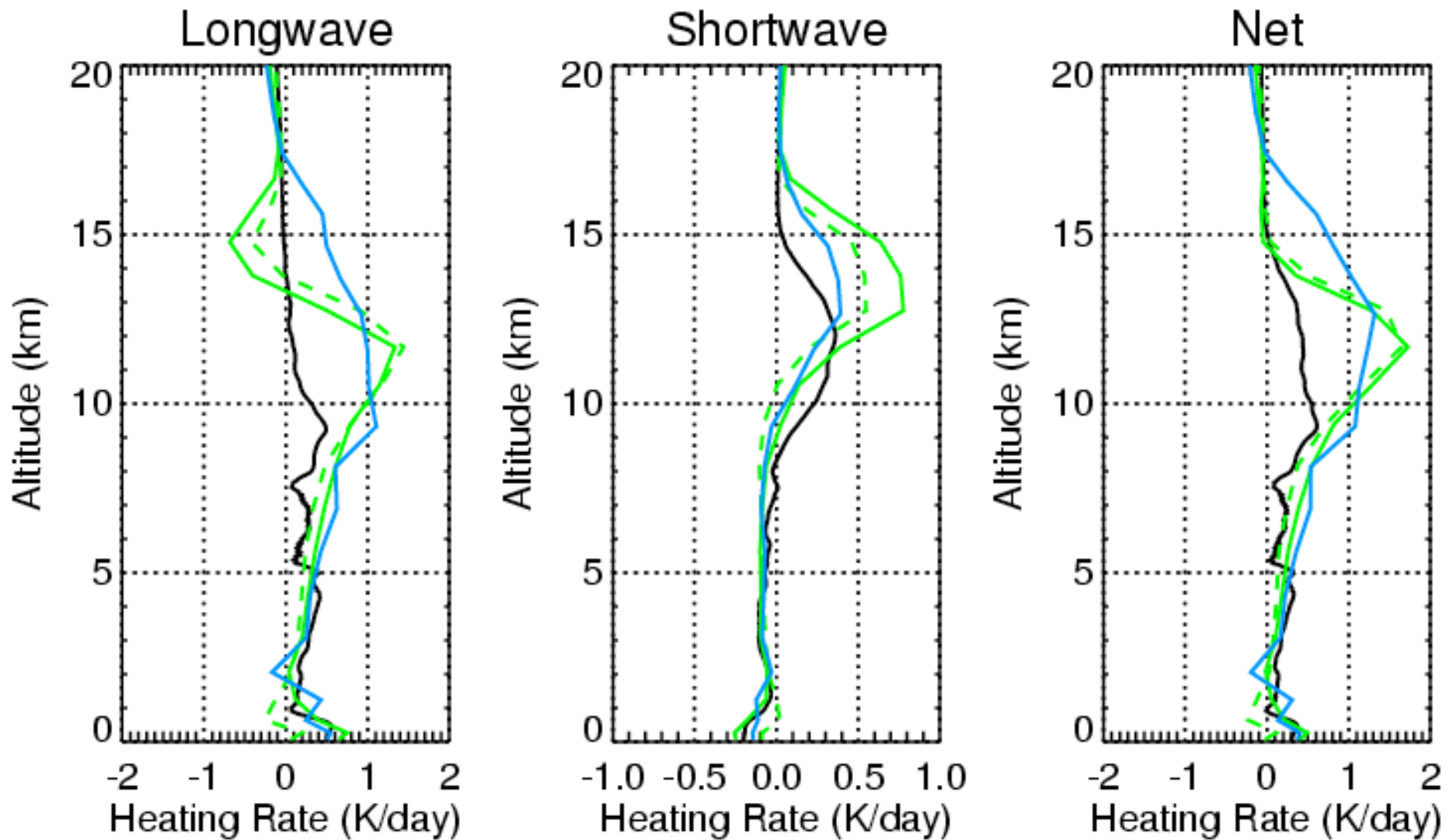
Data from TWP Manus



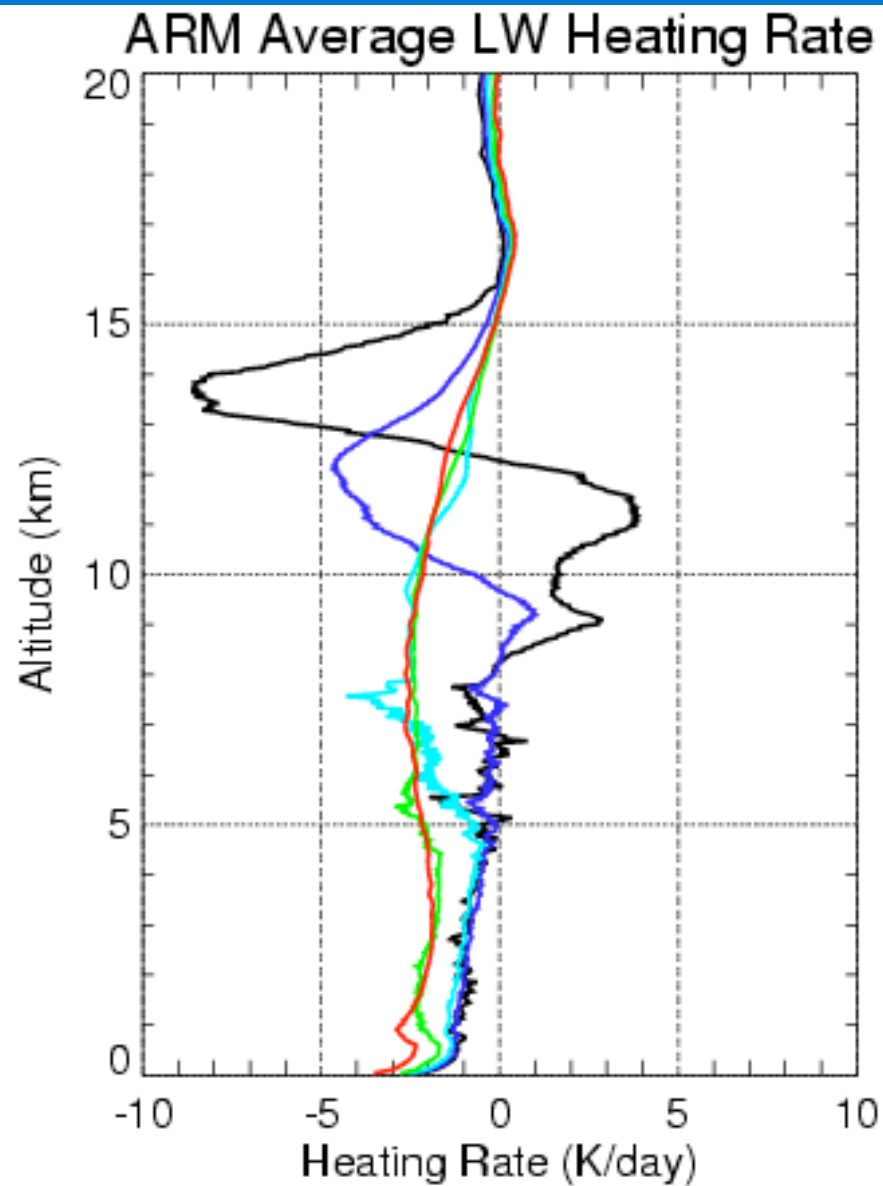
Heating rates



All-sky – Clear-sky



LW heating by OLR category

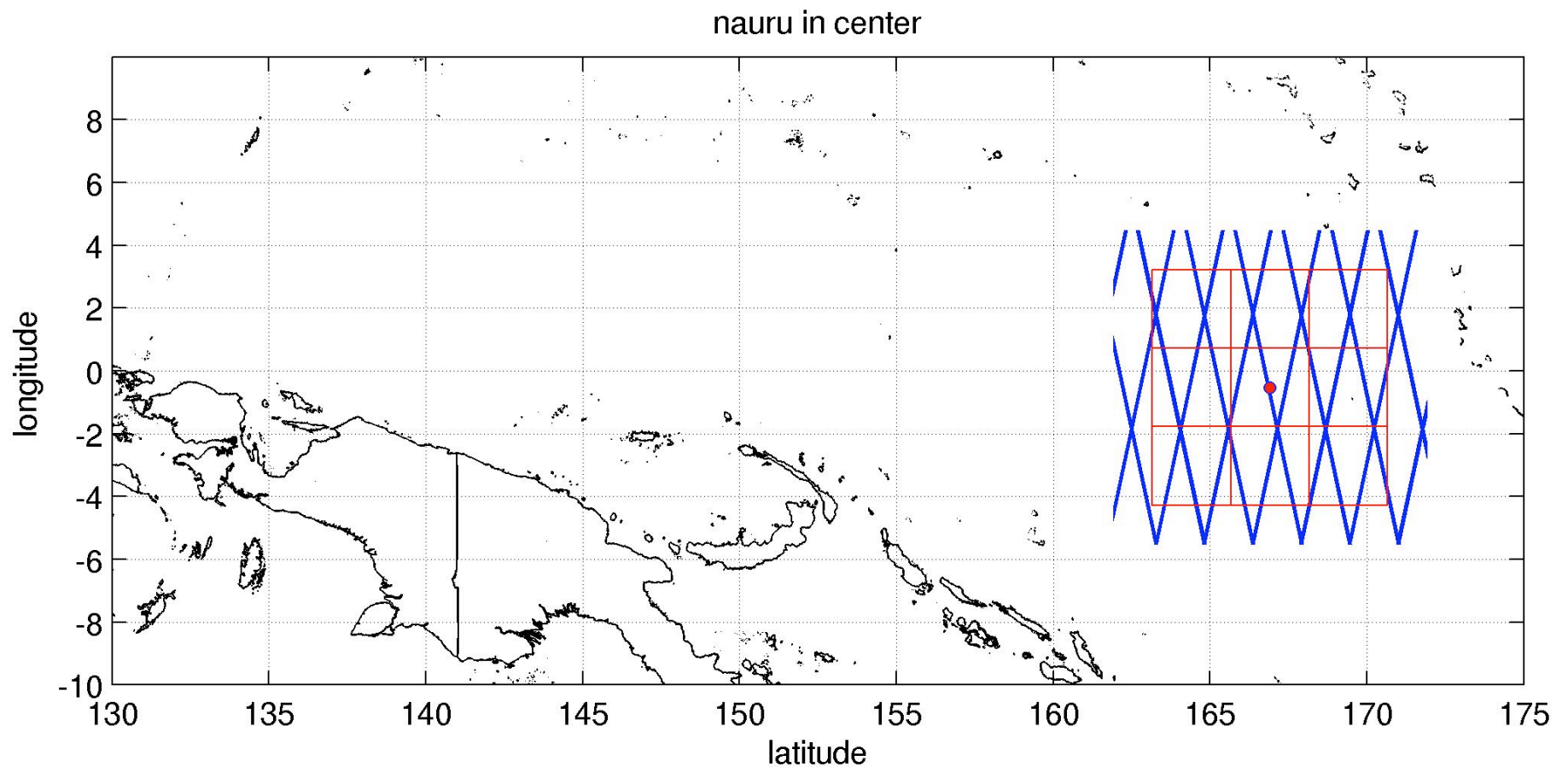


- OLR Range 75- 125 Wm^{-2}
- OLR Range 125- 175 Wm^{-2}
- OLR Range 175- 225 Wm^{-2}
- OLR Range 225- 275 Wm^{-2}
- OLR Range 275- 325 Wm^{-2}

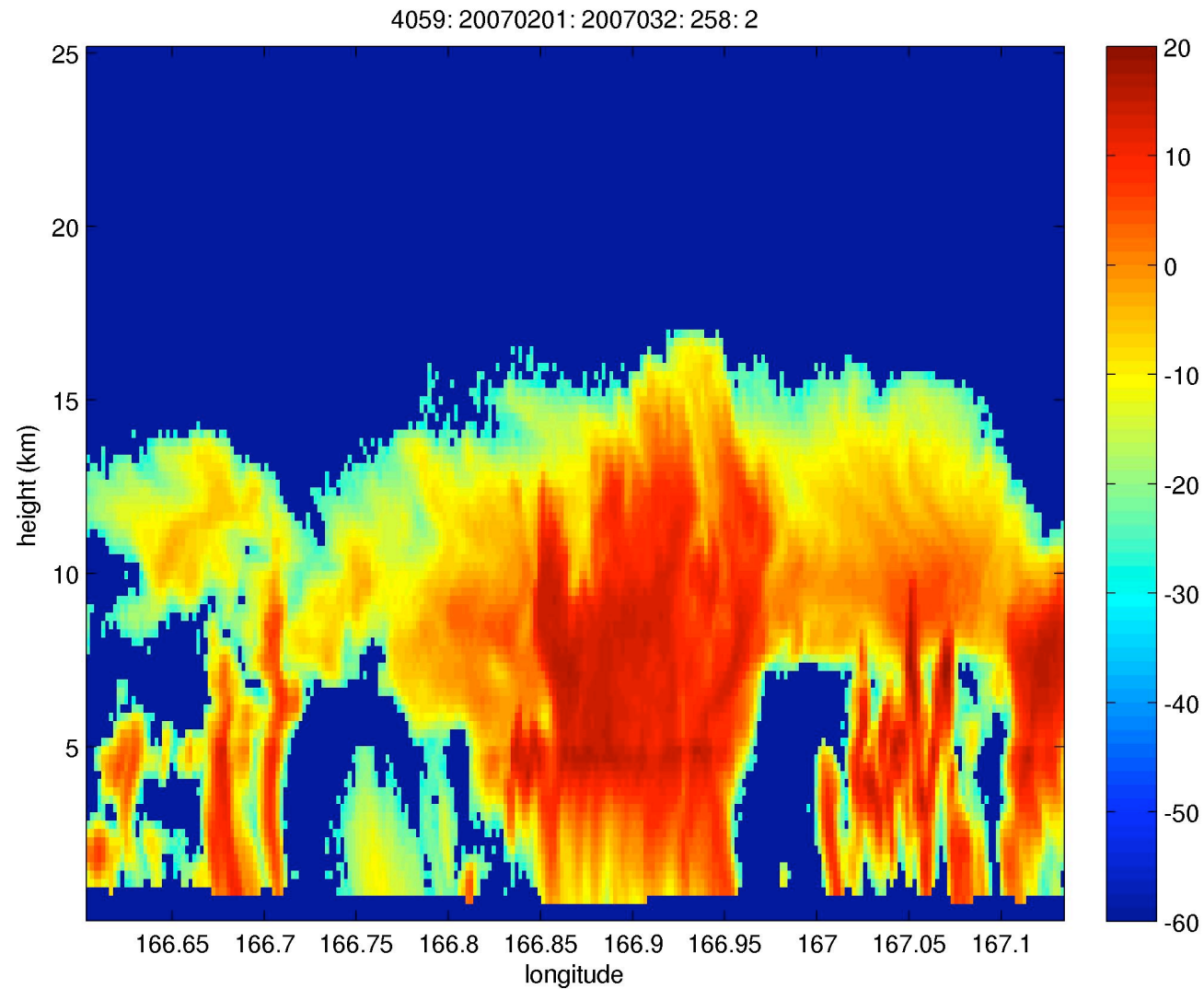
Where do we put the AMF?

- To be determined
- Near (20 to 30 km radius) to scanning precip radar
- Under track (or pretty close to!) of CloudSat, CALIPSO, and rest of A-train

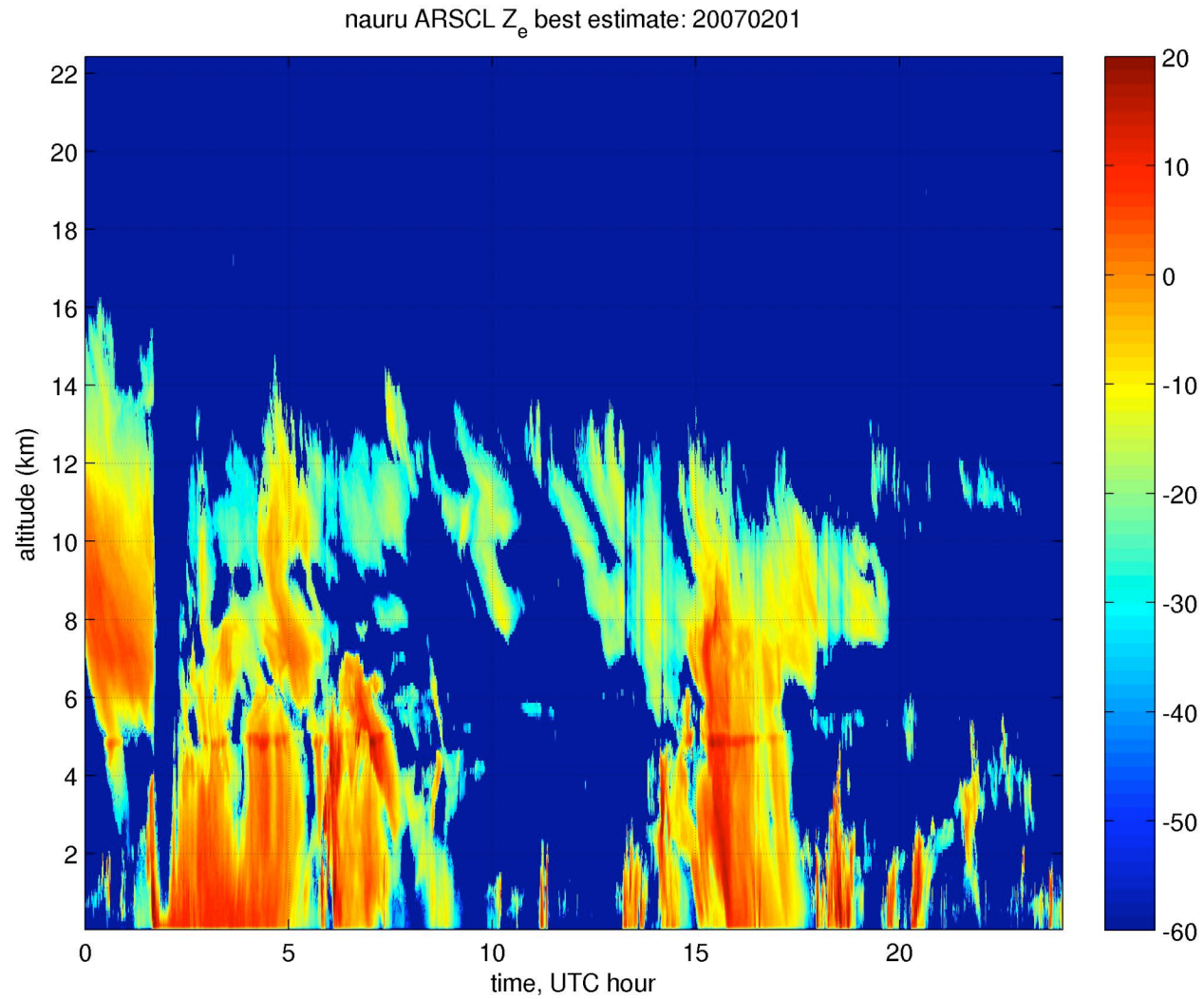
CloudSat tracks - Pacific



CloudSat image at Nauru



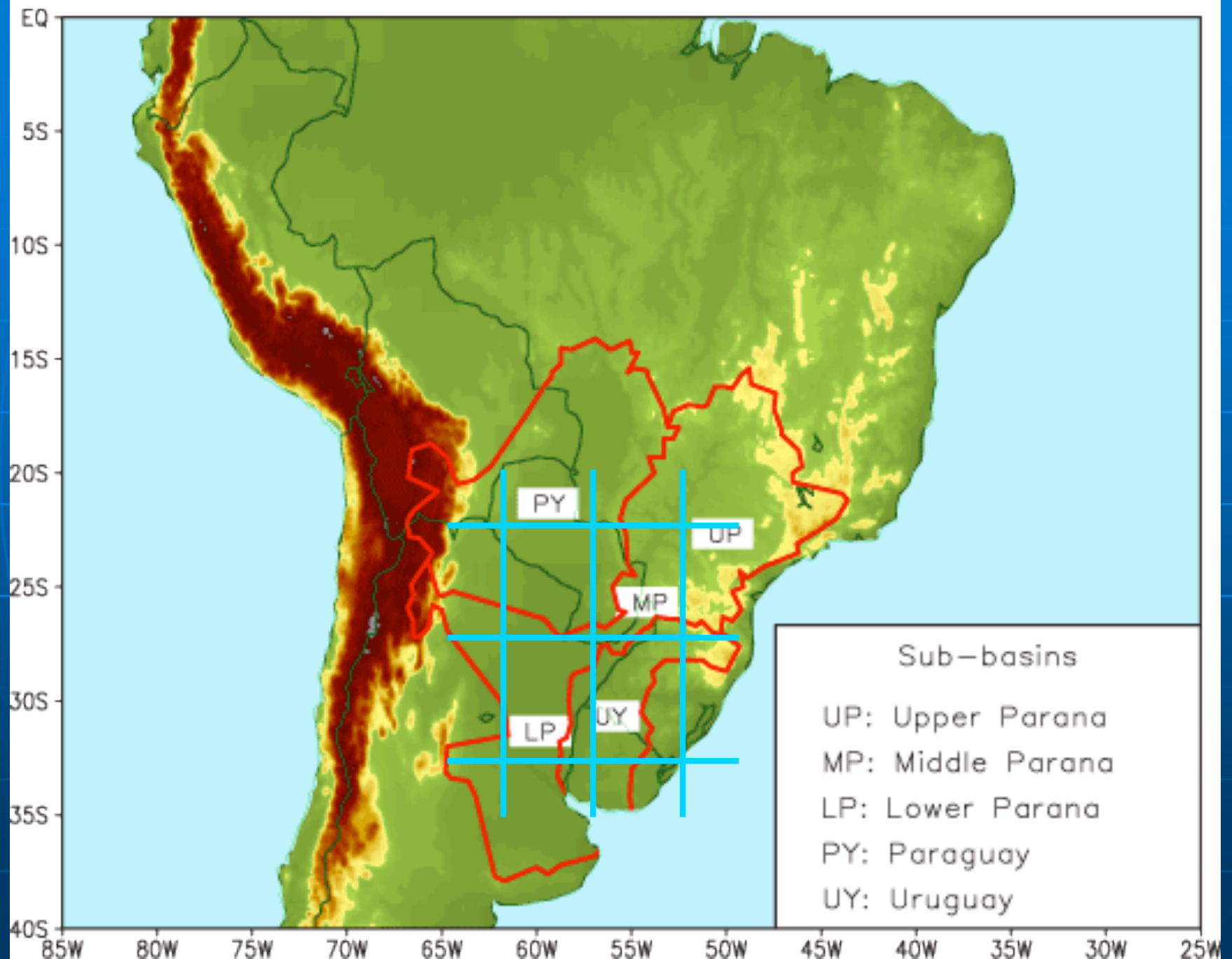
ARM radar at Nauru



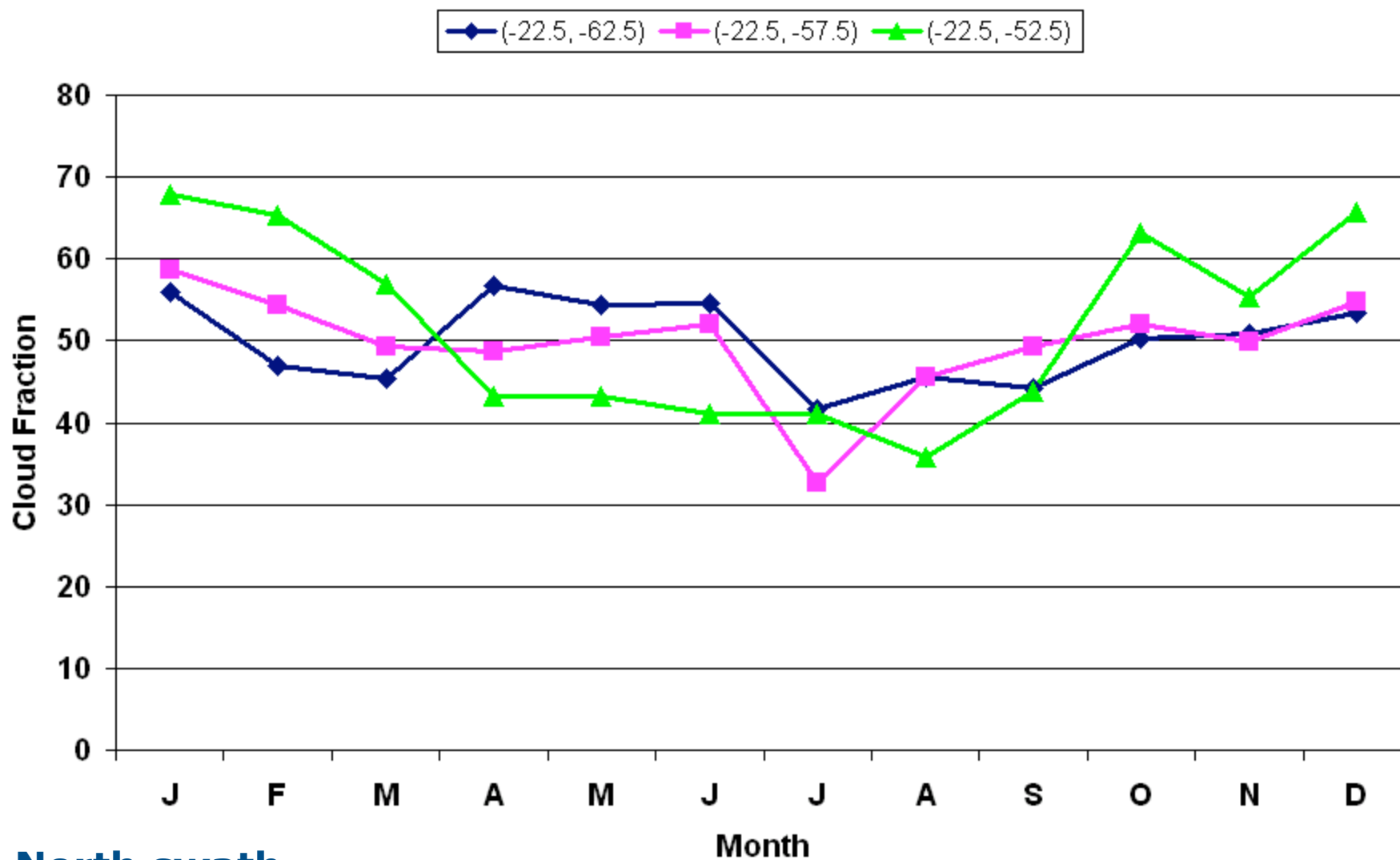
First-cut cloud climatology

- From Warren and Hahn atlas compiled from ground based observers
- 5 x 5 degree boxes
- Land-only

La Plata Basin

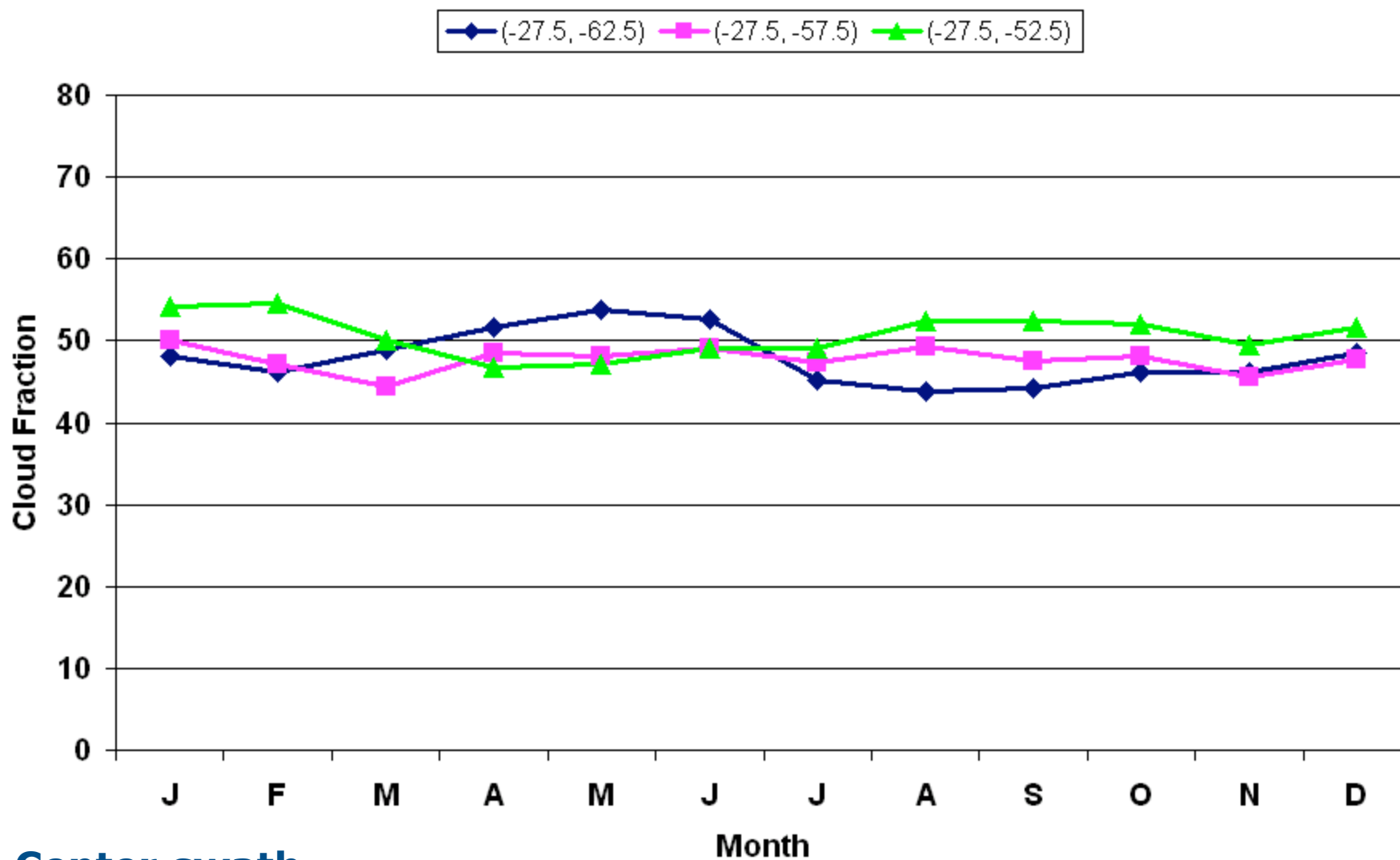


Warren atlas: Monthly Mean, All Clouds



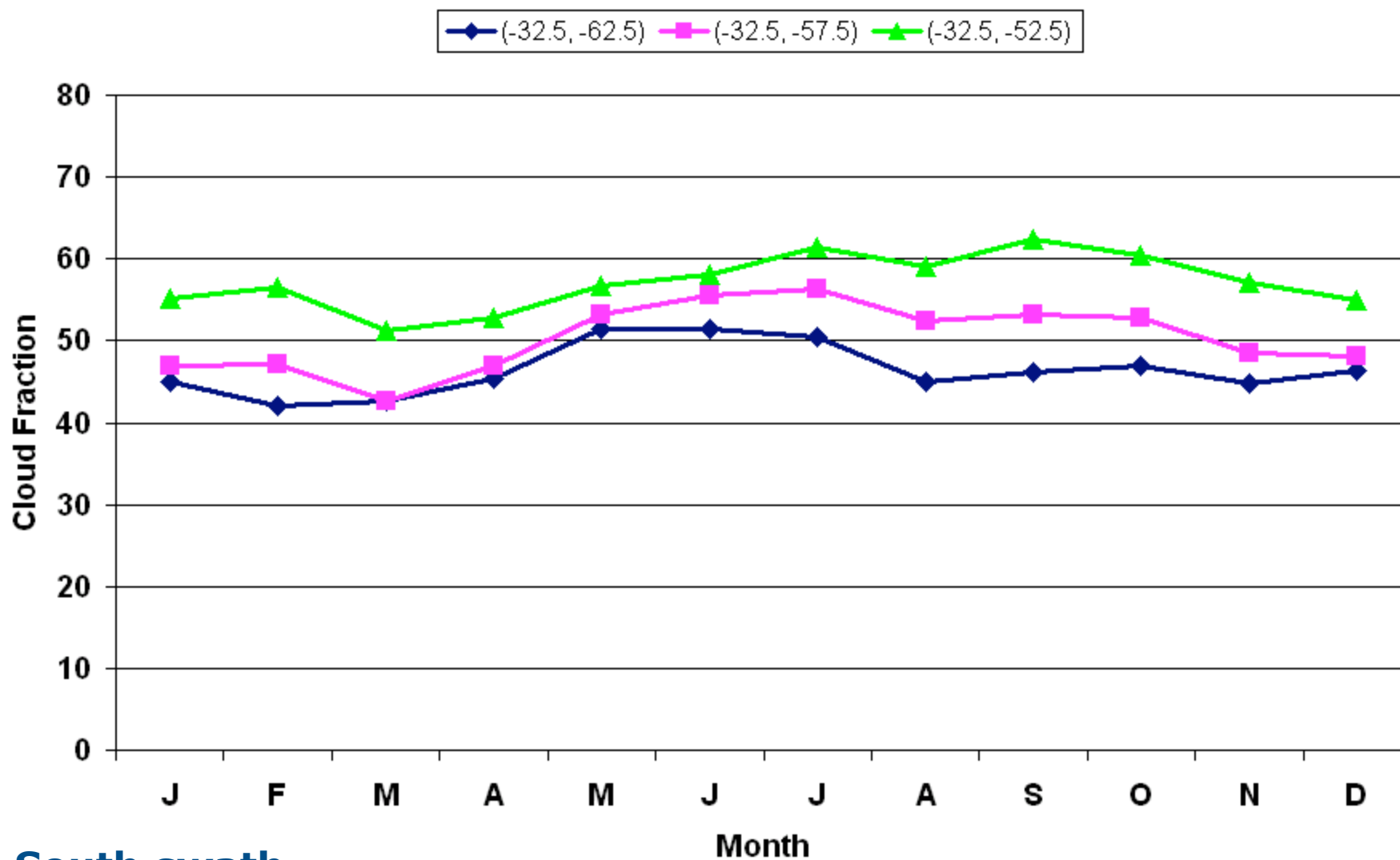
North swath

Warren atlas: Monthly Mean, All Clouds



Center swath

Warren atlas: Monthly Mean, All Clouds



South swath

Next step

- Determine interest
- Write a pre-proposal for 2011 deployment