



## **Soil wetness monitoring by a multi-temporal satellite records analysis.**

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In the last years remote sensing observations have become an useful tool for providing hydrological information, including the quantification of main catchment's physical characteristics, such as topography and land use, and of catchment's variables, such as soil moisture or snow cover. Moreover satellite data have been also a large use in the framework of hydro-meteorological risk mitigation. Recently, an innovative Soil Wetness Variation Index (SWVI) has been proposed using data acquired by the microwave radiometer AMSU (Advanced Microwave Sounding Unit) which flies aboard NOAA (National Oceanic and Atmospheric Administration) satellites. The SWVI is based on a general approach for multi-temporal satellite data analysis (RAT- Robust AVHRR Techniques, Tramutoli 1998). This approach exploits the analysis of long-term multi-temporal satellite records in order to obtain a former characterisation of the measured signal, in term of expected value and natural variability, providing a further identification of signal anomalies by an automatic, unsupervised change detection step. Such an approach is able to reduce spurious effects on the signal generated by different natural/observational conditions. The SWVI has been already applied with good results, both in terms of reliability and sensitivity, in the observation of some extreme flooding events which occurred in the past in Europe. In this paper, the preliminary results obtained in the analysis of the flooding event which occurred in central Europe during August 2002 are presented. Results obtained seem to confirm the reliability of the proposed approach verifying its sensitivity in the identification of pre-precipitations soil conditions, particularly useful for warning system purposes, as well as for monitoring space-time dynamic of the considered event.