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Earth Observation in Support of Sustainable Water Resource Management in Africa
The TIGER initiative – Looking After Water in Africa

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ABSTRACT:

Reliable access to water, managing the spatial and temporal variability of water availability, ensuring the quality of freshwater and responding to climatological changes in the hydrological cycle are prerequisites for the development of countries in Africa. Water being an essential input for biomass growth and for renewable energy production plays an integral part in ensuring food and energy security. Water, as a source of safe drinking water, is furthermore the basis for ensuring the health of citizens and plays an important role in urban sanitation.
The concept of Integrated Water Resource Management (IWRM) is seen as an opportunity to help manage water variability and the wide spread water scarcity in Africa. One key component missing from IWRM in Africa is the limited knowledge of the available extent and quality of water resources at basin level. ESA's TIGER initiative aims at enabling African water authorities to fill this information gap by monitoring water resources at adequate temporal and spatial scales based on Earth Observation (EO) technology.
In direct collaboration with African Water authorities the Water Observation and Information System (WOIS) has been developed in TIGER as an open source software tool for monitoring, assessing and inventorying water resources using EO data. The WOIS offers more than 28 EO products for IWRM tasks from watershed to transboundary basin levels. Resulting EO information products cover basin-wide characterization of land and water resources (e.g. small water bodies), lake water quality monitoring, hydrological modeling, flood forecasting and mapping. This contribution will present WOIS use-cases validated and demonstrated with major river basin authorities (Nile Basin Initiative, Lake Chad Basin Commission, Zambezi Watercourse Commission, Volta Basin Authority) and national water authorities (Department of Water Affairs South Africa; Namibian Ministry of Agriculture, Water and Forestry; Zambian Ministry of Mines, Energy and Water Development).

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