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Applicability of TVDI (Temperature Vegetation Dryness Index) to the Assessment of Soil Moisture Spatial Variability in the Valencia Anchor Station in the Framework of SMOS Validation Activities

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Soil moisture content is highly variable in time and space and therefore quite difficult to characterize in large areas. The Temperature Vegetation Dryness Index (TVDI) can readily be obtained from surface temperature (Ts) and normalized difference vegetation index (NDVI) remote sensing measurements and contains valuable information on the spatial pattern of soil moisture.

Validation of SMOS soil moisture products requires an independent knowledge of this parameter in large extended areas, at least of the order of about 50 km x 50 km. The Valencia Anchor Station, a reasonably homogeneous site in Eastern Spain of about that size, has been chosen as a core validation area for SMOS land products. The site has been heavily equipped with soil moisture related instruments and been object of a number of field and aircraft campaigns.

The large dataset of soil moisture measurements both from the network installed and from the field and aircraft campaigns (ESA SVRC 2008, CNES CAROLS 2009 and ESA-CNES CAROLS 2010) has been confronted to MODIS TDVI derived estimations and the relationship between both parameters is giving us sufficient insight to allow for the spatialization of the soil moisture measurements to larger areas.