Geophysical Research Abstracts
Vol. 14, EGU2012-10189, 2012
EGU General Assembly 2012

A global validation of the ASCAT Soil Water Index (SWI) with in situ data from the International Soil Moisture Network.

C. Paulik (1), V. Naeimi (1,2), W. Dorigo (1), W. Wagner (1), and R. Kidd (1)

(1) Technical University of Vienna, Institute for Photogrammetry and Remote Sensing, Austria (cpa@ipf.tuwien.ac.at), (2) German Aerospace Center (DLR)

Soil Moisture is an Essential Climate Variable and a key parameter in hydrology, meteorology and agriculture. Surface Soil Moisture (SSM) can be estimated from measurements taken by ASCAT onboard Metop-A and have been successfully validated by several studies (C. Albergel et.al. 2009 and 2012, M.Parrens et.al. 2012). Profile soil moisture, while equally important, can not be measured directly by remote sensing. The near real-time Soil Water Index (SWI) product, developed within the framework of the GMES project geoland2 aims to close this gap. It is produced from ASCAT SSM estimates using a two-layer water balance model which describes the relationship between surface and profile soil moisture as a function of time. It provides daily global data about moisture conditions for 8 characteristic time lengths representing different depths.

The objective of this work was to assess the quality of the SWI data for different measurement depths. SWI data from January 1st 2007 until the end of 2010 was compared to in situ soil moisture data from 420 stations belonging to 22 observation networks which are available through the International Soil Moisture Network. These stations delivered 1331 station/depth combinations which were compared to the SWI values. After excluding observations made during frozen conditions the average significant correlation coefficients were 0.564 (min -0.684, max 0.955) while being greater than 0.3 for 88% of all station/depth combinations.