

Emerging (Space) Technologies & Water

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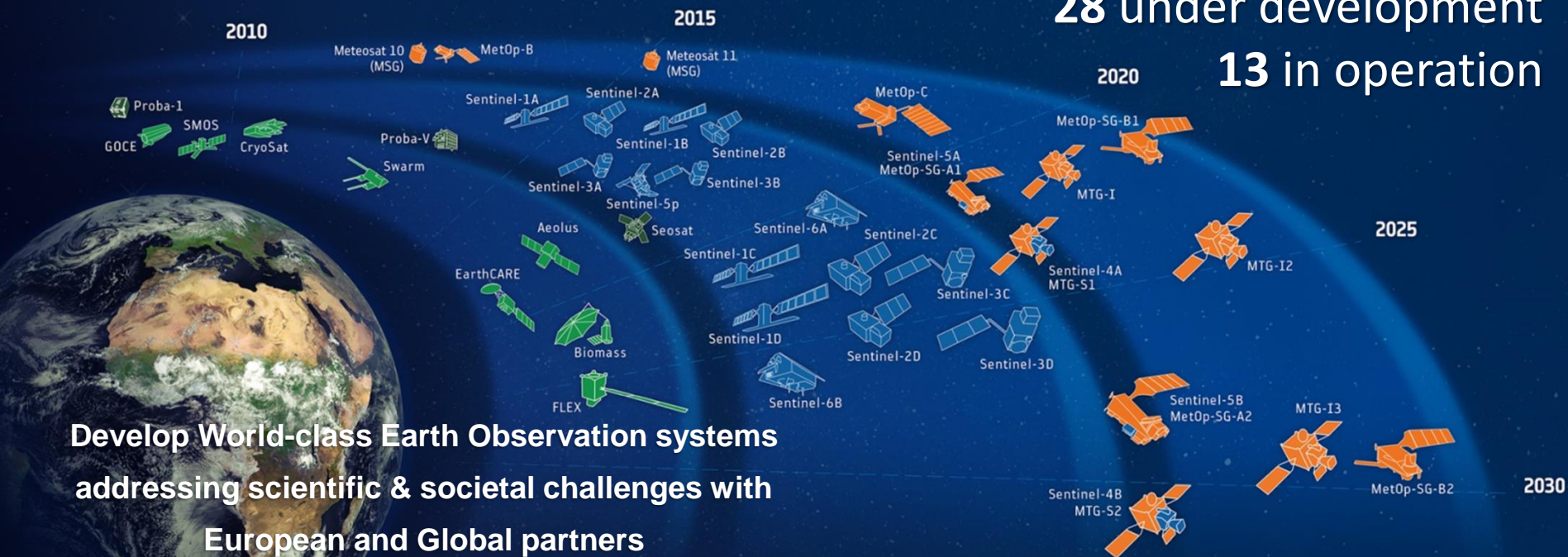
Asia Water Forum 2018

02nd October 2018, ADB, Manila

ESA-DEVELOPED EARTH OBSERVATION MISSIONS

Satellites

28 under development
13 in operation



Develop World-class Earth Observation systems
addressing scientific & societal challenges with
European and Global partners

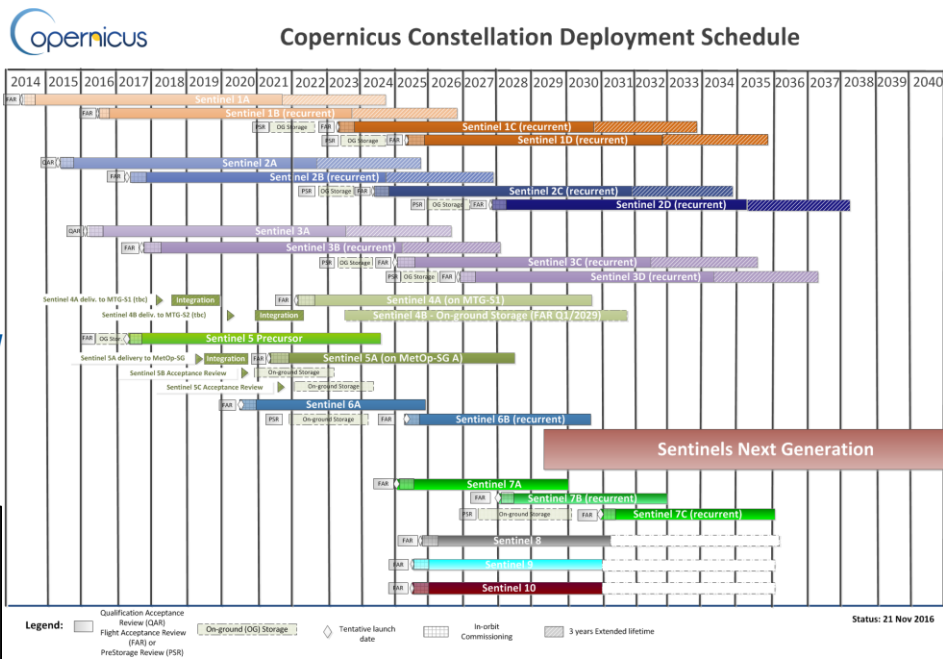
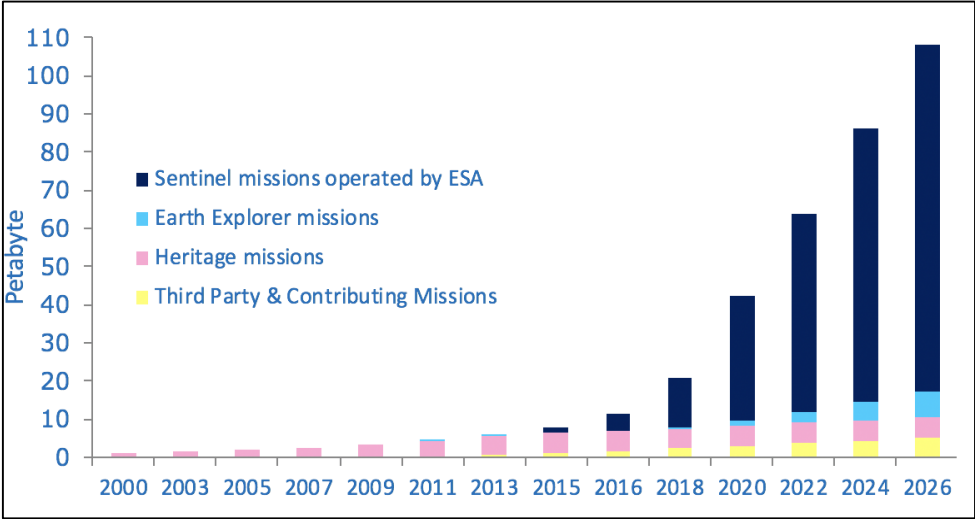
Science

Copernicus

Meteorology

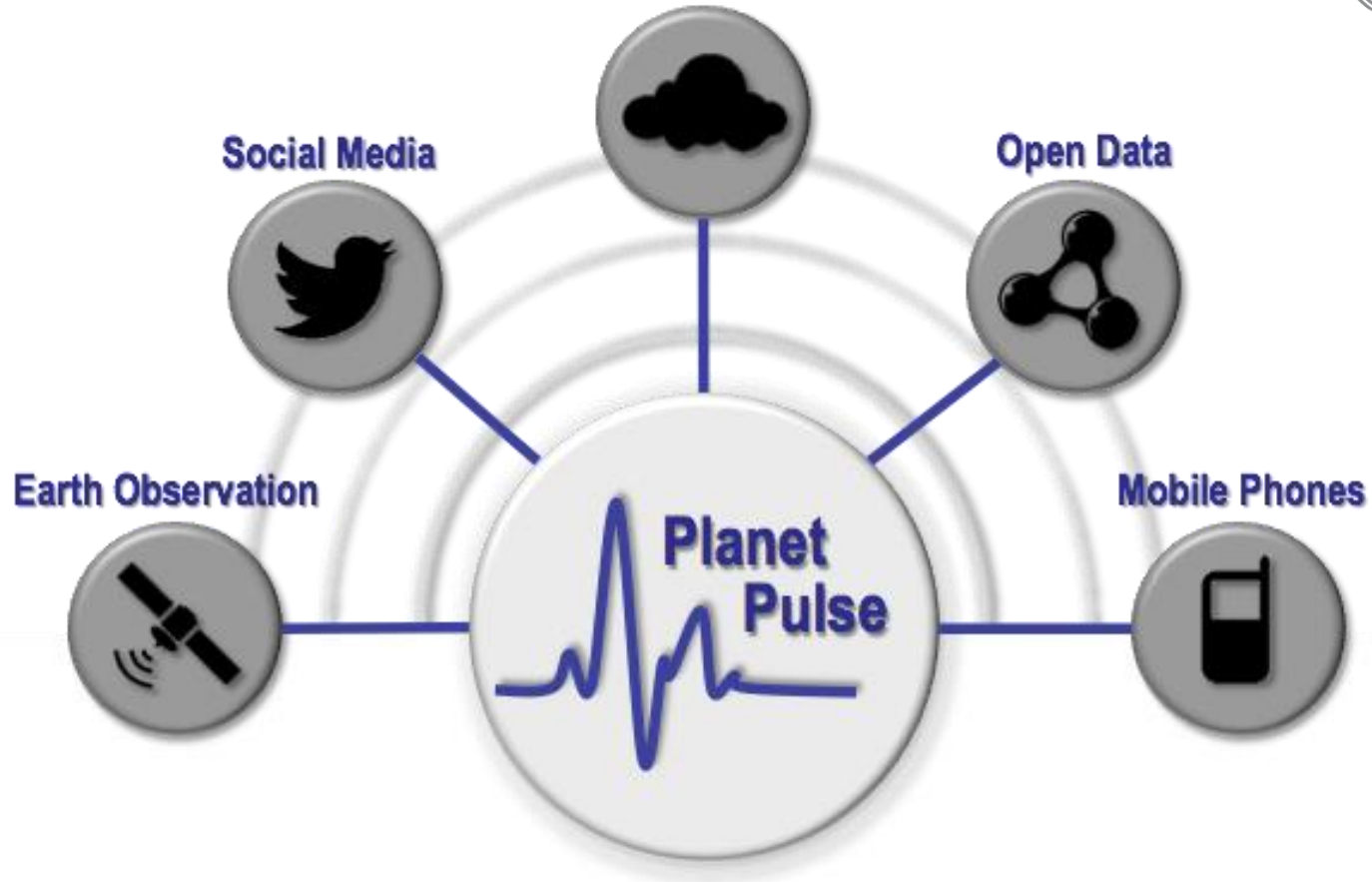


**Long-Term (decadal) data continuity,
Public Good : data freely available to all**



On an unprecedented scale

Taking the Pulse of our Planet



Φ-lab : the future of observing planet Earth

More Data



Evolving EO Landscape,
Copernicus + Met + Science
+ Small Sat Constellations



Emergence Drones, HAPS



IoT Connected Sensors

Rapid Tech Innovation



Cloud Computing
Big Data Analytics



AI advances,
Deep Learning



Miniaturisation of
Sensors / ICT (GPUs)

New Solutions / Partnerships



Small Sats Systems (AI-powered)



End-to-end distributed sensing systems



Create conditions / environment for
Rapid Innovation / Prototyping



Foster New Partnerships (e.g. ICT, startup,
investors, non-space users)



Stimulate New Economic Models (B2C)
Competitive Small Sat Industry
New Business / Startups

Evolving Ecosystem of New Players



ICT corporates
Soft/Hardware e.g. GPU



Digi Startups
New Space

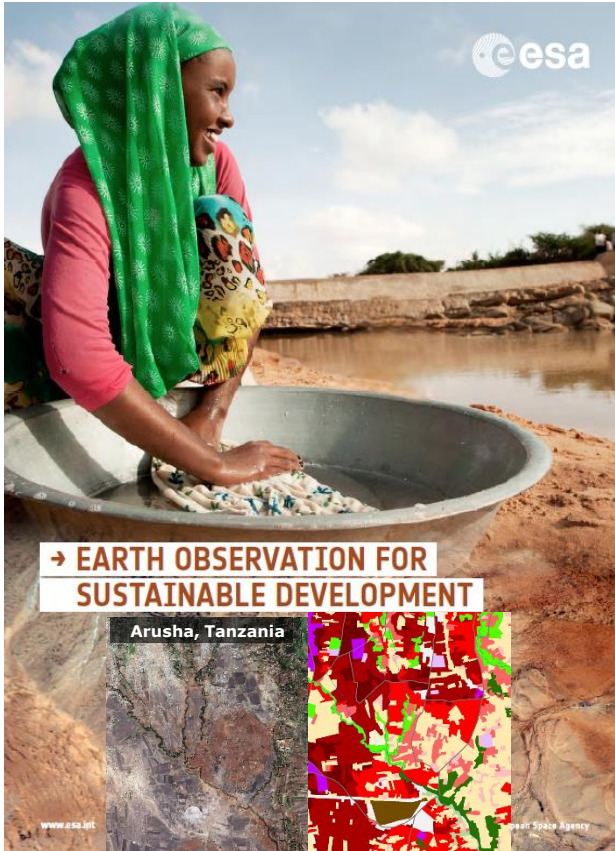


Investors
VCs, Angels

CHALLENGES & OPPORTUNITIES

RESPONSE

International Development Aid

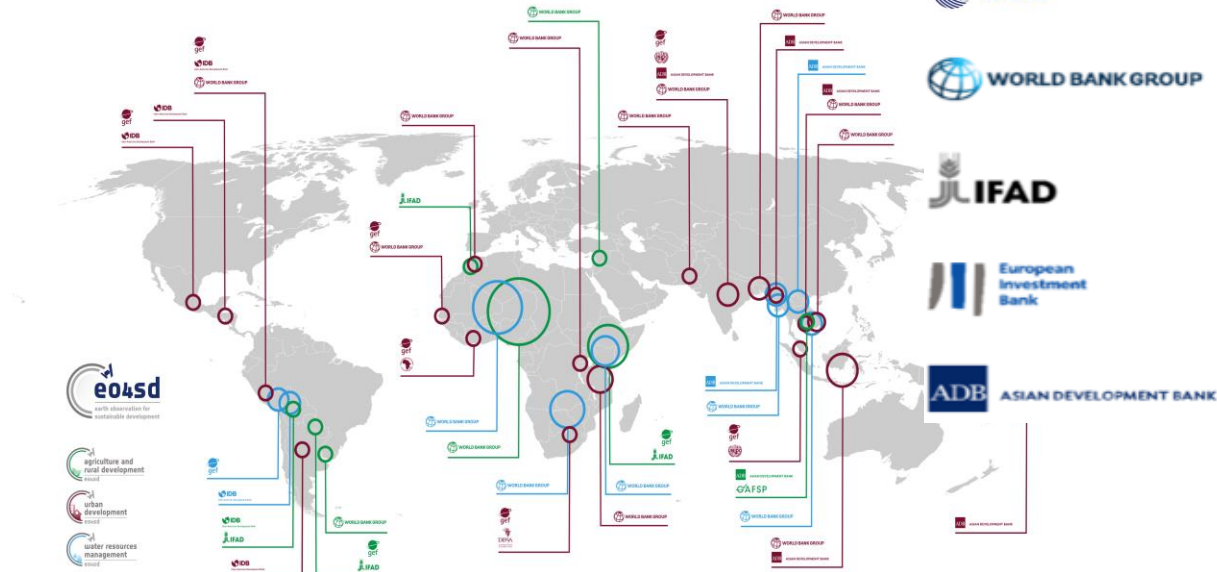


2016: Agriculture, Urban Development, Water Resource

2018: Marine & Coastal, Disaster Risk Reduction, Fragile & Conflict States, Climate Resilience & Proofing,

2019: Forestry, Ecosystems Services,

→ EARTH OBSERVATION FOR SUSTAINABLE DEVELOPMENT



Slide 7

European Space Agency



EO services for water resources management

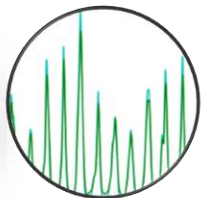
Supporting EO services



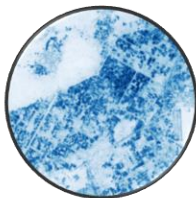
Surface
water
monitoring



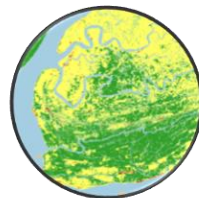
Water Quality and
availability of
reservoirs and lakes



Hydrological
modelling and
monitoring



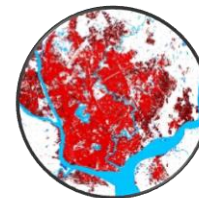
Modelling of
crop water
needs



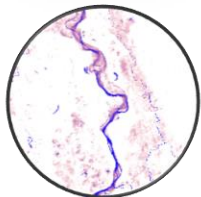
Land Use and Land
Cover mapping and
change mapping



Thematic
mapping



Settlement
characterization and
change assessment



Hydrological
Network
Mapping



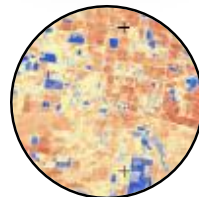
Industrial
Activity
Assessment



Natural Risk
Management



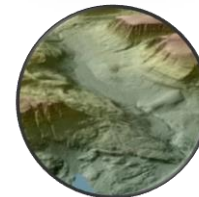
Groundwater
mapping and
exploitation



Mapping of actually
irrigated land versus
irrigable land

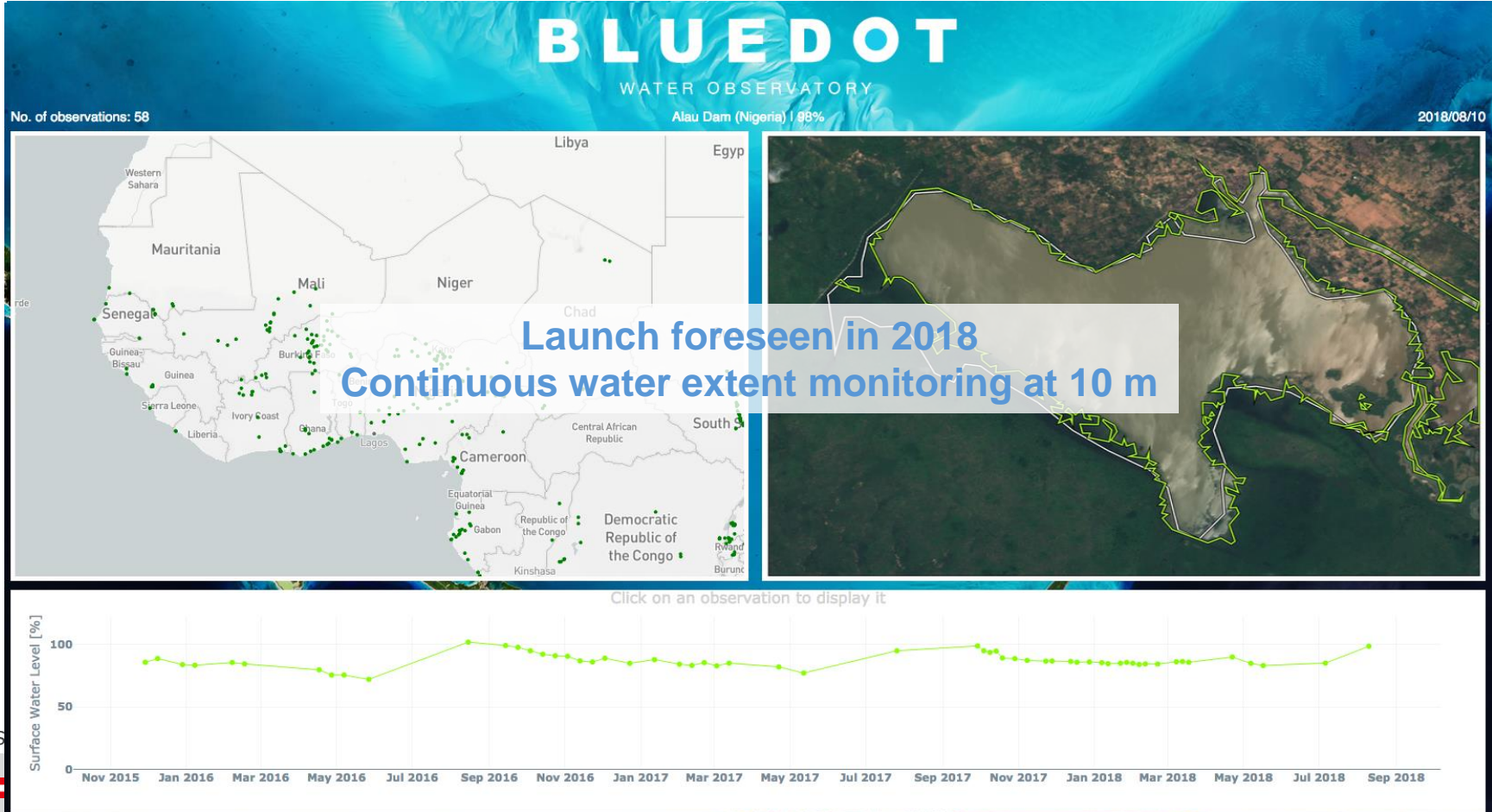


Crop mapping for
agricultural water
demand assessment



High-resolution
digital elevation
models

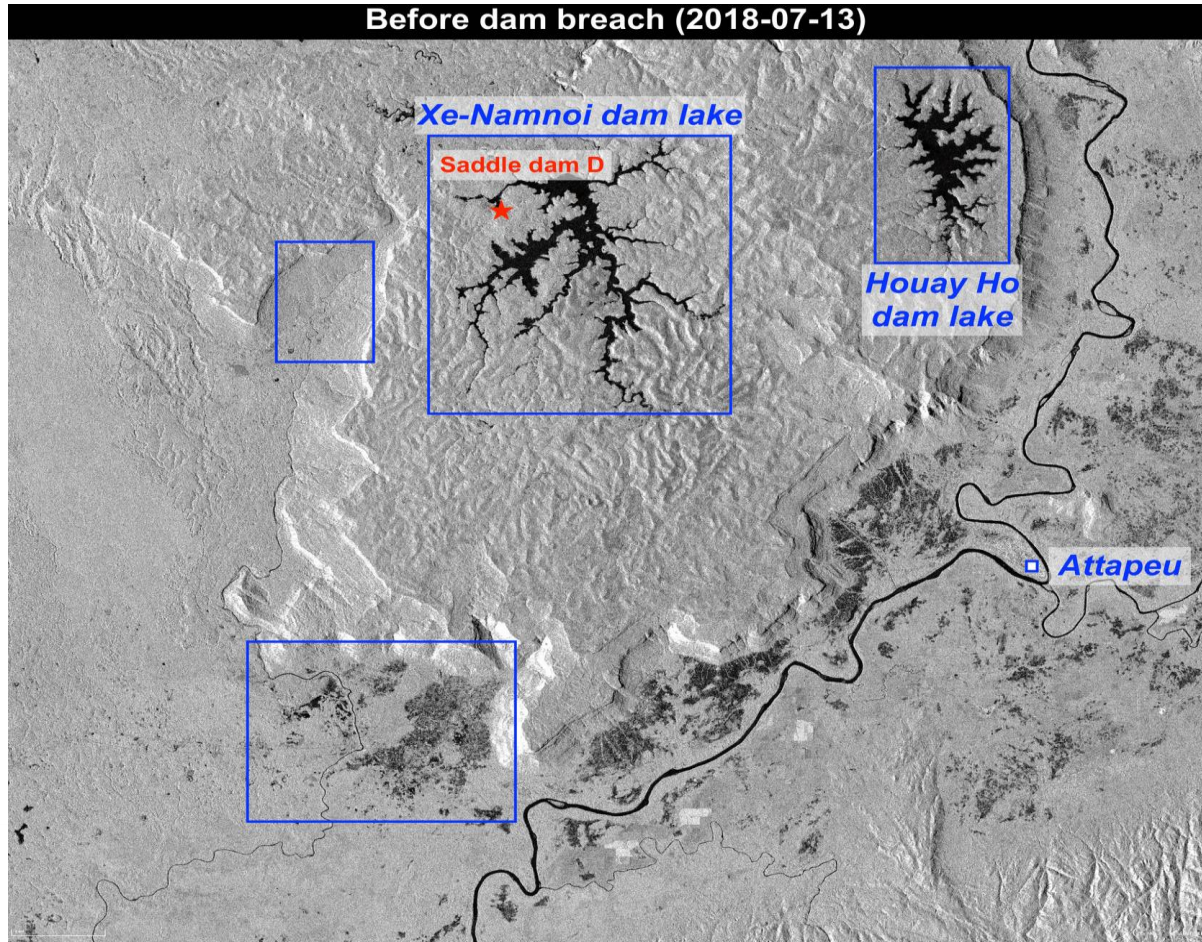
SDG 6.6: Monitoring of Water Extent



Credit: Sinergise, EO-Research, Sentinel Hub

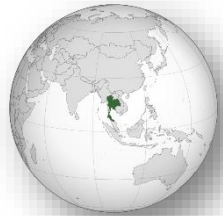
SINERGISE

Monitoring of individual Flood Events

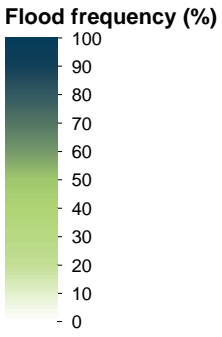
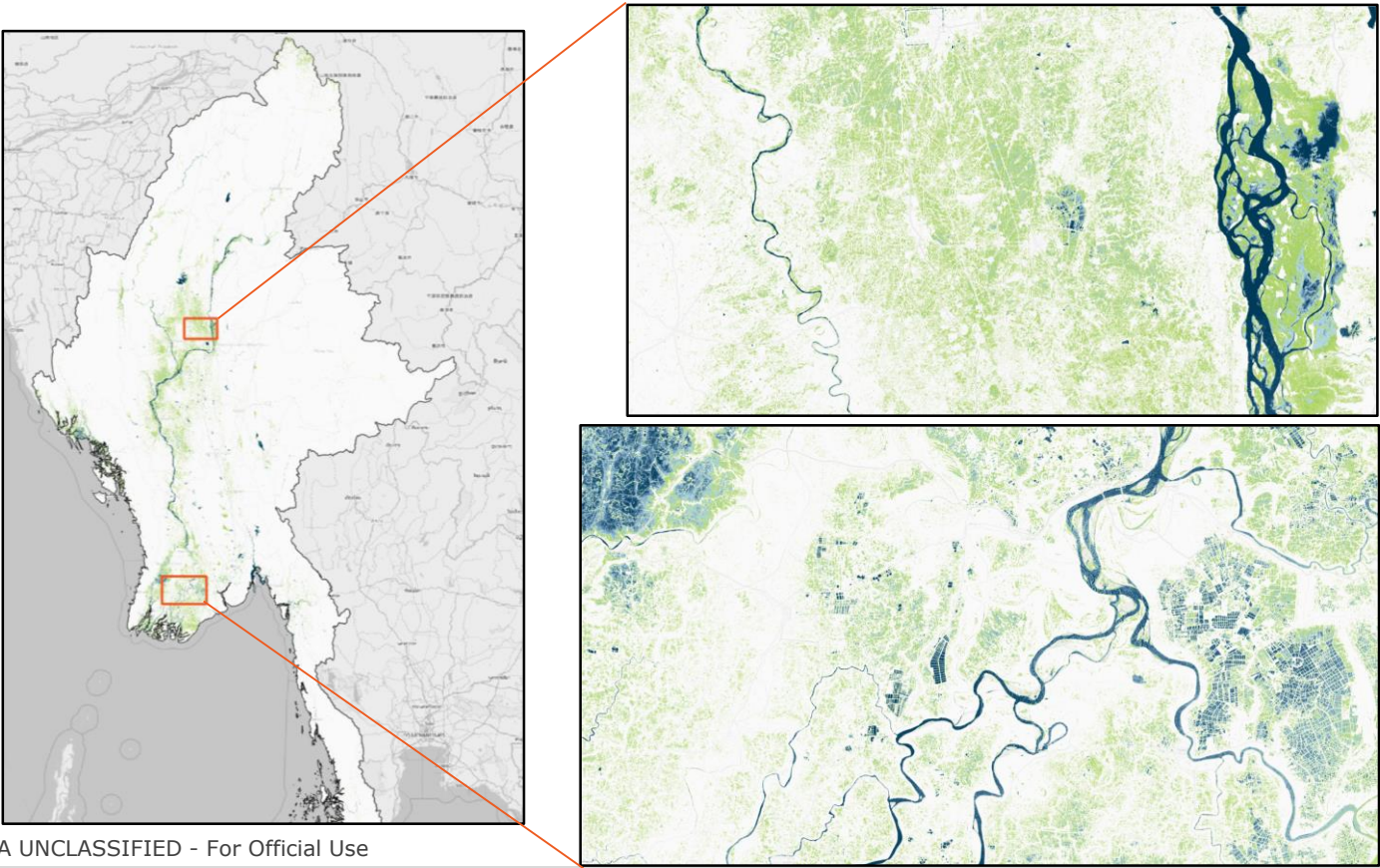


Dam Failure :
Province of
Attapeu in Laos,
mid-July 2018

Flood frequency : Myanmar (country-level)



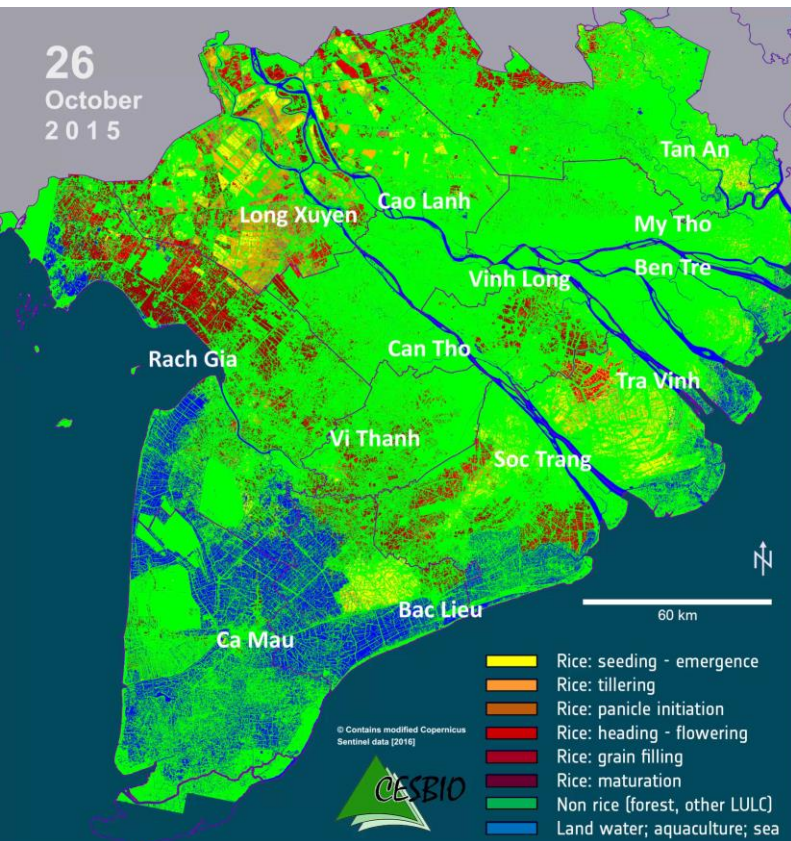
Identifying flood prone areas



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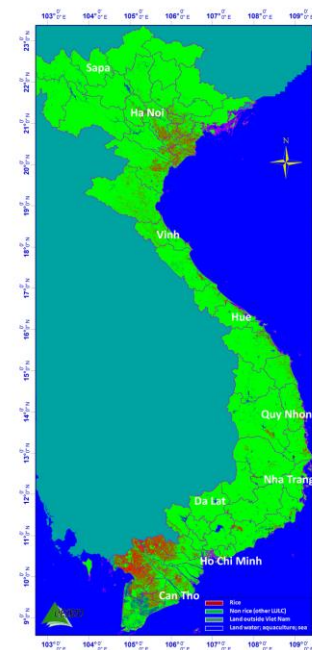
Water for Food: Rice Monitoring: Crop Stages & Area

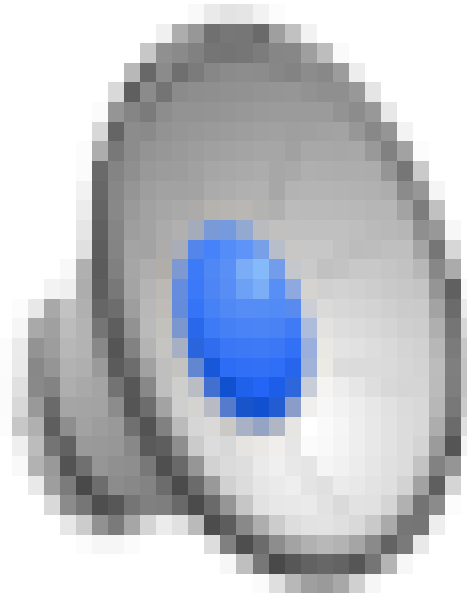


Winter-Spring Rice 2015/16

- March 2016: 1.4 Million ha rice,
- March 2015: 1.7 Million ha rice,
- **16.5% loss in rice area** due to drought & salt water intrusion caused by El Nino,
- **976.000** people affected,
- **67 M\$** estimated damage (UN estimates).

The Mekong Delta, Vietnam
300 km x 300 km, 20 m resolution





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→ E04SD

an ESA initiative to support the uptake of EO-derived information in sustainable development

eo4sd.esa.int



VIDEO

Posted on March 22, 2018 by Mariangela

→ SAFEGUARDING OUR MOST PRECIOUS RESOURCE: WATER



Posted on January 23, 2018 by Mariangela

→ ESA OPENING A DIALOGUE WITH NATIONAL AID AGENCIES

MORE ABOUT EACH PROJECT



Thank You for your attention !

