Status of Radiometer Data Processing from CSET

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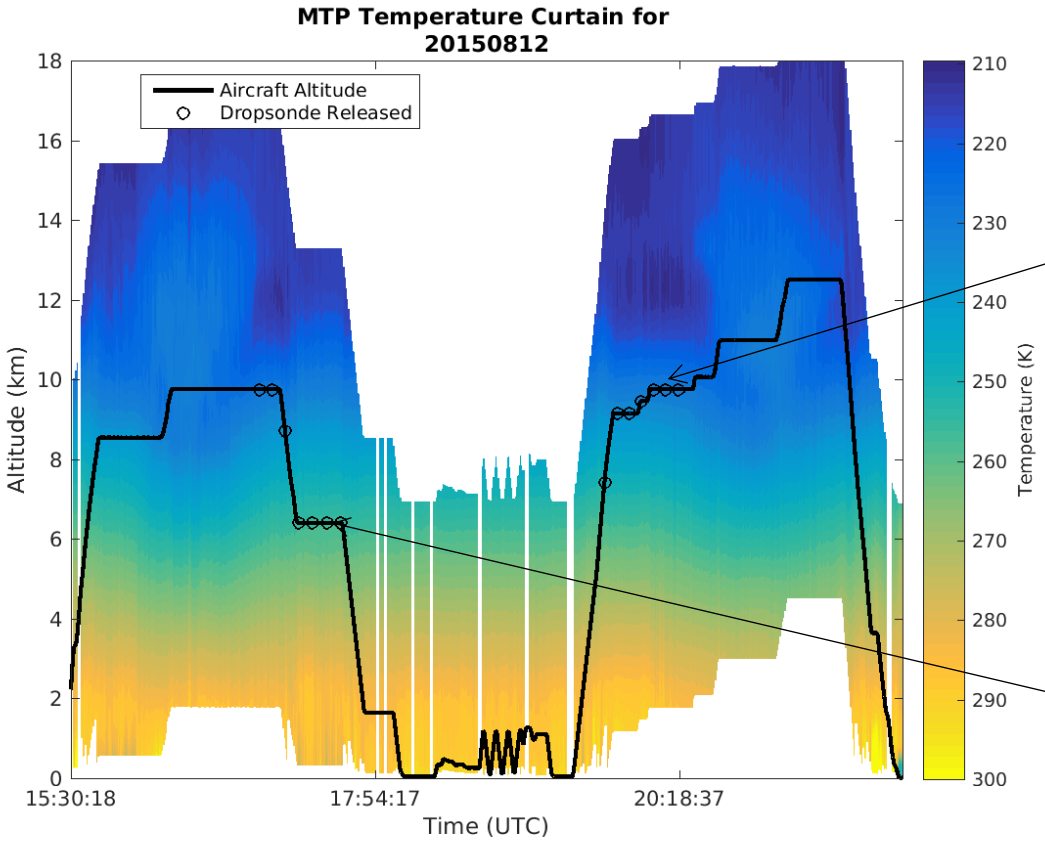
MTP Data Set Overview

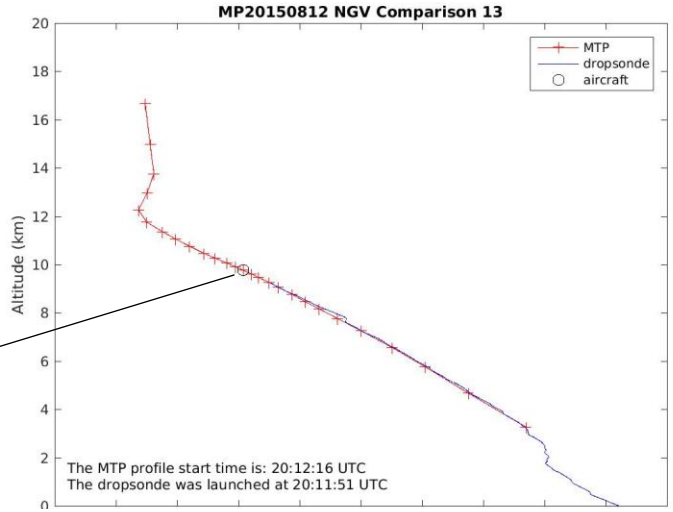
- Operated on all research and ferry flights
- Overheating issues forced manual shutdown during low-level ascents
- Intermittent (additive) noise observed on several flights
- Low-level flight segments introduced sea surface emission into measurements; current retrieval method not configured to account for this signal

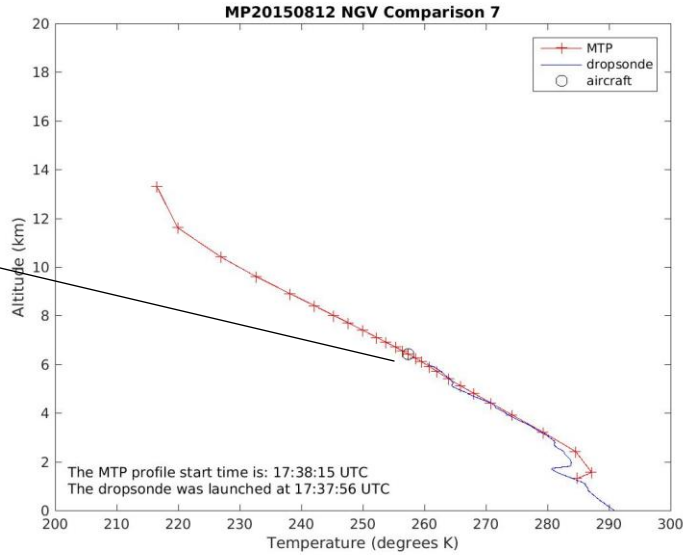
Data Processing Summary

- 16 research flights processed
  - Data not yet released due to continuing investigation of noise issue and effect of surface emission on low level temperature retrievals
- Good retrievals at higher flight levels
  - Based on comparison with dropsondes
  - Some warm bias in lower troposphere (~20% of scans)
- Still investigating retrieval anomalies at lowest flight levels

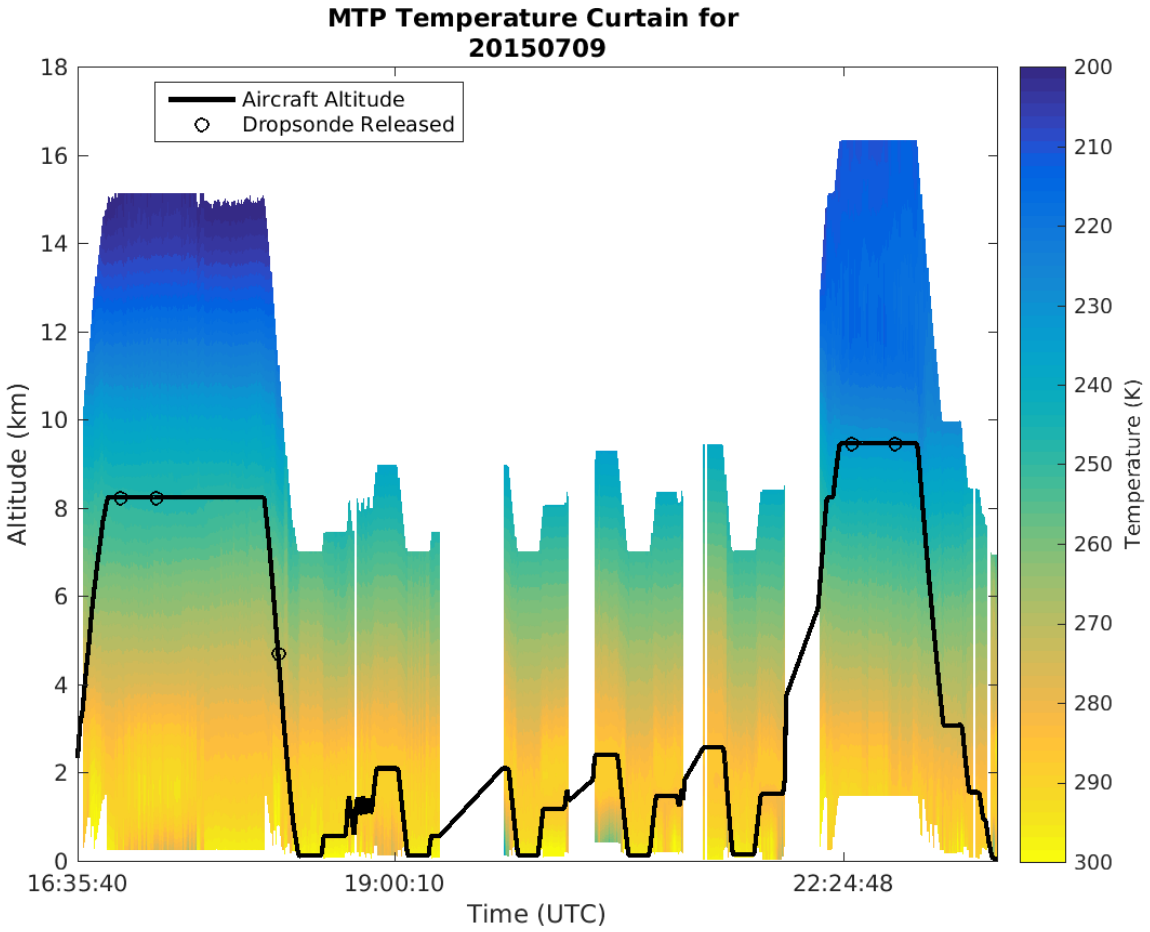
RF16 – 12 Aug 2015

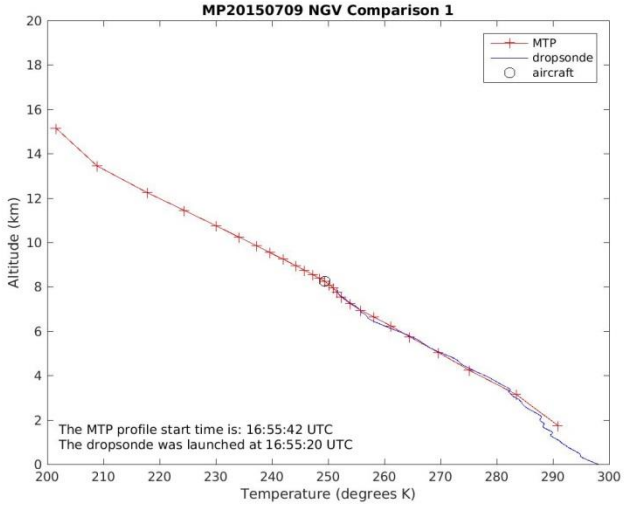


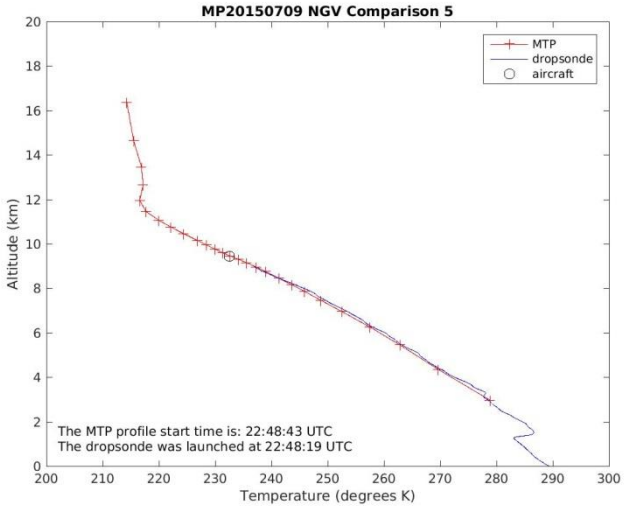




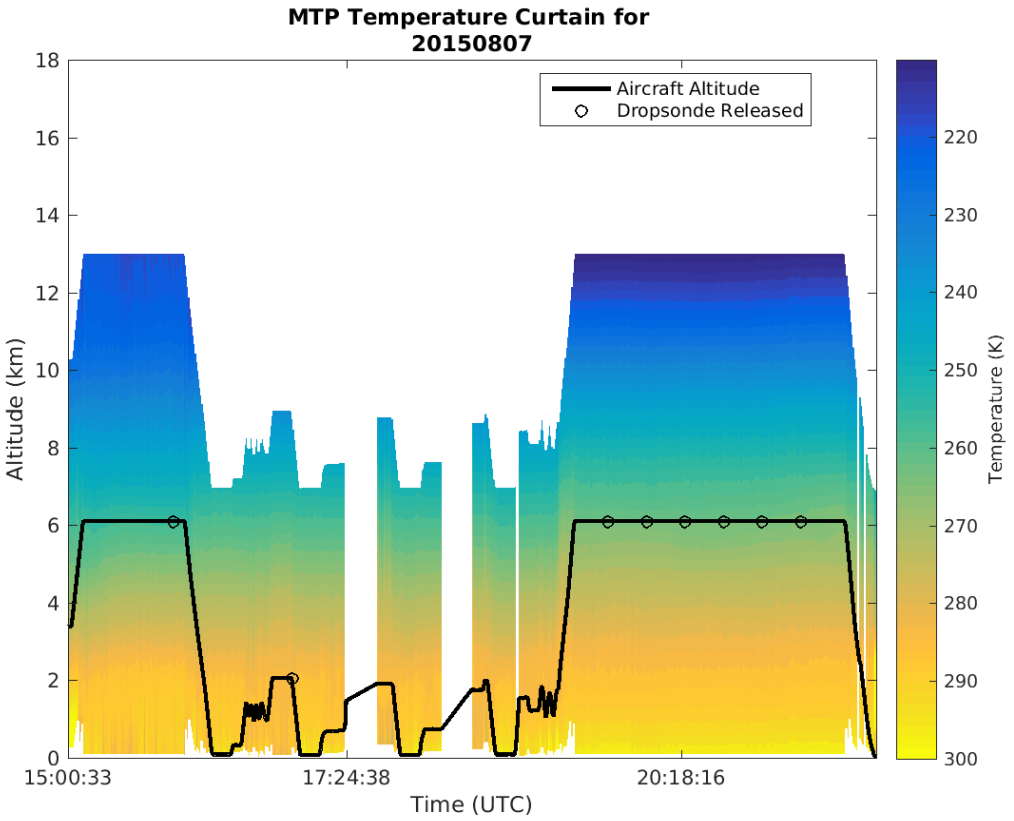
RF03 – 9 July 2015 (KOA to MHR)

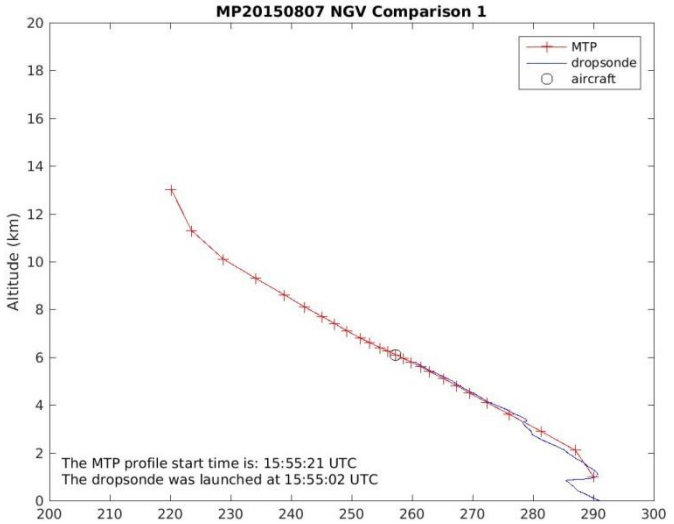


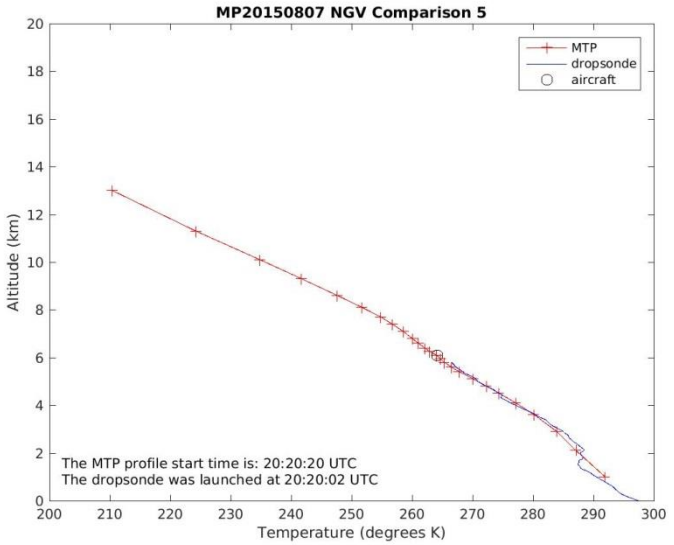




RF14 – 7 Aug 2015 (MHR to KOA)

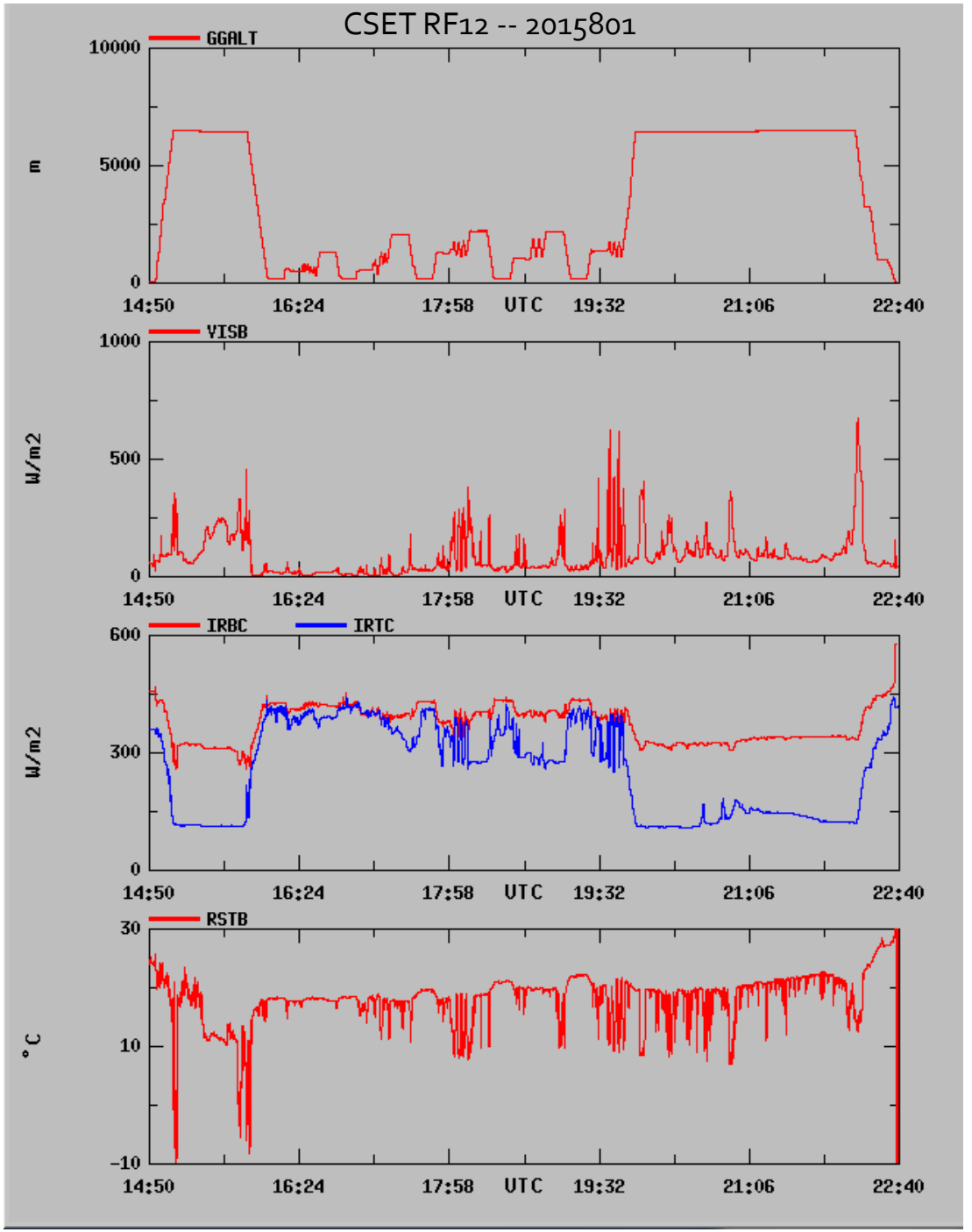






Ongoing Work on CSET Data Set

- MTP currently at JPL for maintenance
  - Intermittent noise observed in lab; source not yet identified, also investigating possible interference from HCR
  - Working on filter to apply to affected CSET data
- Current statistical retrieval method has limited ability to deal with surface emission
  - Experimenting with GFS model profiles as a priori information (oceanic conditions vs. land-based radiosondes)
- JPL team testing a new retrieval method
  - MERRA global reanalysis for a priori data
  - Forward radiative transfer model to include surface effects
  - Retrieval framework using Optimal Estimation Theory (1D-VAR) for inversion; iterative retrieval
  - CSET flight provided for testing

Other CSET Radiometers

- Kipp & Zonen CMP22
  - Shortwave irradiance
  - Down-looking
  - var name VISB
- Kipp & Zonen CGR4
  - Longwave irradiance
  - Up- and down-looking
  - var names IRBC, IRTC
- Heitronics KT19.85
  - Infrared radiometric surface temperature
  - Var name RSTB