

GOME and SCIAMACHY Global Water Vapour Columns

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Global water vapour total column amounts have been derived from measurements of the Global Ozone Monitoring Experiment (GOME) on ERS-2 and the SCanning Imaging Absorption spectroMeter for Atmospheric CHartography (SCIAMACHY) on-board the European environmental satellite ENVISAT.

For this purpose, the Air Mass Corrected Differential Optical Absorption Spectroscopy (AMC-DOAS) approach has been applied to GOME and SCIAMACHY nadir measurements in the spectral region around 700 nm.

GOME and SCIAMACHY water vapour total column data are available over both ocean and land, but only measurements on the day side and under (almost) cloud free conditions can be used.

The derived water vapour columns compare well with correlative data from e.g. the Special Sensor Microwave Imager (SSM/I) and from the European Centre for Medium-Range Weather Forecasts (ECMWF).

The GOME and SCIAMACHY results do not rely on any other measurement data, e.g. calibration factors derived from radio sonde data. The combination of GOME and SCIAMACHY data currently covers a time span of more than 10 years which may extend even further, depending on the life time of SCIAMACHY. In addition, the GOME-2 instruments on the series of operational meteorological satellites Metop (the first one to be launched 2006) will extend this data set.

Therefore, a combination of the results for these GOME-type instruments can lead to an additional, completely independent global water vapour data set suitable for climatological studies.