

Value Added Products (VAPs) associated with the Cloud-Aerosol-Precipitation Interactions (CAPI) Working Group

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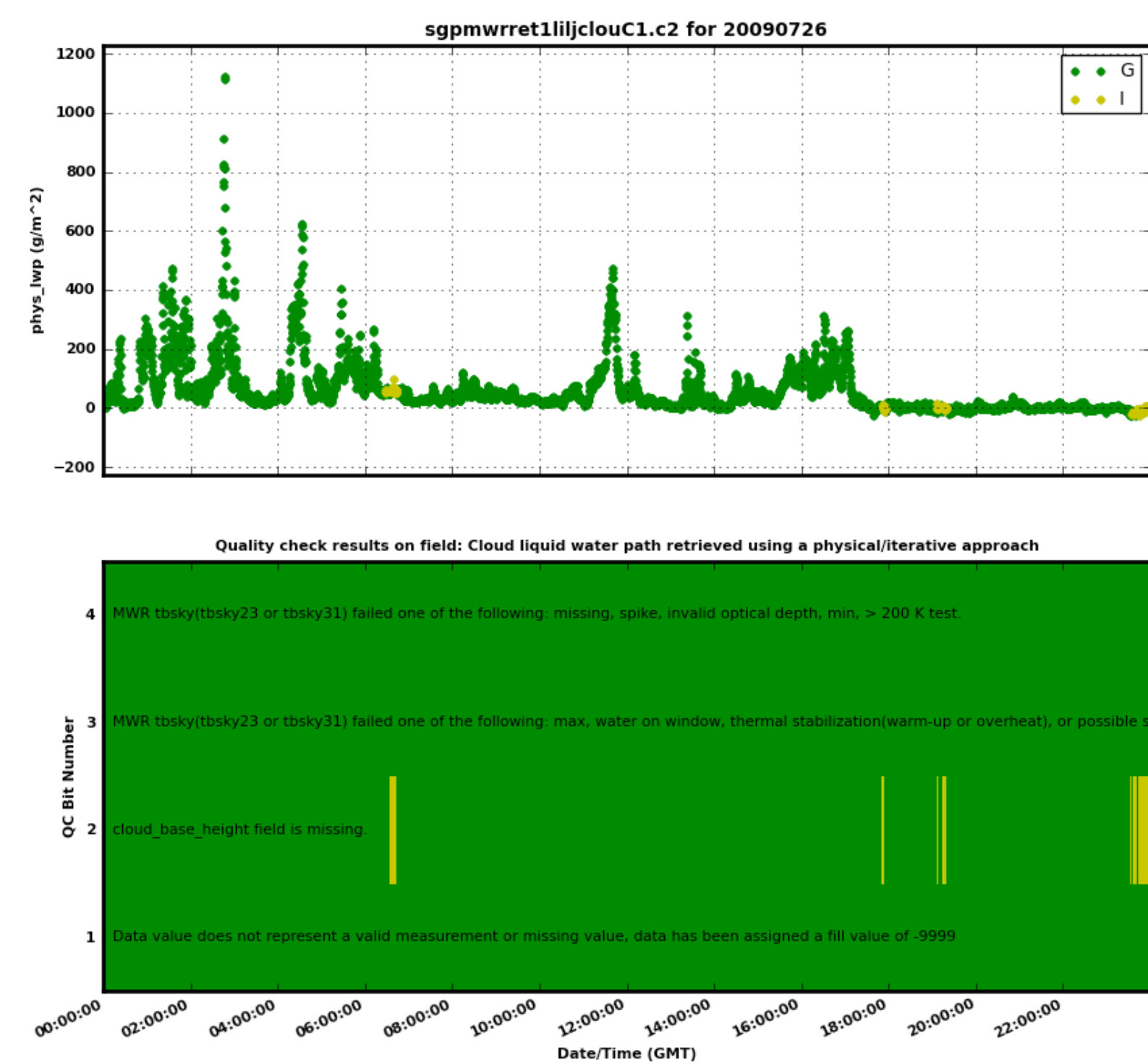
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Current VAPs in Development

MWRRET

Retrieval of column water vapor and liquid water path from 2-channel microwave radiometers (Turner et al. 2007).



Recent updates:

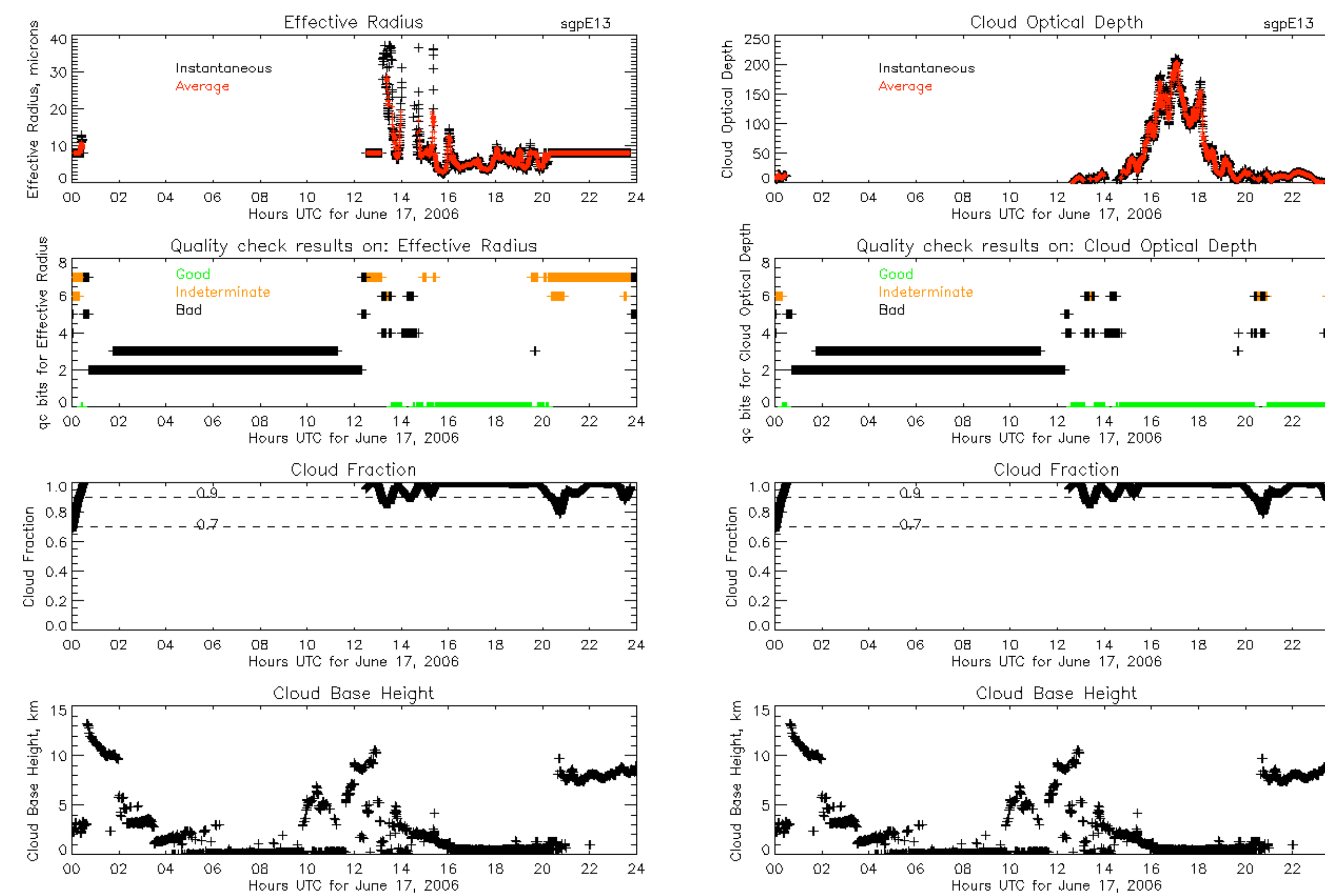
- Fixed several bugs in qc and output
- Created two-level product: c1 data will be produced in near real-time; c2 data will be produced approx. once per year with updated cloud temps and Tb offsets
- Post-processed all historical data
- Released code to operations and historical data to archive

2011 plans:

- Run for Azores and StormVex AMF deployments

MFRSRCIDOD

Retrieval of cloud optical depth for overcast clouds from multi-filter rotating shadowband radiometer (Min and Harrison 1996).



Recent updates:

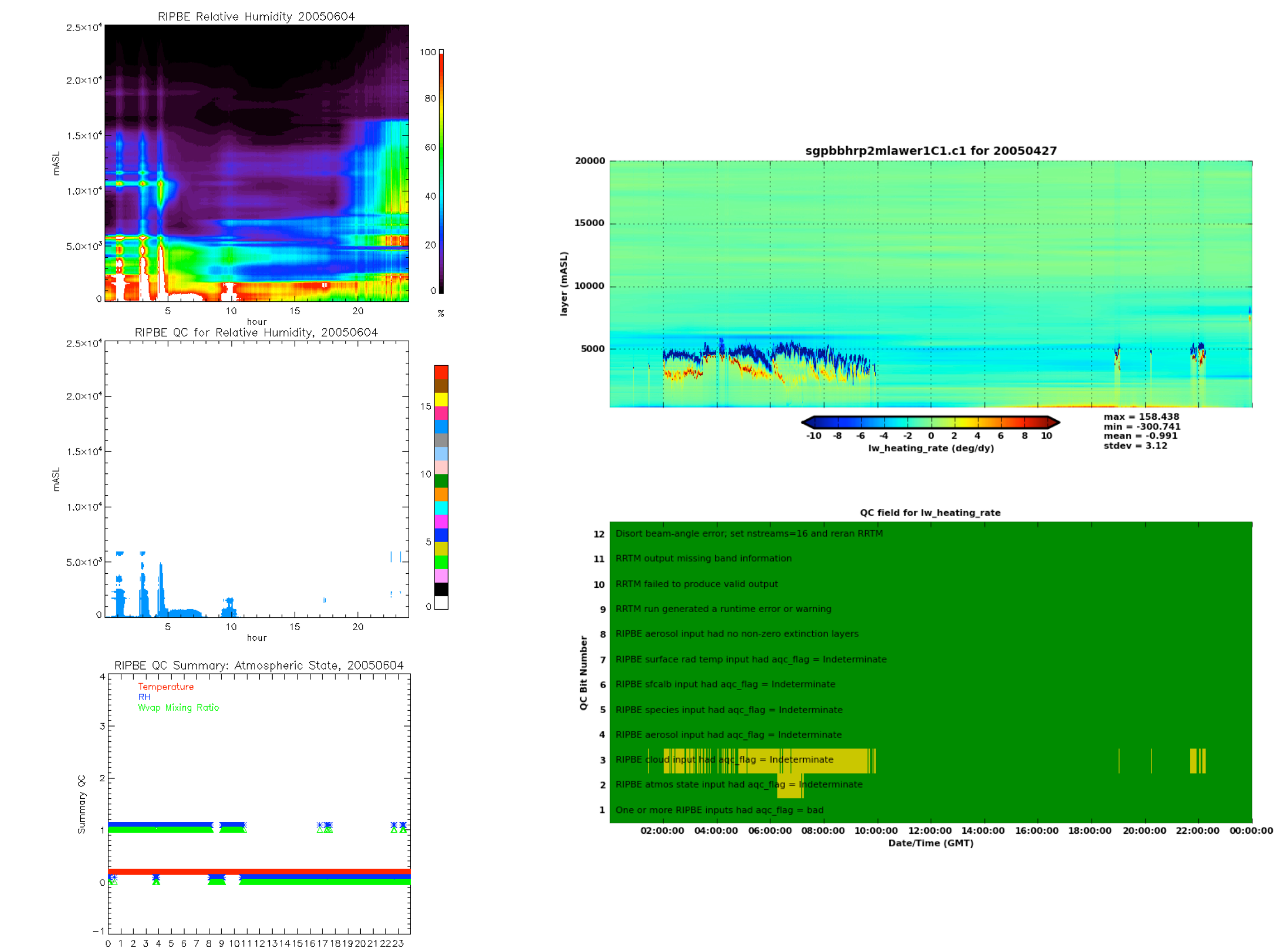
- Added qc flags; fixed minor bugs
- Use MWRRET instead of MWRLOS for effective radius retrieval
- Extended processing to boundary and extended facilities

2011 plans:

- Run operationally at all SGP sites; process all historical data
- Run at TWP and for Azores AMF deployment

RIPBE/BBHRP

Radiatively Important Parameters Best Estimate (RIPBE): Merges all input parameters needed for radiative transfer calculation on common time/height grid. Broadband Heating Rate Profiles (BBHRP) calculates broadband fluxes and heating rates on RIPBE inputs.



Recent updates:

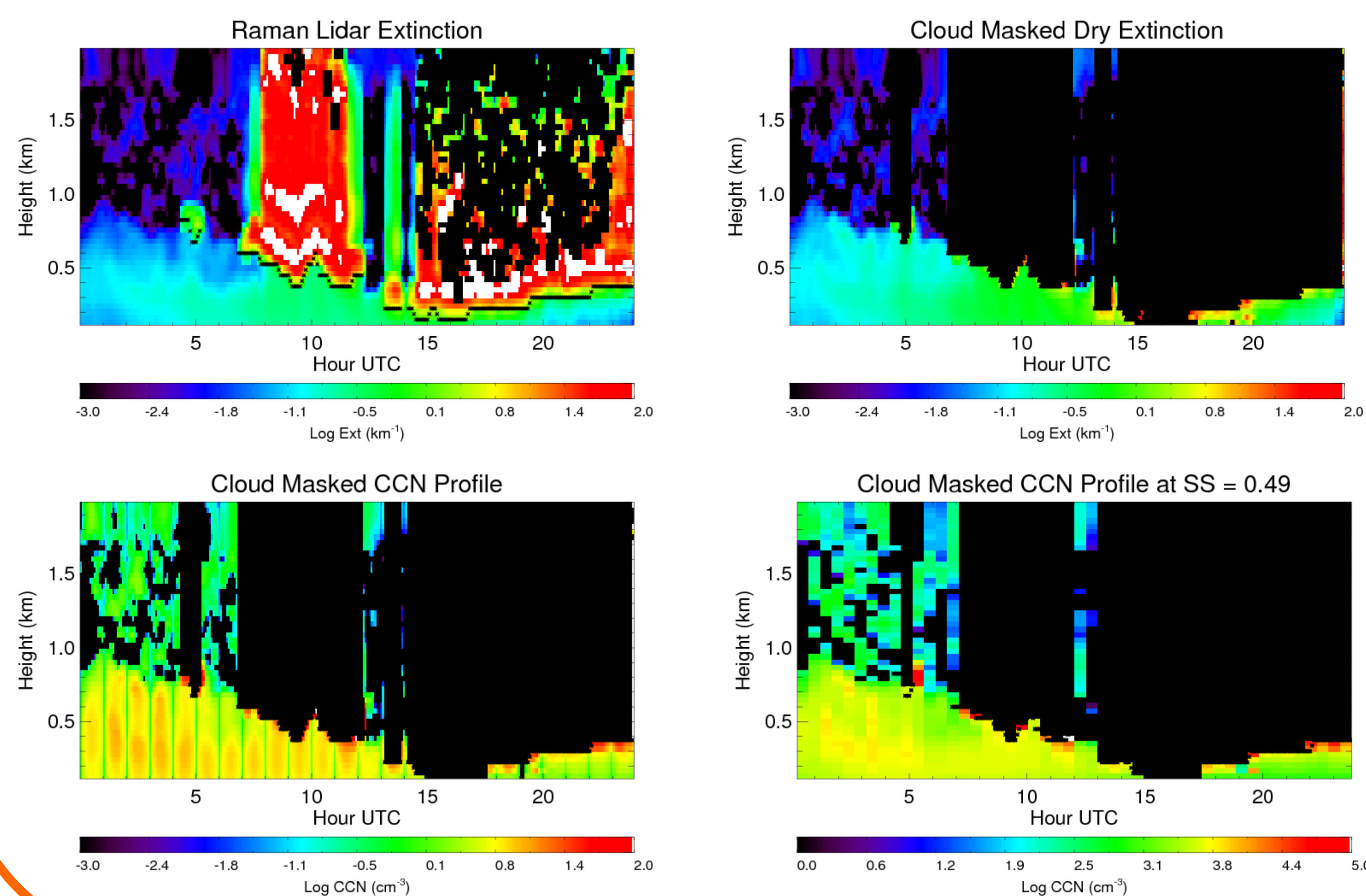
- Updates/corrections to RIPBE evaluation product based on user comments
- Created BBHRP interface in ISDE environment
- Streamlined BBHRP process and added qc to BBHRP output

2011 plans:

- Release RIPBE as operational product; process all available data
- Release BBHRP as evaluation product
- Create 30-min avg BBHRP file

New CCN Profile VAP

Uses Raman lidar extinction profile and cloud condensation nuclei (CCN) and f(RH) measurements at surface to determine CCN at cloud base following methodology of Ghan et al. 2006.



• Implemented algorithm in new ARM Integrated Software Development Environment (ISDE). [See poster 12J by K. Gaustad for ISDE details.]

• Evaluating preliminary results

• Next steps:

- Add qc flags
- Evaluate using CLASIC/CHAPS aircraft data
- Place data in Evaluation Area

Raman lidar extinction profile (top left) is corrected to dry extinction (top right) using humidification factor measured at the surface by the AOS. The dry extinction profile is used to scale the surface CCN measured at varying supersaturations (bottom left) at 5-min resolution. The scaled CCN profile for a single value of supersaturation is also shown (bottom right).

Proposed New VAPs

- MWRRET 3-Channel – development to start April 2011
 - Extend MWRRET to new 3-channel radiometers for improved accuracy in PWV and LWP
 - Use improved microwave absorption models
- Planetary Boundary Layer Height – development to start Fall 2011
 - Implement multiple algorithms using different instruments (thermodynamic, lidar backscatter, Doppler wind lidar)
- Cloud Layer Droplet Number Concentration
 - Algorithm TBD; suggestions welcome
- Drizzle Parameters
 - O'Connor et al. 2003

Potential Updates to Existing VAPs

- CloudClass - Modify to use MPLCMASK and release operationally process all SGP data; extend to TWP, NSA, AMF
- MPLCOD - Modify to use MPLCMASK; make code operational; process all SGP data; extend to TWP, NSA, AMF
- SurfSpecAlb – Extend to NSA
- RadFLuxAnalysis – Extend to include LW fluxes, use QCRad as input