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الإتحاد من أجل المتوسط

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# Developing an Earth Observation Component for the Mediterranean Water Knowledge Platform



**ESA MED2018**

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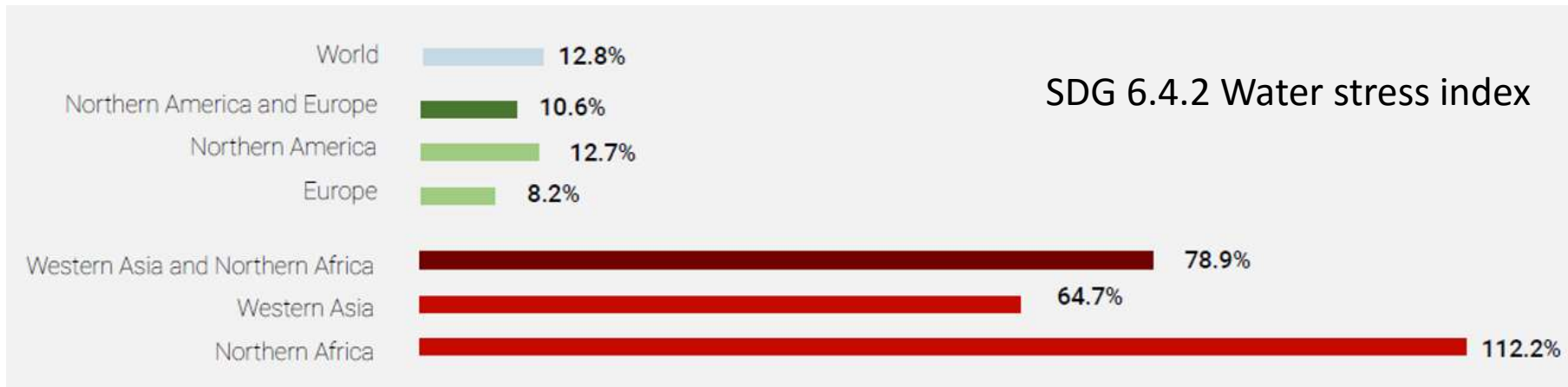


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# Mediterranean fresh water context

- Mainly water poor or extremely countries 1.000-500 m<sup>3</sup>/capita/year
- 80% of water dedicated to agriculture
- Impact of Global Changes:
  - Decrease in annual rainfall, increasing temperature
  - More frequent and severe droughts and floods
  - Ecosystems degradation & biodiversity losses
  - Health issues due to poor water quality



# Mediterranean Water Knowledge Platform

UfM LABELLED PROJECT - April 2014

**Urgent need for comparable data and indicators**

Ministerial declaration on water, Union for the Mediterranean  
*Dead Sea, December 2008*



**Improving Integrated Water Resources Management  
planning and fostering its implementation:**

- A common approach for National Water Information Systems
- An assessment of water resources and use (White Papers)



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# Union for the Mediterranean Water Agenda

Endorsement of  
Implementation  
roadmap  
End 2019



UfM Water  
Ministers of Meeting  
(April 2017, Malta).

Water Energy Food Ecosystems

Drinking Water & Sanitation

Adaptation to Climate Chaneg

Water Employment & Migrations

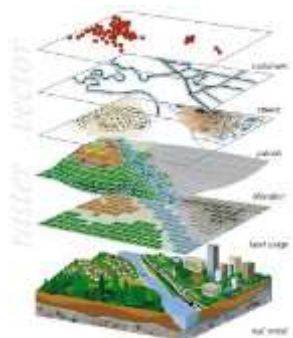
Financial Strategy

➔ *Med water Knowledge Platform to provide metrics for monitoring progress*



## Better knowledge for Climate adaptation and mitigation

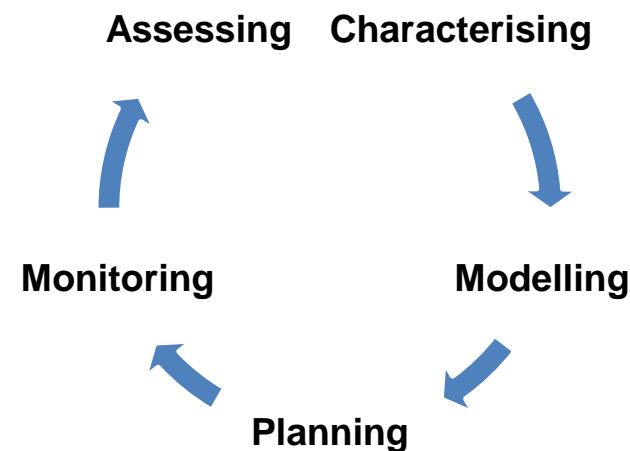
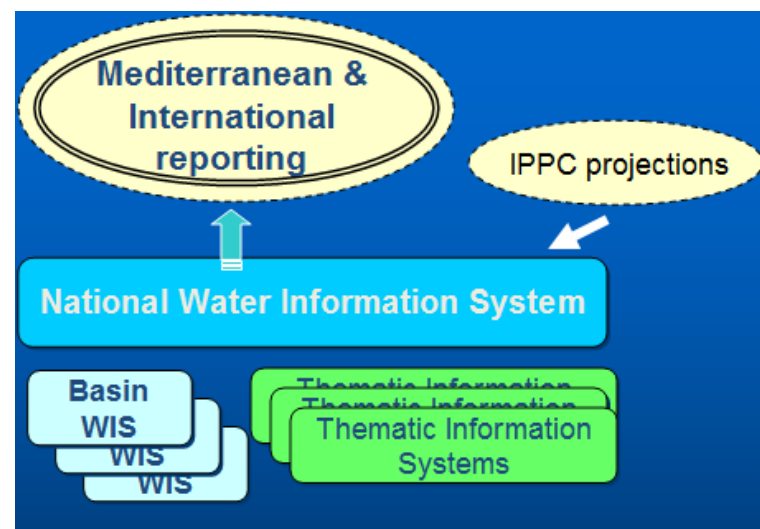
### Organising data sharing and management in each country



### Building capacities for monitoring, evaluation, planning

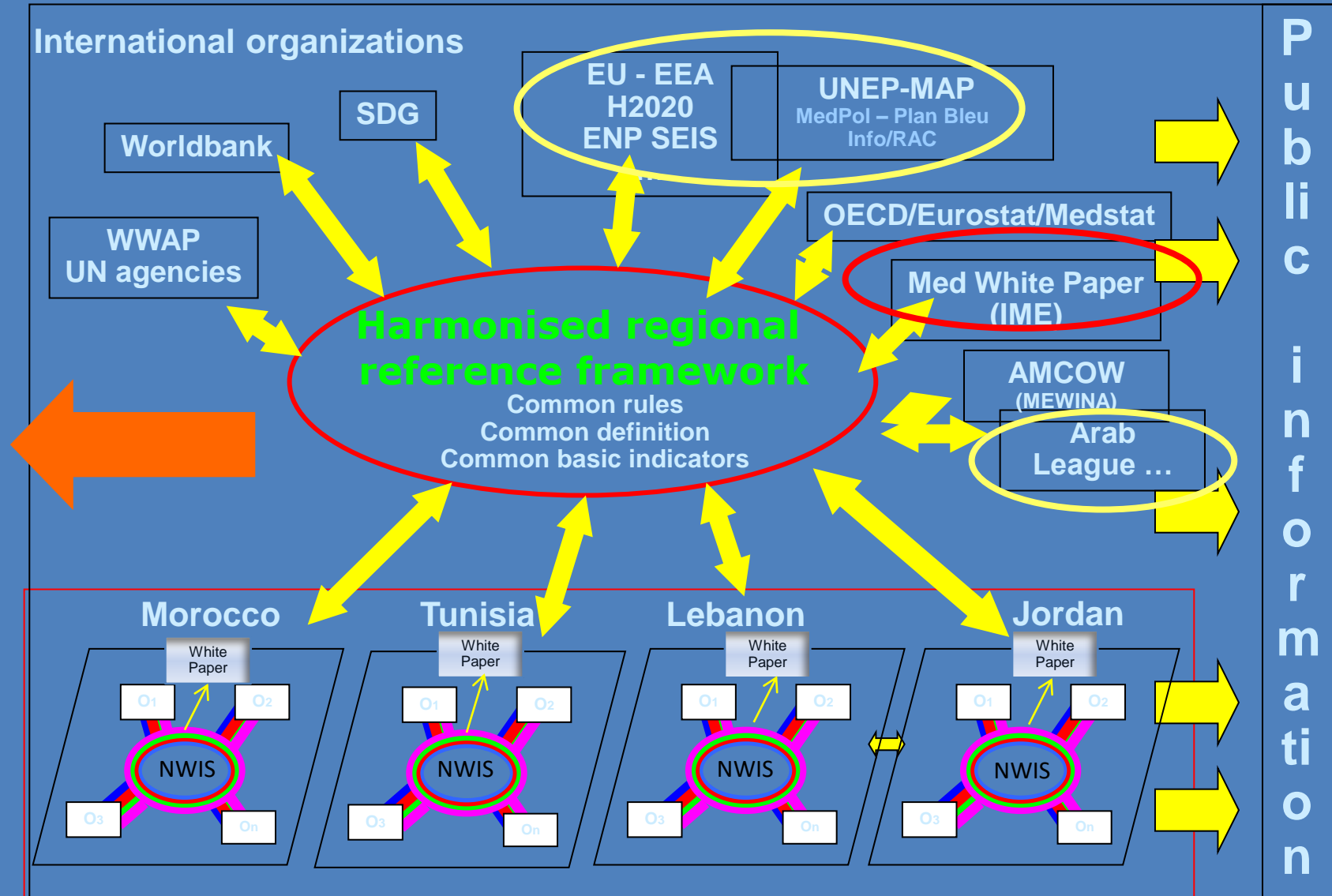


### Exchange of experiences



# Data management from local up to international levels

5+5, Med  
Water strategy





MEDITERRANEAN WATER  
KNOWLEDGE PLATFORM

# Progress - Regional components



- **Capacity building:**

- NWIS training session July 2017 (FR)
- Data management for decentralized water management as part of SWIM-H2020 regional trainings, July 2017 (BE) & April 2018 (AT)



- **Analysis & recommendations & guidelines**

- Legal frameworks for data exchange, NWIS development, white papers

- **Regional exchange of experiences between decision makers**

- Countries and EC, EEA, UNEP-MAP, SWIM-H2020, UfM - Oct. 2017 (ES)



# Towards a Earth observation component

## Important needs:

- Important historical data gaps
  - Limited monitoring networks
  - Poor knowledge on pressures (water use & pollution)
  - Growing concern on
    - Nature based solutions and
    - Ecosystems conservation/restoration
  - Reference based maps
- ➔ EO experiences but not yet standard operation practices:

CAPWater (WB- NASA)

TYGER (ESA)

Globwetland (ESA)

SWOS (EC), .....





# Water availability & water use

## Provision of input parameters for water availability estimation:

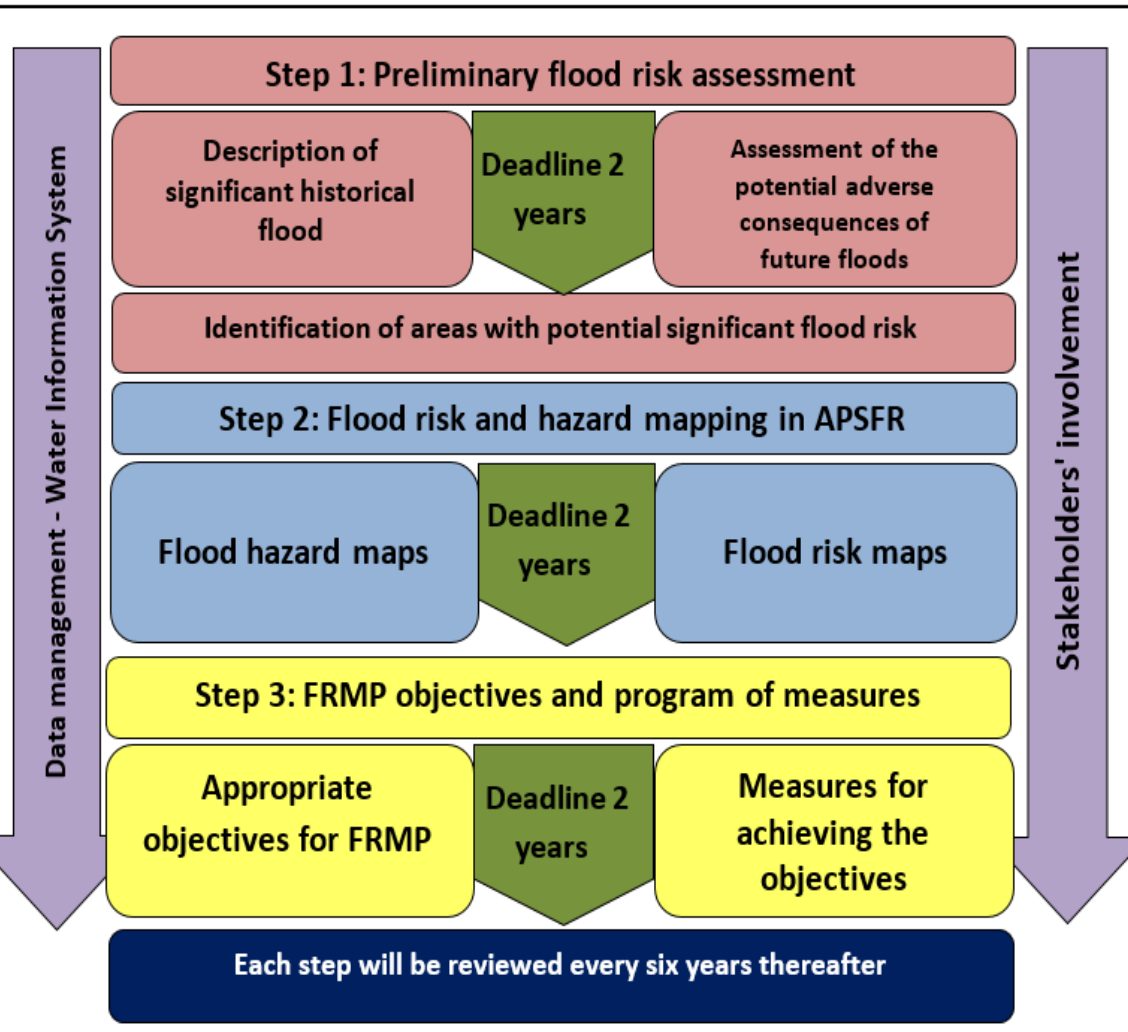
precipitation, ET, Soil moisture, Temperature,  
Snow cover, water extend (reservoirs)

## Agriculture water use estimation

## Illegal water abstraction



# Floods risk management



Potentially flooded areas  
Extend of historical floods

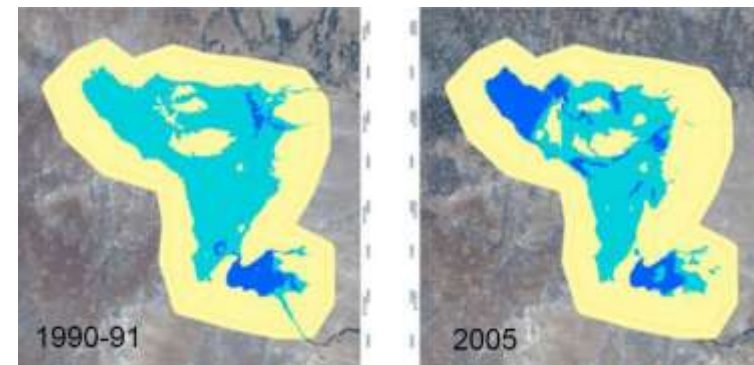
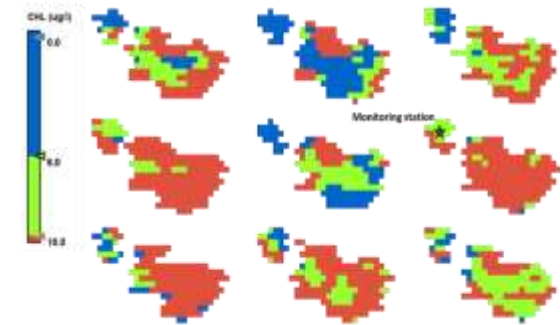
Assets & human risks

Inputs for models:  
runoff, precipitation,  
soil sealing, ...

Definition of measures:  
e.g. water retention

# Water Quality and pollutions

- Early warning of pollution
- Optimising monitoring networks:
  - Location of stations
  - Combining in-situ and remote sensing
- Estimation of risk areas and pollutant emissions
- Hydro-morphology alteration



# Water infrastructures

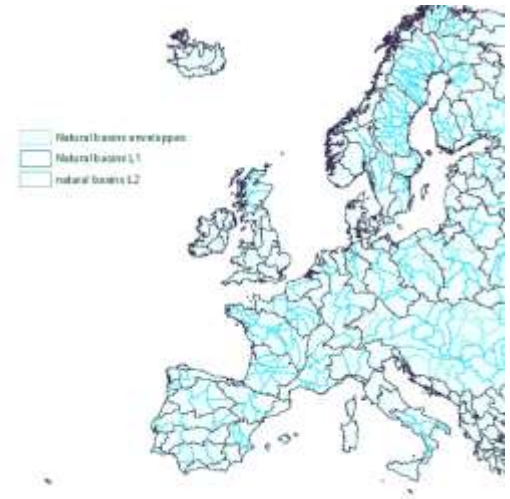
- **Sedimentation of reservoirs**
- **Leakages in pipes and reservoirs**
- **Potential areas for water harvesting/storage**
  - groundwater recharge
  - small reservoirs
- **Potential location and monitoring of nature based solutions (e.g. artificial wetlands)**



## Background layers

### Inputs for building reference geo layers:

- Hydrographical network (codification of stream network, watersheds)
- Water infrastructure
- Land use land cover



# Potential actions for integrating EO into water resources management

## Stakeholder involvement

- Academia, Remote Sensing institutes
- Water authorities
- Consultancies companies
- Civil society

## Demonstration and case studies

- Focus on resources managers but involving all stakeholders
- Cost-benefits analysis
- Interoperability with existing processes / information systems / models

## Training program and guidance and tools

from awareness to expert, including decision makers

Platforms: data access, online (web) services, expertise,

Thank you for your attention.

[www.semide.net/initiatives/MWKP](http://www.semide.net/initiatives/MWKP)

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