

SPARC Water Vapour Assessment II

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The goals of Stratosphere-troposphere Processes And their Role in Climate Water Vapor Assessment II (SPARC WAVAS-II) are to 1) provide quality assessment of upper tropospheric to lower mesospheric satellite records since the early 1990s, 2) provide validation against ground-truth instruments, 3) assess inter-instrument biases, depending on altitude, location, and season, 4) assess representation of temporal variations on various scales, 5) include data records on isotopologues, and 6) provide recommendations for usage of available data records and for future observation systems. To achieve these goals, many intercomparisons between satellite profiles and comparisons with ground-based measurements have been undertaken. Upper tropospheric comparisons have also been done, as well as comparisons between derived quantities (such as H₂O tape recorder speed and seasonal cycles). The systematic comparisons between satellite profiles and all the available frost point balloon-borne hygrometers (with NOAA Earth System Research Laboratory [ESRL] Global Monitoring Division [GMD] frostpoint measurements providing a significant fraction of the data used) and ground-based microwave radiometers have never been done before. Goals and preliminary results from the WAVAS-II satellite assessment report will be presented.

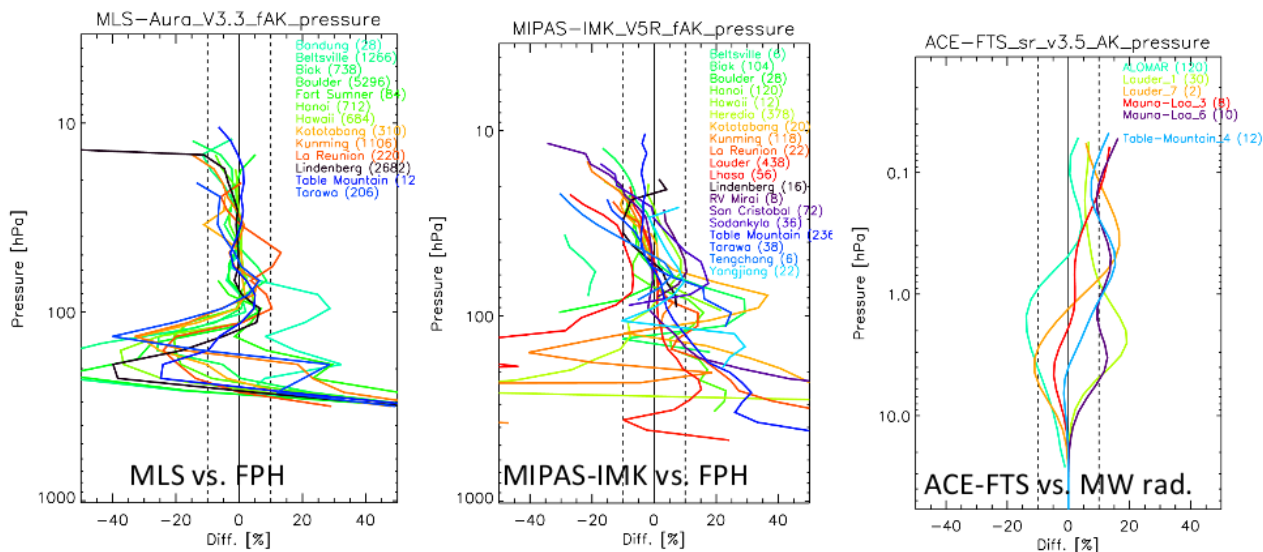


Figure 1. Example of the types of comparisons performed for the SPARC WAVAS-II satellite report. This shows the Microwave Limb Sounder (MLS) compared with frost point profiles (left panel), the Michaelson Interferometer for Passive Atmospheric Sounding (MIPAS) compared with frost point profiles (center panel) and the Atmospheric Chemistry Experiment-Fourier Transform Spectrometer (ACE-FTS) compared with microwave radiometer profiles. The individual stations used are noted on each panel.