VOCALS

NSF C-130
Data Assessment Report

Resources

- Project Documentation: www.eol.ucar.edu (RAF – Field Projects)
  - Allen Schanot: schanot@ucar.edu
- Data Access: www.eol.ucar.edu (RAF – Data Access)
  - Janine Goldstein: janine@ucar.edu
- Analysis Tools: www.eol.ucar.edu (RAF – Software)
  - Chris Webster: cjw@ucar.edu

New Data Release

archived 6/25/09

- No Changes to state, dynamic or thermodynamic variables
- Updated CDP bin sizes & concentration
- Updated PCASP bin sizes & concentration
- Updated FSSP concentration
- Special 2DC processing
- Updated O3 & CO concentrations

Position, Ground Speed & Winds

- DGPS – most accurate
  - Unusually noisy signal due to interference
  - Separate data set
- IRS – Schuler oscillation
- Novatel GPS – Used as reference
- Winds –
  - Use GPS corrected (WSC, WDC, etc)
  - IRS version for comparison (WS, WD, etc)

Reference Altitude (ALTX)

- GPS Altitude: variable satellite coverage
  - Data gaps
- Pressure Altitude: non-std lapse rate
  - Constant surface pressure (1013.15)
- DGPS most accurate but noisy this case
- Used Radar Altimeter Data as reference
  - Accuracy decreases with increased altitude

Reference Temperature (ATX)

- OPHIR-III: less accurate / slower
  - In cloud as needed or at exit
- Heated Rosemount: less accurate / slower
- Used Unheated Rosemount
  - Minimal wetting in cloud
  - Fast enough for heat flux calculations

Reference Humidity (PI Choice)

- Chilled mirror most accurate
  - Slow (variable response tied to Td depression)
  - Overshooting at cloud boundaries
- UV Hygrometer used in derived variables
  - Fast / suitable for moisture flux calculations
  - Flt-by-flt calibration against chilled mirror sensor
  - Some residual in flight drift (some unsat. Cloud legs)
  - Loss of accuracy at high altitude

Surface Temperature (TSURF)

- Derived from radiometric measurement RSTB
- Adjusted for altitude based on mean PBL humidity
- Not valid for cloud top temperatures due to unknown altitude separation. Use RSTB.

CDP Cloud Droplet Data

- Optical window heater failure led to mid project change in probe calibration (rf04 / rf06)
- Switched to 2 stage bin size calibration
- Bin shift checked with flt-by-flt pollen test
- Data updated in June release to archive

PCASP Aerosol Data

- Collaborated with Univ. of Wyoming on bin sizing and sample flow calibration
- Bin 1 data removed from concentration total due to excessive noise.
- Data updated in June release to archive

2DC Precipitation Data

RAF FSSP-100 Cloud Probe Data

- Probe modified to reduce droplet shattering
  - Excessive noise in smallest bins
  - First bin 6 or 8 in CONCF calculation
  - Raw data matrixes intact
- Probe changed to std model between rf10 & rf11
  - Noise reduced to normal
  - First bin 2 in CONCF calculation

User Supplied Data

- Drexel SO2 & DMS – merged
- RAF Chemistry (O3 & CO) – updated to final product
- CVI – updated to final product
- Wyoming CN – updated to final product
- Wyoming CCN - products separate in archive
- Hawaii CN – preliminary / final products separate in archive
- Hawaii non-CN aerosols - products separate in archive
- Fast FSSP - products separate in archive
- WCR & WCL - products separate in archive
- Microwave Radiometer - products separate in archive
- RAF GNI – products separate in archive