



An operational soil moisture product from ENVISAT ASAR GM for Australia

M. Doubkova, A. Bartsch, D. Sabel, and W. Wagner

Institute of Photogrammetry and Remote Sensing, Vienna University of Technology, Vienna, Austria

Soil moisture is a key element in the global cycles of water, energy and carbon and belongs to the Essential Climate Variables defined by the Global Climate Observing System (GCOS). Soil moisture represents a switch that controls the proportion of rainfall that percolates, runs off, or evaporates from land. Its quantitative representation can bring further improvement in hydrological monitoring and modelling.

Since 1970's the microwave technology dominated the soil moisture retrieval. A variety of coarse resolution datasets became available from active and passive microwave systems (ERS-1/2, METOP ASCAT or AMSR-E) and the potential of these datasets for improvement in hydrological, climatological, and vegetation studies has been amply demonstrated.

To address the needs of the hydrological community for medium resolution soil moisture dataset an approach developed at the TU WIEN for the coarse resolution ERS/METOP datasets has been transferred to medium resolution SAR data. This work was performed within the ESA Tiger Innovator project SHARE. The used sensor is the ENVISAR ASAR. Its Global Mode with 1 km spatial resolution provides frequent data coverage which allows for detection of the highly variable soil moisture patterns. The original product is available for the region of the Southern African Development Community (SADC) since June 2007 and is regularly updated (www.ipf.tuwien.ac.at/radar/share). In June 2008 a similar service has been implemented for the entire Australian continent with exception of Tasmania. The new dataset provides twice weekly measurements for 92% of the continent leaving the reminding regions with at least 1 acquisition a week. The datasets also allow for downscaling of the coarser resolution datasets (ERS, ASCAT) for operational applications.