

# **WATER VAPOR MONITORING USING ENVISAT SPECTROMETER AND RADAR MEASUREMENTS**

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Synthetic aperture radar interferometry (InSAR) is known as a very important method for topographic mapping and high accuracy surface displacement measurements. Moreover, further investigations showed that radiowave propagation through the atmosphere significantly influences these measurements. Even though in the case of InSAR observations the atmosphere represents the unwanted component of signal, given knowledge of the earth surface behavior, one can obtain very accurate information on the state of atmosphere at the time of measurements.

Similar to GPS atmospheric measurements, InSAR observes radiowave path delays. These path delays can be related to amount of water vapor in atmosphere. As a result InSAR observations can provide high-resolution ( 20 m) atmospheric integrated water vapor maps. Since the radar signals penetrate through clouds and precipitation it gives a possibility of observing of total water vapor column regardless of weather conditions.

Due to the location of the Medium Resolution Imaging Spectrometer (MERIS) and the ASAR radar on board of the ENVISAT, both acquisitions are collocated both in time and space. This gives an unprecedented possibility for cross-validation and interpretation. In this work we compare MERIS water vapor products and the integrated water vapor as observed with ASAR. In this study we pay a special attention to the cloud free areas, since in these areas both instruments have an optimum performance. However, the water vapor products over cloudy areas are also compared.