EARTH OBSERVATION FOR SUSTAINABLE DEVELOPMENT

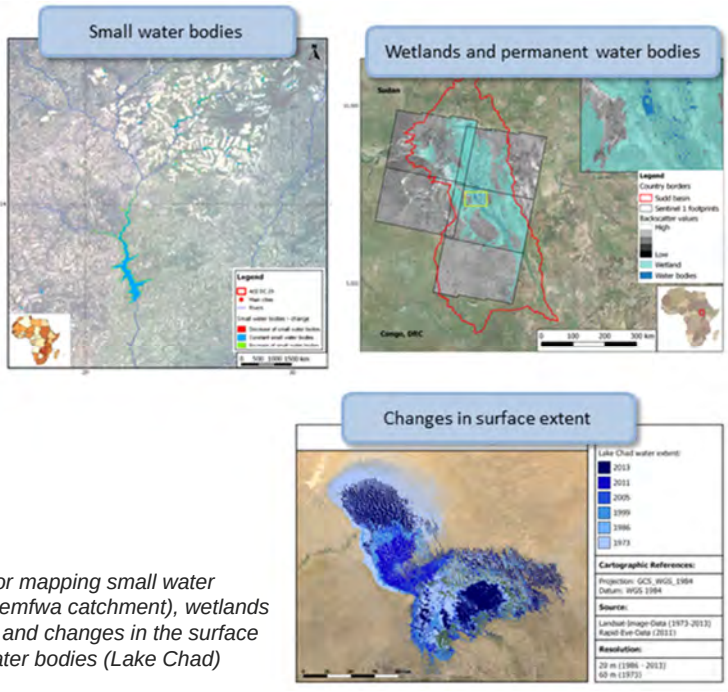
SURFACE WATER MONITORING

Satellite derived information supports the assessment and monitoring of water resources from watershed to cross-border basin level. The Surface Water Monitoring services focus on the identification of water bodies and wetlands as wells as their seasonal extent changes. Such information supports water authorities and basin commissions.

Assessing the amount of small- and large-scale water resources in a river basin, including discharge and recharge is crucial for water resource management, the reduction of flood risks, and decision-making in water sensitive sectors. Furthermore, it is essential for efficient planning and steering of reservoir development and management. In combination with information about precipitation, evapotranspiration, soil moisture and snow cover the surface water monitoring is also important for the basin hydrology (e.g. by impacting runoff and streamflow) and for the current and future utilization potential of the land.

The required information provided by the Earth Observation satellites Sentinel 1A/B and Sentinel 2A/B in high resolution optical and RADAR data allows mapping of even very small (few hectares) water bodies and wetlands and the high revisiting time of the twin satellites constellation helps to capture seasonal changes .

.



Examples for mapping small water bodies (Lusemfwa catchment), wetlands (Nile basin) and changes in the surface extent of water bodies (Lake Chad)

SUMMARY

CHALLENGE

- Increased water scarcity, high population growth and loss of ecosystem services
- Need to better understand ecosystem response to water take activities
- Need to effectively manage water resources
- Need to assess water availability for human and livestock water requirements

SOLUTION

- The EO service products for surface water monitoring are key for assessing the availablity of water resources and providing water ressource managers with the reference information needed to take informed decisions

VALUE

- Providing important information on the basin hydrology over poorly gauged watersheds
- Support small dam infrastructure planning
- Providing crucial knowledge for livestock watering
- Monitor impacts on critical ecosystems

esa

water resources management
eo4sd

Satellite Earth Observation (EO) technology has a tremendous potential to inform and facilitate international development work. Since 2008 the European Space Agency (ESA) has worked together with the International Financing Institutions (IFIs) and their client countries to harness the benefits of EO in their operations and resources management.

EO4SD – Earth Observation for Sustainable Development – is an ESA initiative which aims to achieve a step increase in the uptake of satellite-based information in the IFIs regional and global programs, aiming at more systematic data user approach in order to meet longer-term strategic geospatial information needs in the individual developing countries as well as international and regional development organizations.

The EO4SD initiative cover a wide range of thematic domains including Water Resources Management which is regarded as one of the most critical development challenges.

The activities will start in spring 2016 and will run for a period of three years. The first year will be dedicated to stakeholder engagement and requirements consolidation and with years two and three focusing on information production, delivery and capacity building.

Points of contact:

ESA Technical Officer

Dr. Benjamin Koetz

European Space Agency, ESA-ESRIN
Exploitation & Services Division, Project Section
00044 Frascati, Italy

e-mail: benjamin.koetz@esa.int

Project Lead

Dr. Christian Tottrup

Senior Project Manager
DHI GRAS A/S
Agern Allé 5
DK-2970 Hørsholm, Denmark

e-mail: cto@dhi-gras.com

esa

eo4sd
earth observation for sustainable development