

## → MWBS | MAPPING WATER BODIES FROM SPACE 2015 CONFERENCE

18-19 March 2015 | ESA-ESRIN | Frascati (Rome), Italy





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## The ESA EO Programme



Scientific: Earth Explorer Missions Operational: Copernicus Sentinel Missions Operational: Meteorological Missions



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## Split of costs in EOP for 2014





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## **ESA Earth Explorers**









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## **Copernicus and Sentinels**



- Operations secured until 2021
- Infrastructure secured until 2028-2030
- Fully geared towards contributing to GEOSS
- EU-ESA Agreement signed 28 October 2014
- Sentinel-1 A launch on 3 April 2014
  - Data freely available since 3 October 2014
  - On top of the Copernicus services:
    - More than 5600 users registered
    - 580 TB of data distributed



## Sentinel-1 vs ENVISAT ASAR over Namibia



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# Sentinel-1 for water body mapping: Namibia Flood mapping





One of the first S1 images: IW mode – 20 m flood extent

# The TIGER Initiative: Looking After Water in Africa



### TIGER objective: (since 2002)



"assist African countries to overcome problems faced in the collection, analysis and dissemination of water related geoinformation by exploiting the advantages of Earth Observation technology".



### African Community:

TIGER involved more than 650 African experts in 42 countries who actively participate in TIGER development projects and capacity building actions;



Sentinel-2 water body monitoring Simulated time-series - Egypt







Raw Sentinel-1 radar data (left) and derived soil moisture indicating inundated wetland areas (middle) are used as input for seasonal composited wetland extent and permanent water body maps (right). The characterisation and seasonal dynamics of the wetland water cycle regime are important for water management and wetland conservation alike.

Source: GeoVille/ESA Water Observation and Information System; Based on: Sentinel-1

## Land Cover CCI: Water Body Index

### High density of SAR data allows high quality classification

East Siberian Sea

Bing Maps



SAR WBI — Land Water

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## **Regional Surface Water Bodies**



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Product based on ENVISAT ASAR Wide Swath

Classification of open water surfaces, 10day updates for maps of wetland dynamics

A. Bartsch et al.

## Addressing ESA Thematic Users



- Address new observations opportunities offered by the Sentinels and other Space assets for major societal challenges
- shape the next generation of R&D activities in the frame of ESA Earth Observation Envelope Programme, particularly for the Data User Element (DUE)

#### 2015

Mapping Water Bodiesfrom SpaceMWBS 1518-19 March 2015



#### Mapping Urban Areas from Space MUAS 15 4-5 November 2015



#### 2016

#### Monitoring **Biodiversity** from Space Monitoring **Agriculture** from Space

## **141 Registered Participants**





## **Conference Objectives**



- 1. Main theme is the Mapping of Water Bodies from Space with its temporal dimension
- 2. Present up to date results from research and application development from past and current satellites
- 3. Propose R&D activities that may be implemented in ESA Earth Observation programmes
- 4. Recommendations to be collected by session's chairs and presented at closing session