



Global trends (1996-2003) of the atmospheric H₂O column and cloud cover derived from GOME

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We present global trends of the total water vapor column (precipitable water) and cloud cover for the period January 1996 - June 2003 derived from observations by the Global Ozone Monitoring Experiment (GOME) on the research satellite ERS-2. In contrast to other retrieval methods our analysis does not use independent or a-priori information making it in particular well suited for trend studies. The chosen wavelength range in the red spectral region ensures similar sensitivity for observations over land and ocean and thus a consistent global picture. During the period 1996 - 2002 the globally and yearly averaged H₂O column increased by 3.7±0.5%; the cloud cover by about 2.0±1.5%. The temporal evolution of the yearly averaged H₂O column is highly correlated to those of the surface temperature indicating that the global atmospheric humidity is mainly driven by the Clausius-Clapeyron law. The spatial patterns of the H₂O and cloud trends show both positive and negative signs. Especially over the southern hemispheric oceans very similar trend patterns are found which also well agree with those of the surface temperature.