Geophysical Research Abstracts
Vol. 12, EGU2010-2831-1, 2010
EGU General Assembly 2010

Inter-comparison of remote-sensing and radiosonde tropospheric profiling systems

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Precise, long-term assessment of accurate temperature and humidity profiles is vital for the determination of the atmospheric state. Fueled by a desire for better weather predictions and climate change analysis, the standard radiosonde technique has been complimented in the recent decade through the use of several new remote-sensing instruments. At the aerological station in Payerne, Switzerland, increased temporal resolution of tropospheric profiles has been investigated through the statistical comparison of operational radiosondes and the more-recently installed microwave radiometers as well as LIDAR and GPS instruments. Completed and ongoing statistical evaluation of the various instrument measurements shows the analogous and supplementary information that an integrated system can provide, as well as the discrepancies, uncertainties, and situational relevancies that must be considered.