



Episode of enhanced water vapor in the middle stratosphere over southern Europe during SCOUT-O3 Darwin campaign in November 2005

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On the transfer flight of the SCOUT-O3 Darwin campaign in November 2005 the airborne microwave radiometer AMSOS observing water vapor was flown onboard a Learjet of the Swiss Air Force. The data product of the instrument are vertical profiles of water vapor from 15 to 65 km. Over the Mediterranean Sea between Southern Italy and Cyprus on 2005-11-04 we have measured an enhancement of 25% of water vapor than expected for this region in an altitude of 25 km. The extension of this water vapor area is approximately 1500 km in length and about 5-10 km in altitude.

The analysis of ECMWF potential vorticity and water vapor fields have also shown this feature in the same geographical region but in an altitude which is 5 km higher. Backward trajectory calculations show a polar origin for the H₂O enriched air area while air masses below originate from the mid-latitudes. It seems that polar air was mixed into mid-latitudinal air due to a filament of the polar vortex that has passed over Southern Europe.