

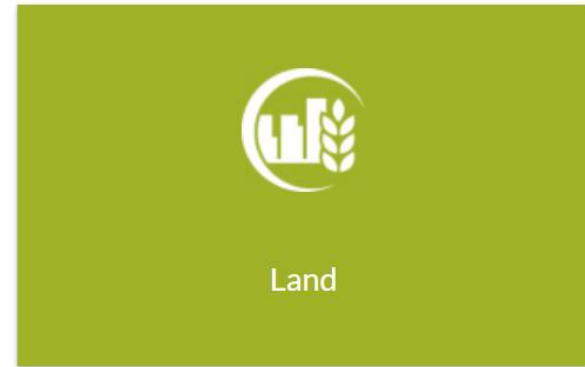
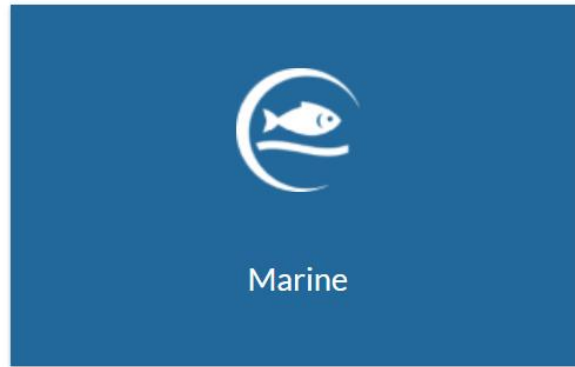
# Water - ForCE

## Water scenarios for Copernicus Exploitation

Tiit Kutser



# Copernicus Services



**All deliver some water or hydrological parameters as services**

# Shortcomings identified by the EC

- ❖ Better understanding of the whole water cycle needed, but related products are split between different Copernicus Services.
- ❖ Need in more water related products (by which Service?)
- ❖ Duplication of effort (e.g. lake water quality by Land Service, coastal by Marine Service; processing of Sentinel-2 by most Services)

# EU Horizon 2020 Space Programme

Copernicus evolution:

Mission exploitation concept for WATER

**Scope:** The main goal is to analyze current and planned EO space capacities together with innovative processing, modelling and computing techniques to reinforce the existing portfolio offered under Copernicus and to propose an integrated approach for a coherent and consistent inland water monitoring system.

# EU Horizon 2020 Space Programme

Copernicus evolution:

Mission exploitation concept for WATER

**Coordination and Support Action**  
**= no research**

# Water-ForCE approach

**Develop Roadmap for  
Copernicus WATER services**

# The Roadmap

- ❖ Analyse EU policies (Water Framework Directive, Bathing Water Directive, Flood Risk Directive, etc.) to identify where Copernicus Services could be more effectively used both in developing policies and monitoring their implementation.
- ❖ Identify gaps and enlarge service portfolio (based on user needs)

# The Roadmap

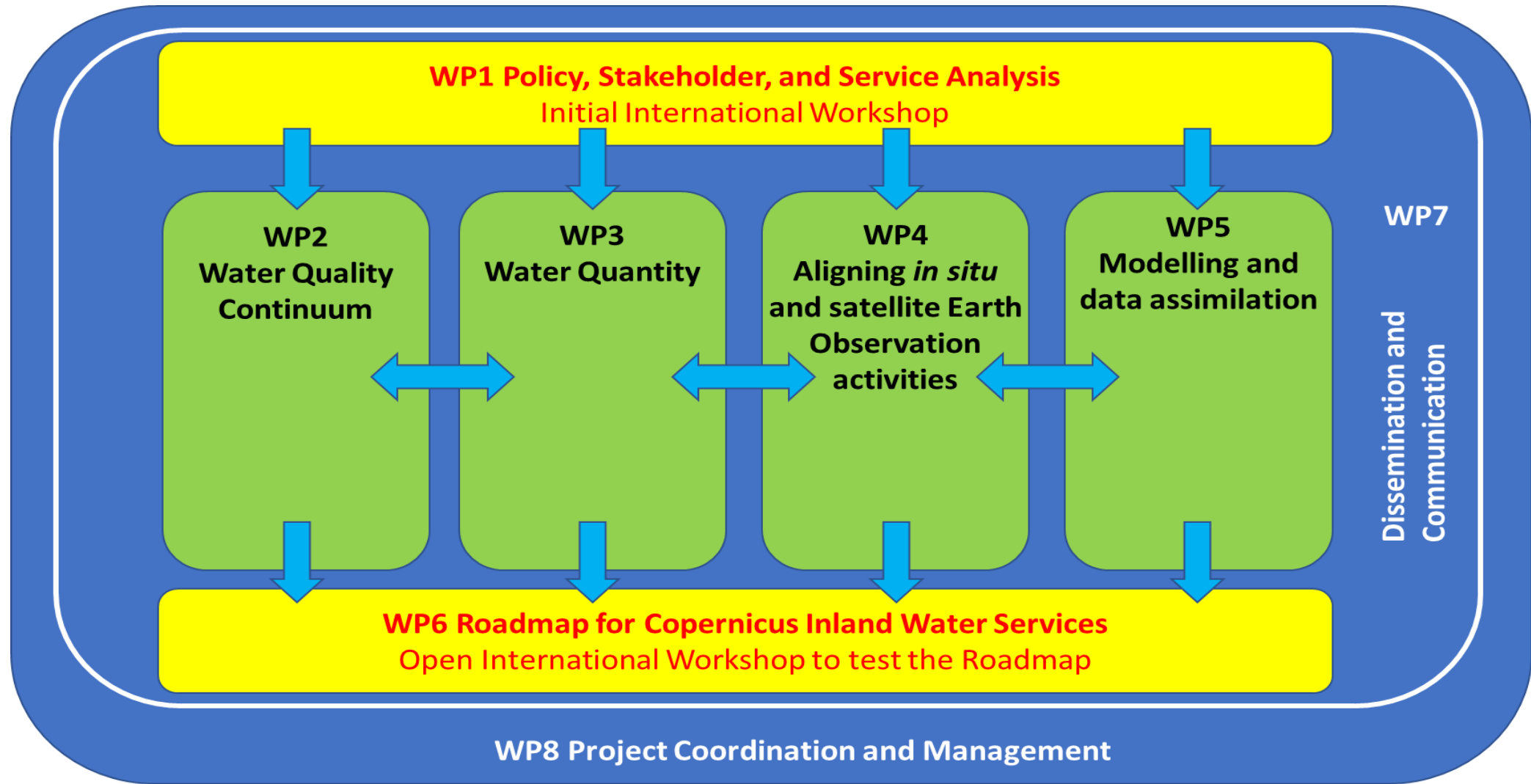
- ❖ Develop higher level biogeochemical products
- ❖ Specify requirements for future Copernicus sensors (e.g. Sentinel-2E new bands) to improve water portfolio
- ❖ Facilitate closer cooperation between *in situ*, remote sensing and modelling communities
- ❖ Propose the design of *in situ* networks so that they can support Copernicus WATER Services better



# The Roadmap

- ❖ Define the relationship between Core Services and Downstream Services
- ❖ Recommendation on the evolution of WATER services (a new Copernicus Water Service, integrating all water services under one Copernicus Service, *status quo*, etc.) based on cost-benefit analysis

# Water-ForCE project



# WP 1. Policy, stakeholder, and service analysis

- ❖ Compile the list of stakeholders (individuals, researchers, user organisations, etc.)
- ❖ Assess sectorial policies and legislation
- ❖ Report on user needs and requirements
- ❖ Report on business opportunities
- ❖ Provide directions to WP2-WP5 and input for the Roadmap

# WP 2. Water quality continuum

- ❖ Create an international working group (i.e. engage GEO AquaWatch and other relevant organisations)
- ❖ Gap analysis of Copernicus water quality products
- ❖ Develop higher level biogeochemical products
- ❖ Technical needs for future Sentinels

# WP 3. Water quantity

- ❖ Create an international working group (remote sensing and water resources experts)
- ❖ Gap analysis of Copernicus hydrological and water balance products
- ❖ Technical needs for future Sentinels
- ❖ Input to the Roadmap from the water quantity and hydrology point of view

# WP 4. Aligning *in situ* and satellite Earth observation activities

- ❖ Create an international working group (strengthen links between *in situ* and RS communities)
- ❖ Standard operating procedures for *in situ* networks
- ❖ *In situ* data collection and satellite cal/val recommendations for the Roadmap (what kind of *in situ* networks are needed to support delivery of properly validated RS and modelling products)

# WP 5. Modelling and data assimilation

- ❖ Create an international working group
- ❖ Gap analysis (Copernicus needs for modellers and decisionmakers)
- ❖ Recommendations on better integration of RS and modelling for better decision support.
- ❖ Recommendations for the Roadmap

## WP 6. Roadmap for the Copernicus WATER services

- ❖ Capacity building requirements and priorities for research and innovation
- ❖ Business innovation and service delivery
- ❖ Compiling the Roadmap  
(organising a workshop (mid-2023) where the draft Roadmap will be analysed in a broad international community)





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