

SCOPE-CM UTH Plan for 2015

Project Name: Sustained generations of upper tropospheric humidity Climate Data Records from multiple sensors with multi-agency cooperation

Project leader:

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The upper tropospheric humidity (UTH) (also named as free tropospheric humidity (FTH)) is one of the Global Climate Observing System (GCOS) atmospheric Essential Climate Variables (ECVs). The datasets have been derived from the High Resolution Infrared Radiation Sounder (HIRS) since late 1978, from the Advanced Microwave Humidity Unit-B (AMSU-B) and the Microwave Humidity Sounder (MHS) since late 1998, and from Meteosat Visible and InfraRed Imager (MVISR) and Spinning Enhanced Visible and InfraRed Imager (SEVIRI) since 1983. These satellite records have been improved by bias corrections and improved homogenization procedures. Detailed activities planned for 2015 are listed below.

- Update the Climate Algorithm Theoretical Basis Document (C-ATBD) for inter-satellite calibrated HIRS channel 12 brightness temperature dataset for a new version.
- Enter the new version of HIRS channel 12 brightness temperature data to the climate data record review process for approval.
- Re-process the time series of HIRS channel 12 brightness temperature dataset to the end of 2014 with NOAA-19 data added.
- Perform final evaluation of UMD/NOAA AMSU-B and MHS homogenized time series of channel brightness temperatures.

- Finalize the C-ATBD for the UMD/NOAA AMSU-B/MHS FCDR.
- Work on generating layer-averaged UMD/NOAA microwave tropospheric humidity.
- Work on scan bias correction and add NOAA-19 to UMD/NOAA AMSU-B/MHS data.
- Extend the UMiami microwave UTH data set to 2014.
- Work on microwave brightness temperatures from NOAA-18 and MetOp-A, and rectify any biases due to orbital drift and differences in calibration (UMiami).
- Develop an improved Meteosat FTH algorithm using new cloud mask and FCDR.
- Enhance operational capabilities by incorporating feedback from Noveltis and by reducing number input sources.
- Update the ATBD. The updated ATBD for the release will be under review in Q3 2015.
- Understand differences among upper tropospheric water vapor measurements through further inter-comparison of data from different sensors.