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Comparison of H_2O total column measurements during the DEMEVAP 2011 campaign

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Atmospheric water vapour has a very important effect on the climate and the weather. Instruments developed last decades are providing total columns with a very good accuracy, usually of the order of less than 10% of relative value, but inter comparison between results has not been fully explored because of the diversity of the origin of the instruments (from astronomy to meteorology) and therefore, because of the diversity of scientific teams: tropospheric water vapour experts at “Meteo France”, measurements of stratospheric minor constituents like ozone by UV visible spectrometry, astronomers, etc.... At Observatoire de Haute Provence, many instruments are able to measure atmospheric water vapour, total columns and/or vertical profiles as well as rain and clouds. A dedicated campaign DEMEVAP (DEvelopment of MEthods for remote sensing of water VAPor) has been organized at Observatoire de Haute Provence, South of France, in Octobre 2011 to compare and validate results of measurements.
Ground based observations were compared to satellite observations and to meteorological analysis integrated amounts. Data from Sophie, the very high resolution spectrometer on the astronomical telescope of 1.96 cm; Schiamachy, GPS and SAOZ instruments as well as NCEP and ECMWF analysis are compared. This paper presents the instruments, followed by results as the agreement between instruments, discussion as the sources of differences, and the conclusion.