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Applicability of ENVISAT ASAR global mode data for analyses of hydrological patterns in the Okavango Delta

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Global mode data at 1km resolution are acquired by the ENVISAT ASAR ScanSAR instrument. It is an active microwave system and allows efficient analyses over large regions. Due to microwave signal sensitivity to hydrological surface parameters, these data feature a large potential for wetland analyses especially in subtropical regions where seasonal soil moisture and inundation dynamics are the major maintenance factors for wetlands.

A data set comprising all images since the beginning of global mode data availability (December 2004) covering the Okavango delta and surroundings has been analyzed with respect to meteorological events. A processing chain developed at IPF (Vienna University of Technology) for operational use of ENVISAT ScanSAR data was employed. A range of drying and inundation patterns can be distinguished. For example, the Gumare floodplain forms a unique feature throughout the entire year. Previously it was a permanent floodplain where peat accumulated but dried during the preceding years. Both, long and short term hydrologic patterns are well captured with the ASAR global mode data. Although the spatial resolution is comparably coarse, these data provide valuable additional information on the hydrological processes for this region which will enhance the already existing detailed wetland mapping by optical satellite data analyses and field measurements.