



Trend analysis of total column-integrated water vapor over cloudfree land surfaces

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Water vapor is the most important greenhouse gas of the atmosphere. Its physical properties to absorb solar and terrestrial radiation makes it important for every climate future prediction. Therefore global datasets with high spatial and temporal resolution as well as high accuracy and precision are required. The imaging spectrometer MERIS (Medium Resolution Imaging Spectrometer) placed on the polar orbiter ENVISAT provides the total column-integrated water vapor over cloud free surfaces data since May 2002. MERIS has a spatial resolution of 1.2×1.2 km and a swathwidth of 1200km which provide a global coverage after 3 days and for the most cases a cloud free observation in a $1 \times 1^\circ$ grid after 1 month.

A trend analysis over land surface has been performed on a monthly mean global dataset of water vapor distributed by ACRI-ST. From May 2002 to April 2007 the trend was examined for the global, hemispheric and the Mediterranean area. Assuming a significance of 0.05, the results show that there is a slight and insignificant increase over the Southern Hemisphere and a positive trend of 2.3% or 0.026 g/cm^2 for this period over the northern areas. The global examination reveals a small upwards movement of 1.28% or 0.019 g/cm^2 . A strong increase of 4.9% or 0.056 g/cm^2 over the Mediterranean area is recovered.