



Rainfall events and soil moisture deviations as detected by operational ASCAT soil moisture data: case study in semi-arid regions of Somalia

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Large and widely dispersed populations in Somalia depend on pastoralism and on rainfed and irrigated farming. Droughts and floods that have plagued the country in the course of its history were critical for the herders and farmers and have often initiated long-lasting food crises. Recently, the Somalia Water and Land Information Management (SWALIM) has initiated collaborative activities to identify and quantify the physical causes of drought for better understanding of this phenomenon and better addressing the humanitarian aid in Somalia. The soil moisture was identified as one of the parameter that may improve the drought assessment studies in Somalia.

The poor accessibility and long-lasting conflicts in Somalia region caused periods of missing values in the meteorological networks that complicate or disable further weather analyses. In this study, a comparison of operational available spatial soil moisture dataset from active microwave sensor with 50 km spatial resolution - ASCAT scatterometer - with existing in-situ rainfall data is performed. The ASCAT data are processed at the Vienna University of Technology (TU WIEN), and recently became operationally available via EUMETCAST. Together with its predecessor – ERS 1/2 – the ASCAT/ERS scatterometers embrace period of 1992 until recent with existing gap over Somalia (2001-2007). The rainfall data were provided by the SWALIM organization. The focus is brought on the ability of the ASCAT scatterometer to detect first rains in the season that dictate the schedule of agricultural activities from land preparation, crop variety to selection to planting. Further, the ability to detect moisture deviations with coarse resolution soil moisture data is studied.

The remote sensing data are especially important for countries like Somalia with the poor field accessibility. The improved understanding of the soil moisture data from active microwave sensor may help in interpolating data from existing in-situ networks both spatially and temporally. Further, it should bring more understanding on physical causes of hydrological extremes. The METOP satellite mission has been assured until 2021 allowing for continuous long-term studies.