

VAP Highlights for the CAPI Working Group

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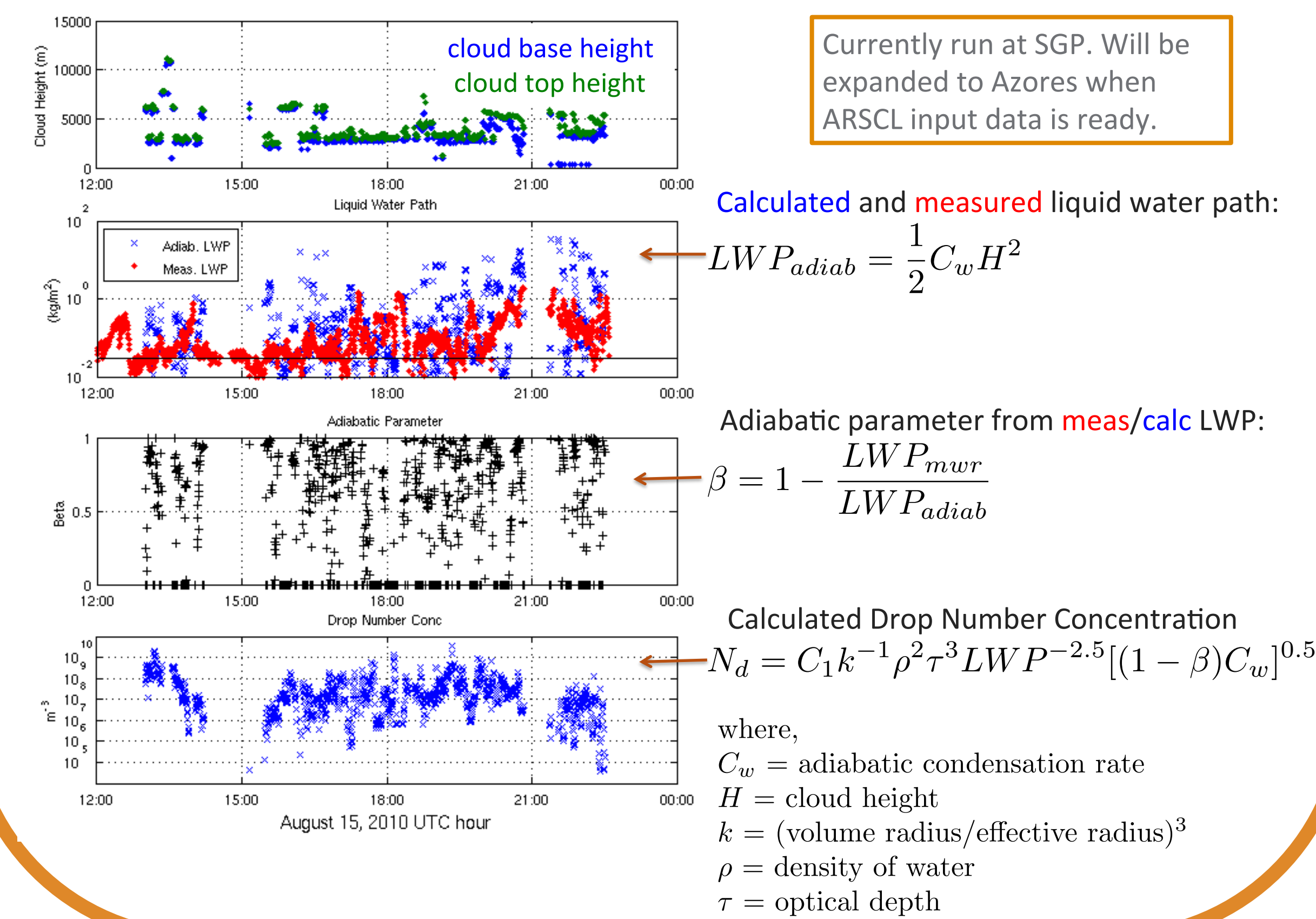


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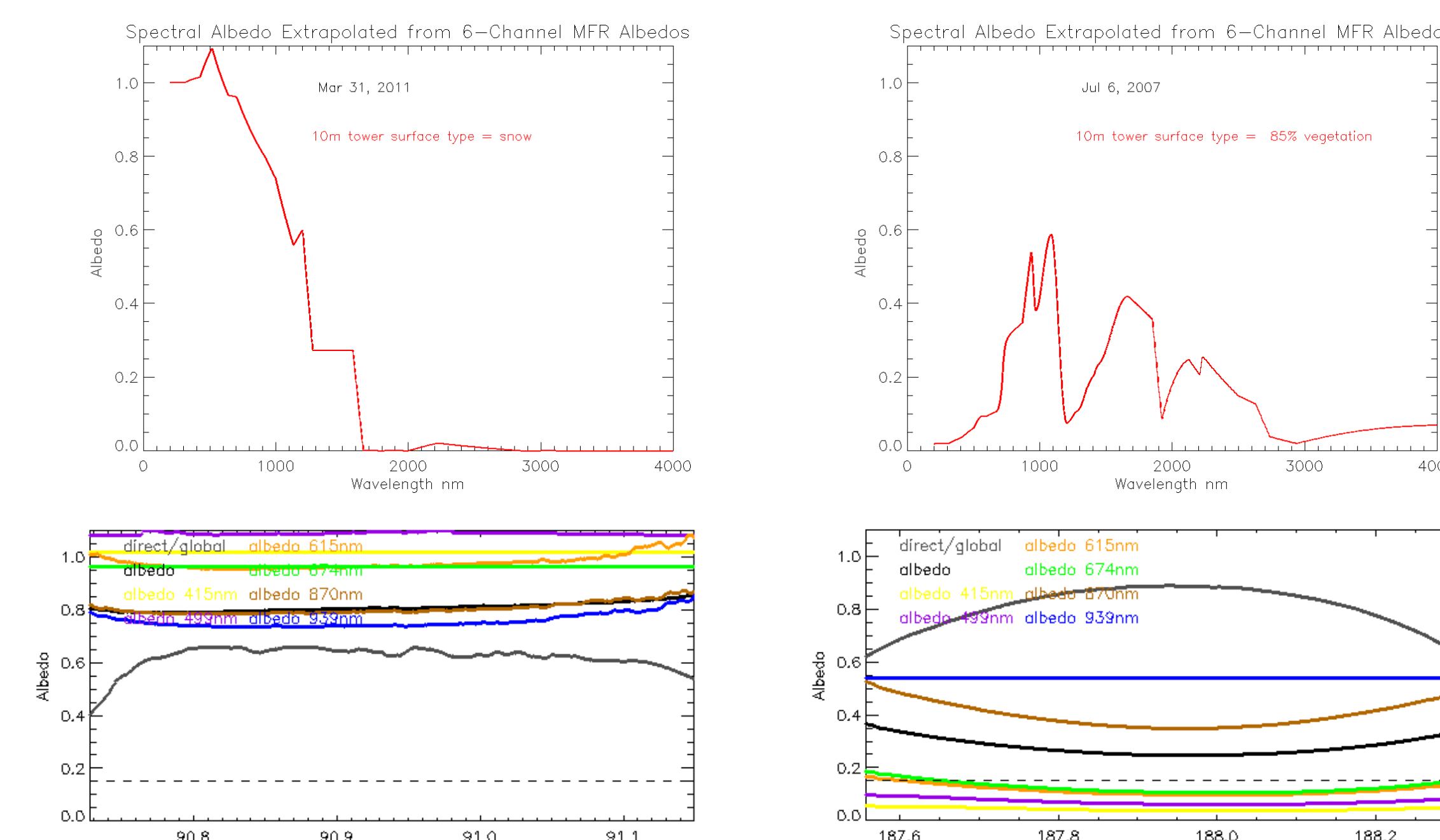
Droplet Number Concentration (NDROP)

New Product Implements McComiskey et al. (2009) JGR method, calculating droplet number concentration from cloud optical depth and liquid water path. Also estimates adiabatic liquid water path/adiabatic parameter (β).



NSA Surface Spectral Albedo (SURFSPECALB)

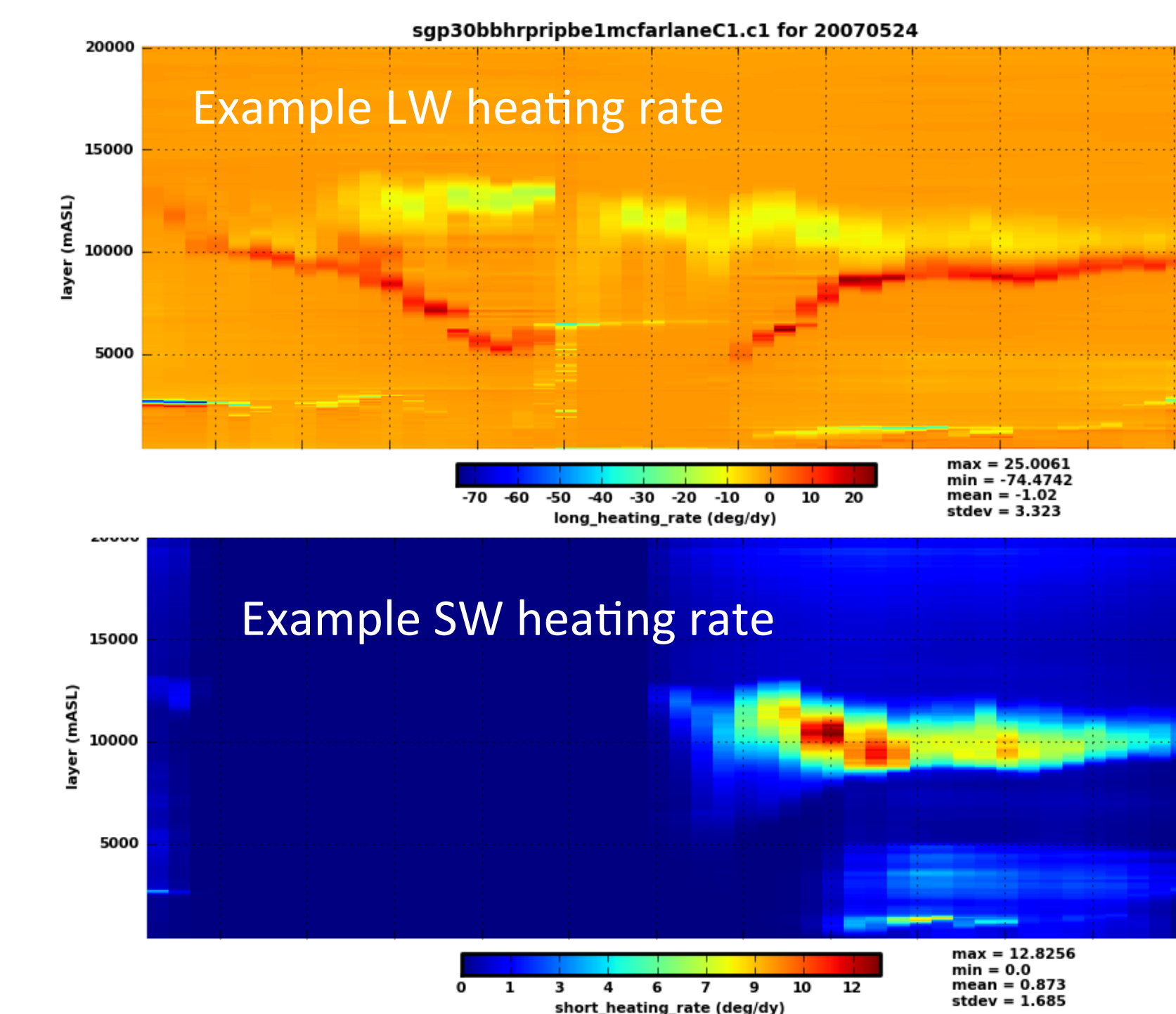
The surface spectral albedo product has been extended to the NSA site, requiring updates to properly handle long periods of snow and annual cycle of solar elevation.



Spectral (top) surface albedo for snow covered ground (left) and vegetated ground (right). Albedo at individual MFR wavelengths also shown (bottom).

BroadBand Heating Rate Profiles (RIPBE/BBHRP)

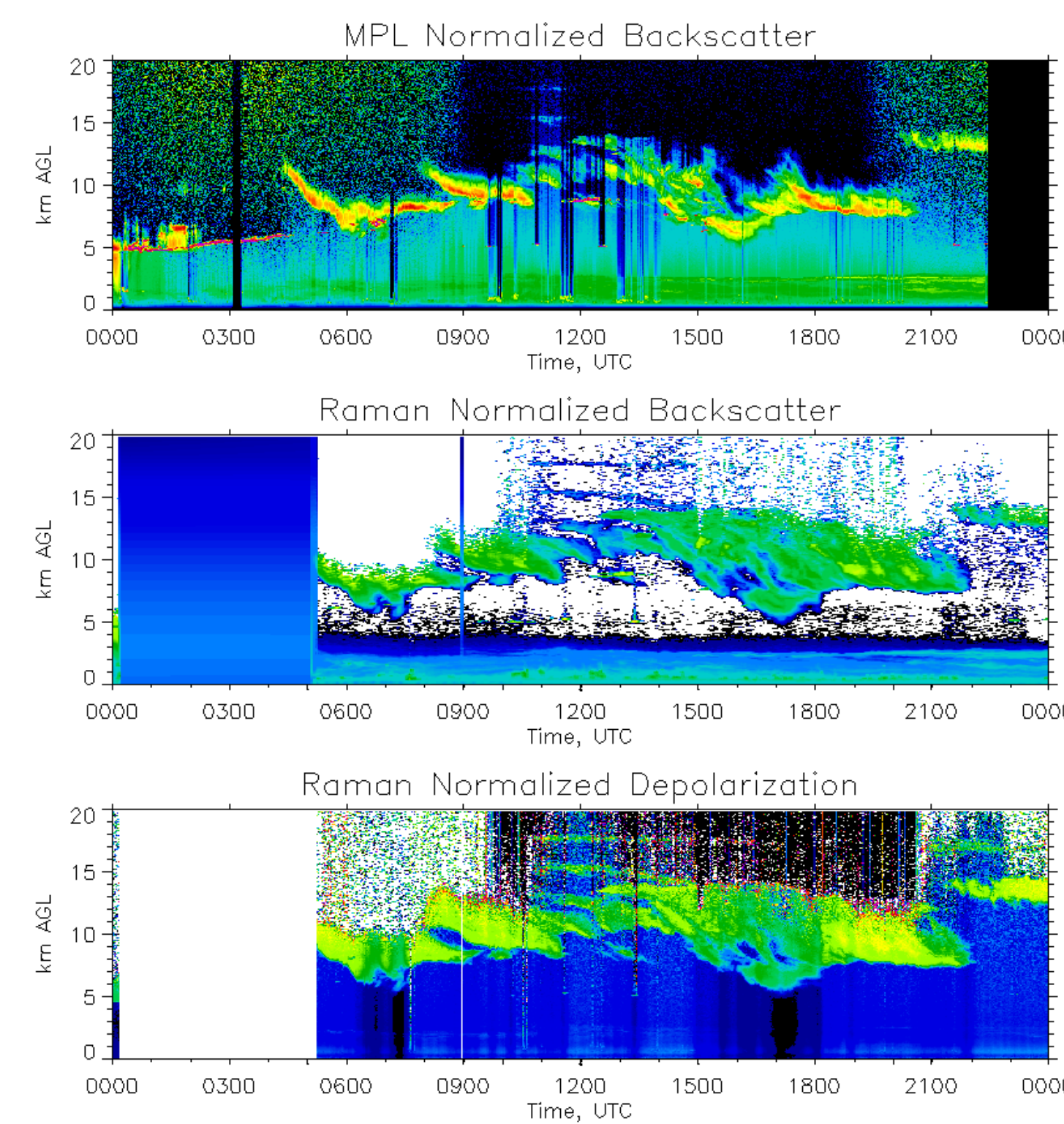
BBHRP is being used as a testbed for ACRED retrieval runs. RIPBE/BBHRP data in evaluation area were updated to fix bugs. In addition, RIPBE and BBHRP are being updated to run on newer versions of aerosol best estimate, microbase, and other input variables, allowing production of BBHRP for MC3E and other time periods.



Darwin Raman Lidar Depol (RLPROFDEP)

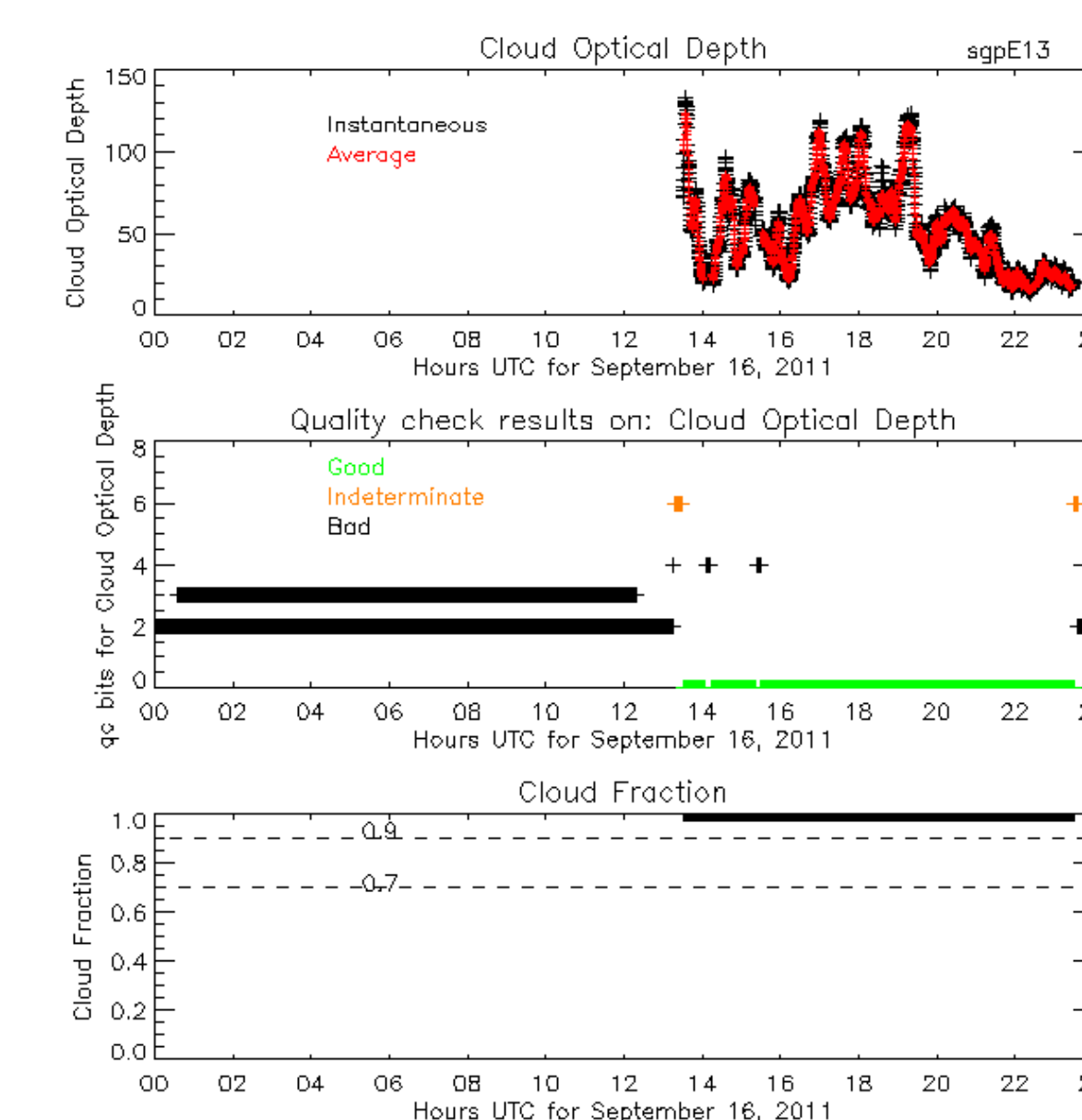
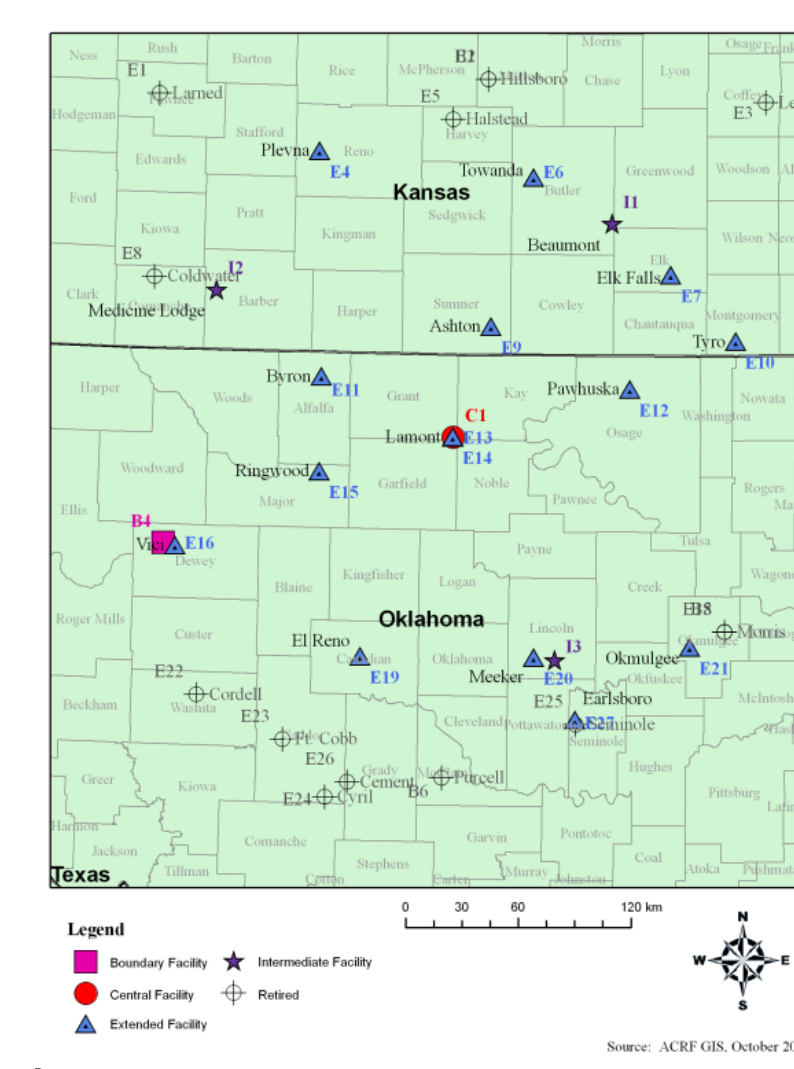
Raman Lidar data at Darwin site have been reprocessed with an improved cloud mask, attenuation flag, and extended height range to 20 kilometers.

RLPROFDEP data improve detection of cirrus and anvil clouds compared to micropulse lidars (see figure).



MFRSR Cloud Optical Depth (MFRSRCLDOD)

The MFRSRCLDOD VAP has been expanded to run at SGP extended facilities, TWP sites, and AMF campaigns. Historical data from SGP extended facilities has been processed and archived. Data from TWP and Azores will be processed soon.

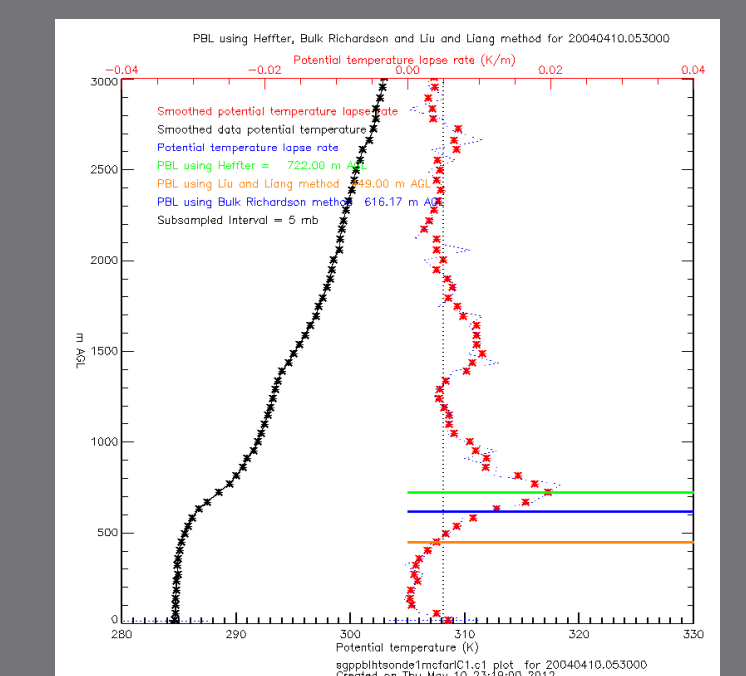


(Left) MFRSRCLDOD now available at all extended facility locations. (Right) Sample cloud optical depth data.

VAP Development in Progress

Planetary Boundary Layer Height

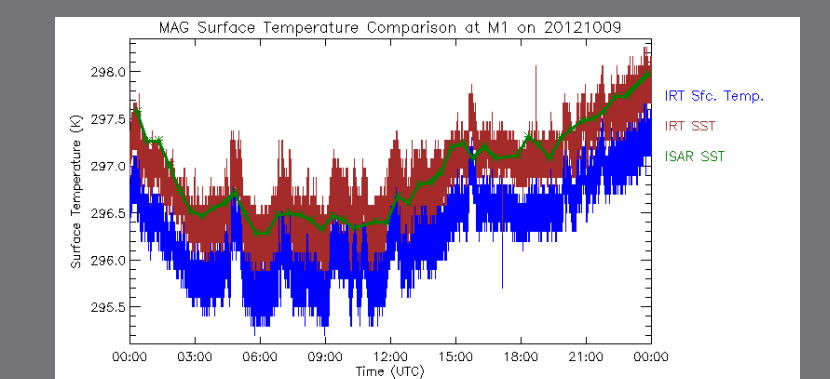
- Graduate Sonde VAP (PBLHTSONDE) from evaluation to operational
- Develop new VAP from MPL/Ceilometers



Example PBLHTSONDE data

Sea Surface Skin Temperature (IRTSST)

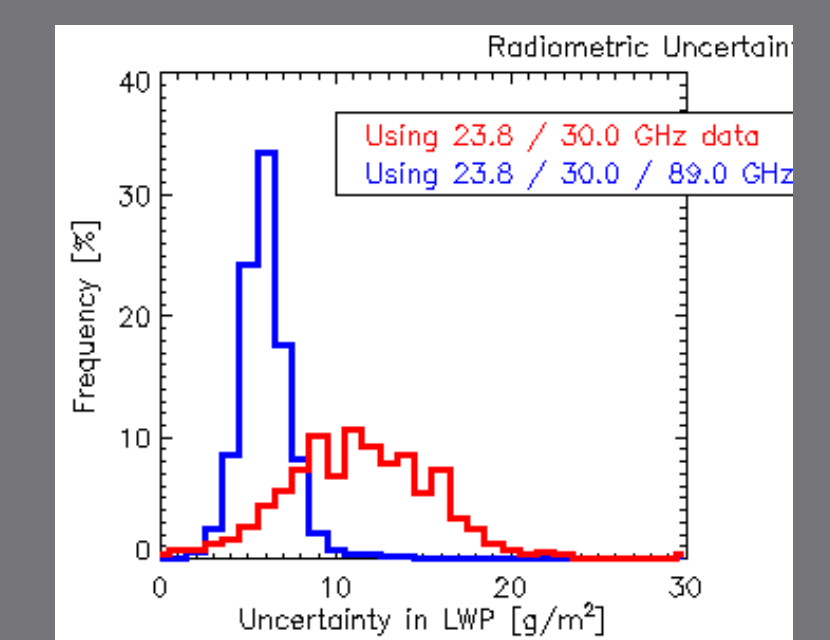
- Correct Infrared Thermometer sea surface measurements for sky radiance for MAGIC and other ship deployments



Corrected IRT SSST (red) closer to ISAR measurements (green)

New Microwave Radiometer Retrieval (MWRRET2)

- Implement Dave Turner's code to calculate LWP and PWV from 3 channel (and other) microwave radiometers



Decrease in LWP uncertainty from 3 channel MWR retrieval compared to 2 channel