Upper tropospheric humidity data set from operational microwave sounders

V. O. John, S. A. Buehler, M. Kuvatov, M. Milz, B. J. Soden, and D. L. Jackson

Microwave radiation measured around 183.31 GHz by operational weather satellites can be used to derive Upper Tropospheric Humidity (UTH). This presentation gives details of a new UTH data set derived from Advanced Microwave Sounding Unit - B (AMSU-B) instruments on board NOAA (15, 16, and 17) satellites for 8 years (2000-2007). In contrast to UTH data sets derived from infrared measurements, the new data set is less affected by clouds. The maximum uncertainty due to clouds is estimated as 10 %RH in deep convective areas. We also show that the data from the three satellites are consistent with mean relative differences less than 4+/-7%. Comparisons with Radiosonde measurements and infrared UTH measurements show consistent results with previous studies.