The CU/NOAA Water Vapor Profiling Network Seed

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The most pressing question regarding stratospheric water vapor is why it has been increasing as observed over Boulder, Colorado, during the last 20+ years. The Boulder record is the only data set worldwide spanning a multi-decade time period and showing this increase.

In the last 5 years, significant efforts have taken place to simultaneously measure water vapor and ozone in the upper troposphere and lower stratosphere in the tropics, the southern hemisphere midlatitudes, and high latitudes. San Cristóbal, Galápagos, where six campaigns have taken place so far, was the first station to be established in cooperation with the Soundings of Ozone and Water in the Equatorial Region (SOWER) project; the second tropical station that was utilized was Watukosek, Indonesia, with two campaigns, also in cooperation with SOWER.

As part of the Atmospheric Infrared Sounder (AIRS) and Stratospheric Aerosol and Gas Experiment (SAGE) III validation measurements, we conducted soundings at Hilo, Hawaii; Lauder, New Zealand; and Sodankylä, Finland. At each of these sites, local personnel were trained and will conduct soundings in the future. At Hilo, soundings of ozone and water vapor are launched roughly monthly. These soundings show a strong variability, reflecting the varying influence of tropical and midlatitude origin of the air sampled at this subtropical site. At Sodankylä, soundings have been concentrated in the Arctic winter in conjunction with SAGE III overpasses. This site may extend its sounding frequency to a monthly schedule beginning in 2004. At Lauder, initial soundings have taken place also in conjunction with SAGE III overpasses. Pending the available funding, this site may become the southern hemisphere site for routine water vapor profile soundings.

The network of University of Colorado (CU)/NOAA water vapor sounding sites is shown in Figure 1.

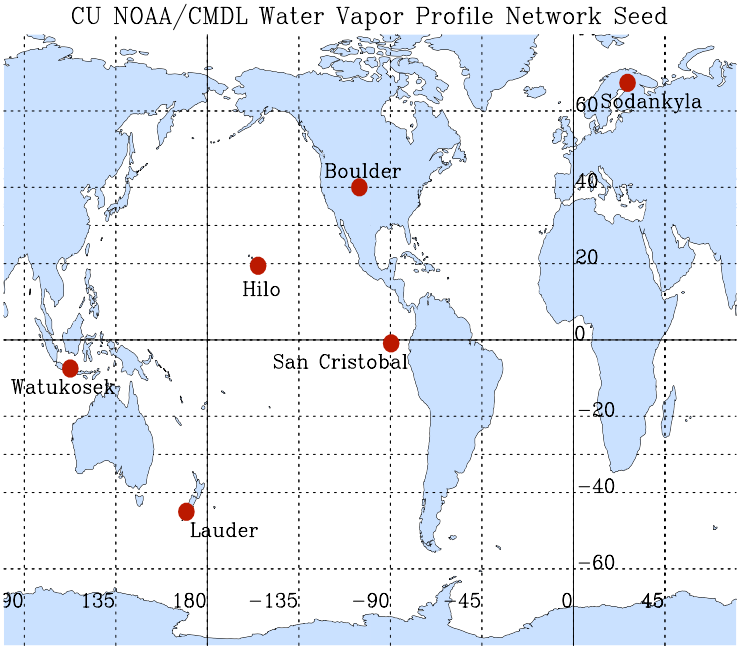

Figure 1. Network of water vapor sounding sites. Boulder, Colorado, and Hilo, Hawaii, are operating on a continuing basis with soundings launched by CMDL personnel. San Cristóbal and Watukosek are operated on campaign basis in cooperation with personnel from the National Institute for Meteorology and Hydrology, Ecuador, and the National Institute of Aeronautics and Space, Indonesia. Soundings at Lauder and Sodankylä are launched by personnel from the National Institute of Water and Atmospheric Research, New Zealand, and the Finnish Meteorological Institute.