Regional Initiative for the Assessment of Climate Change Impacts on Water Resources and Socio-Economic Vulnerability in the Arab Region

Session 6B: Climate Services in Arab States

Delivering Regional Hydro-Climate Services

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Outline

- Motivation
- General considerations: user perspective
- Some example of prototypes for climate services
- Lessons lernt
- Conclusions: key messages

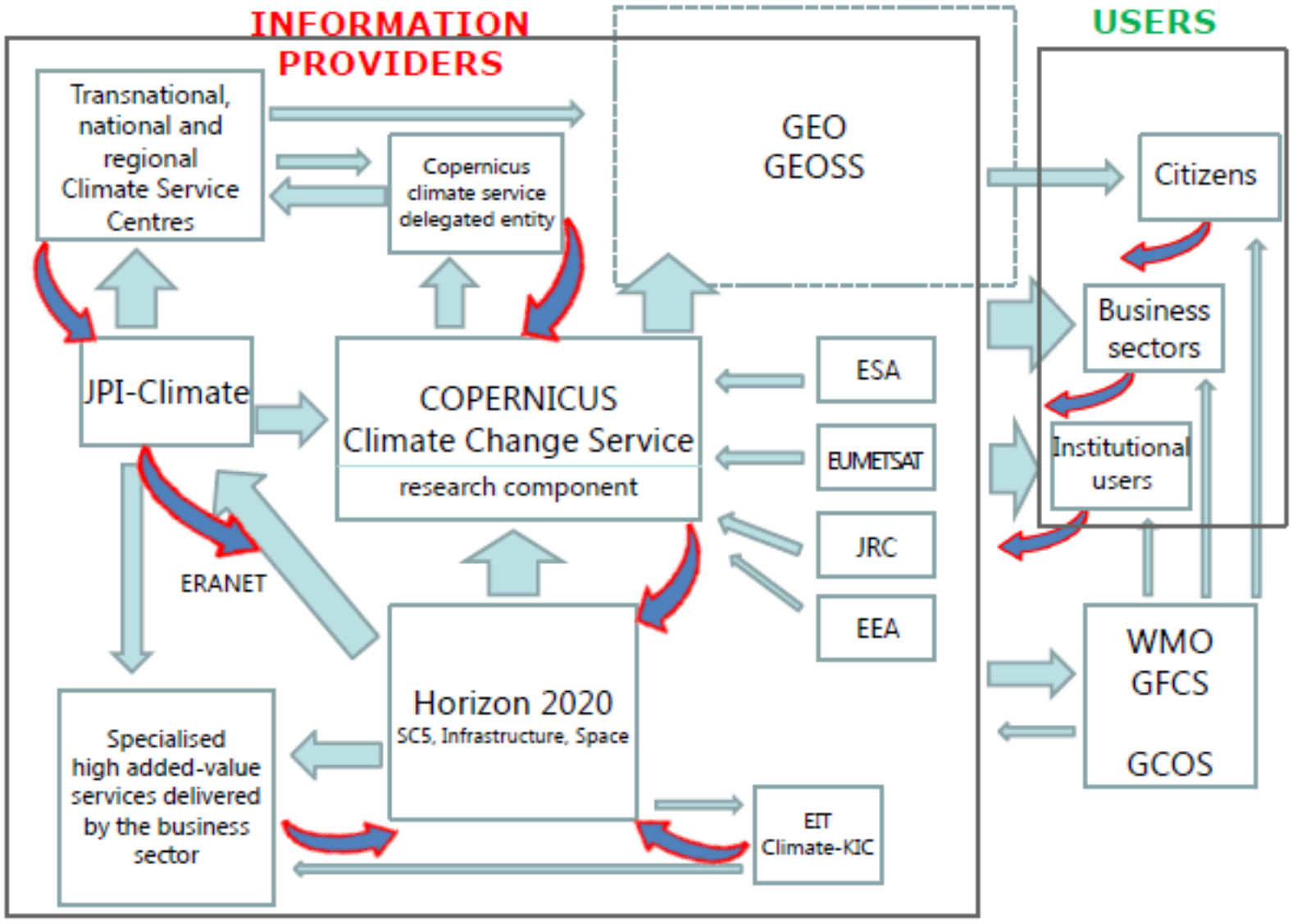
Motivation (1)

- Since the creation of the GFCS by WCC-3, the generation and provision of climate services have reached a **new scientific, social and economic relevancy**
- The original objective of **building climate resilient societies** (e.g., CSs for Disaster Risks Reduction) have slowly evolved to the subsidiary objective of **developing a market for climate services** (e.g., CSs for improving business)
- We may well say that the **current broad meaning of CSs** covers the transformation of climate-related data into customised data that **may be of use for the society at large**.

General considerations

- Long way **from climate information to climate services**
- Most NMHSs and other providers are **mainly producing climate information and NOT true climate services**
- To translate climate information into services **we still need**:
  - sustained research/innovation
  - closer partnership with end-users
  - cross climate knowledge with multiplicity of data/sectors
  - appropriate data (not only climatic)
  - actionable services for decision making
  - credibility

The European landscape of CS



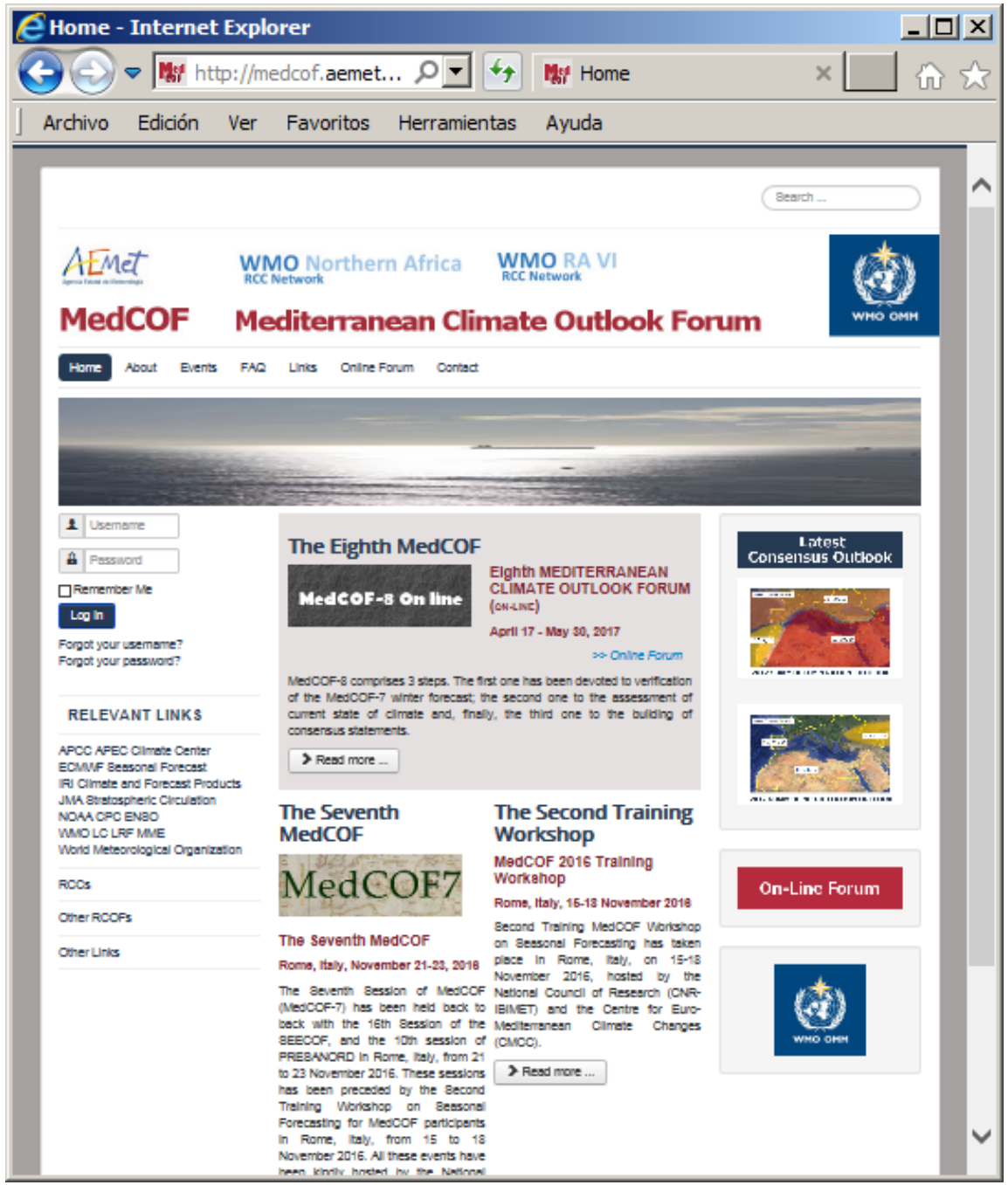
Climate Services in Arab States

- CSs very **dependent** on regions, governance structures, sectors, …
- **Learn** from experiences in other regions and **adapt** to own circumstances.
- **Inventory** of information providers, users (citizens, institutional, business) , international initiatives, …
- Start with **research/innovation** projects, then **demostration** projects, and finally **operational implementation** → long process
- Always in **partnership with users**

EU EUPORIAS Project

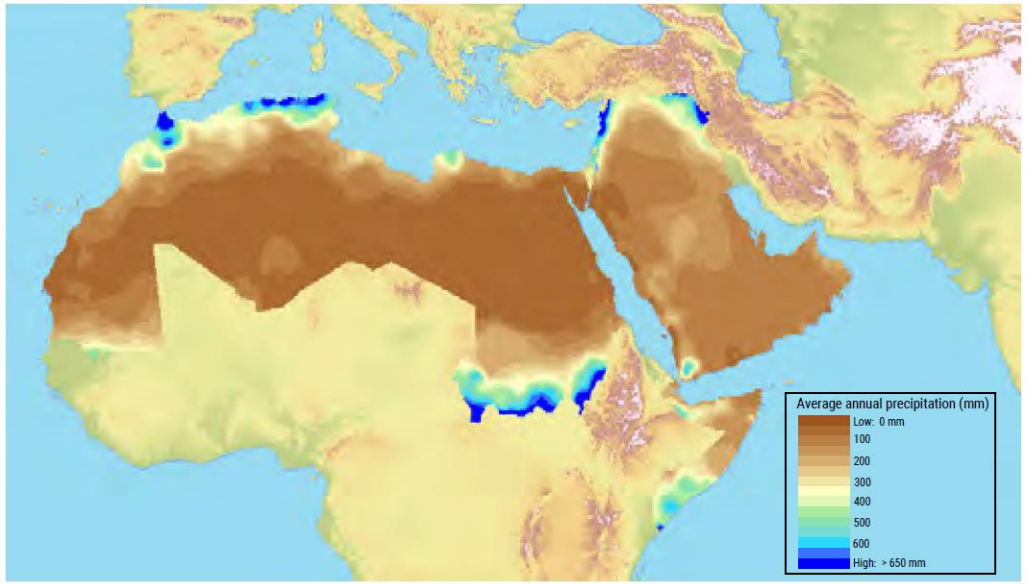
(Dec 2012-March 2017)

- EU Project ended in March 2017 and left as legacy different CS prototypes applicable in different regions and/or sectors.
- EUPORIAS was mainly a **demonstration** project on CSs
- EUPORIAS paved the was for many i**mplementation** projects on CSs currently under development (MOSES, CLARITY, MEDSCOPE, …)

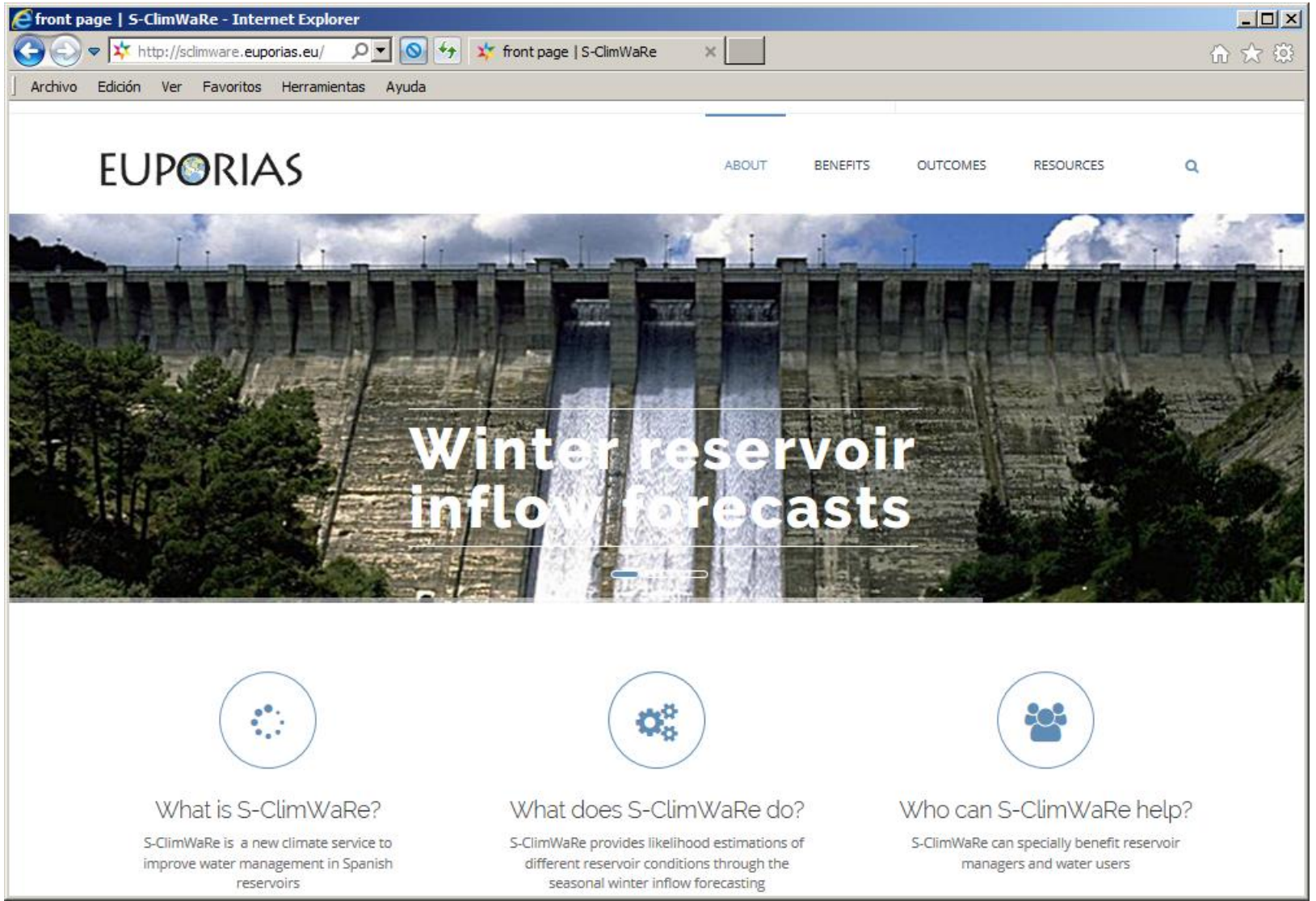


WMO RCOFs → Climate Service focused on seasonal time scales.

- RCOFs are part of the WMO GFCS structure
- MedCOF and ArabCOF subtantially overlap
- ArabCOF can benefit from the MedCOF experience.
- Collaboration/cooperation N-S and W-E
- Water is the main issue for both RCOFs
- Both RCOFs work closely with WMO RCCs
- RCOFs sessions include close interaction with users.

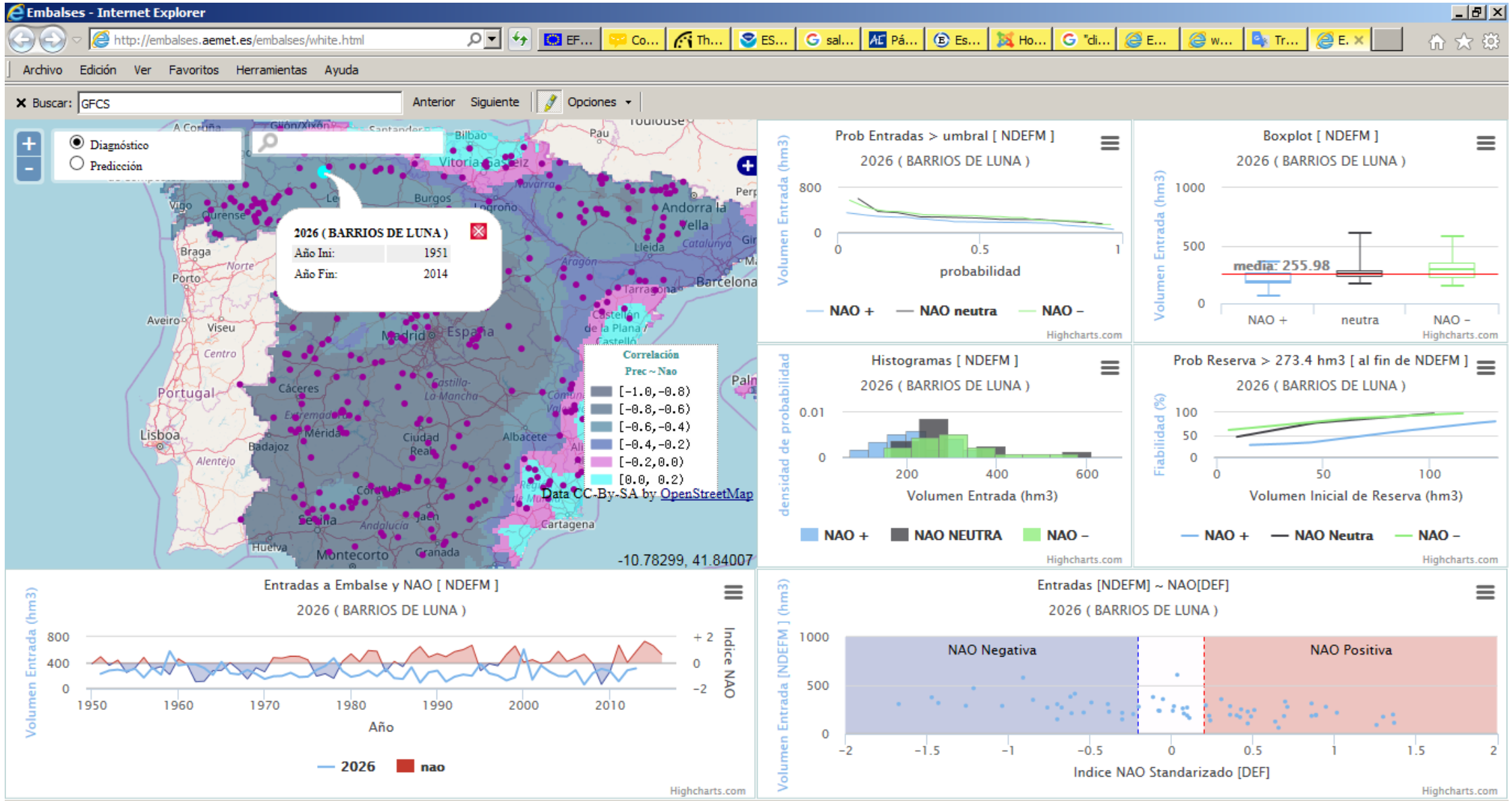


Example of prototype for dams management

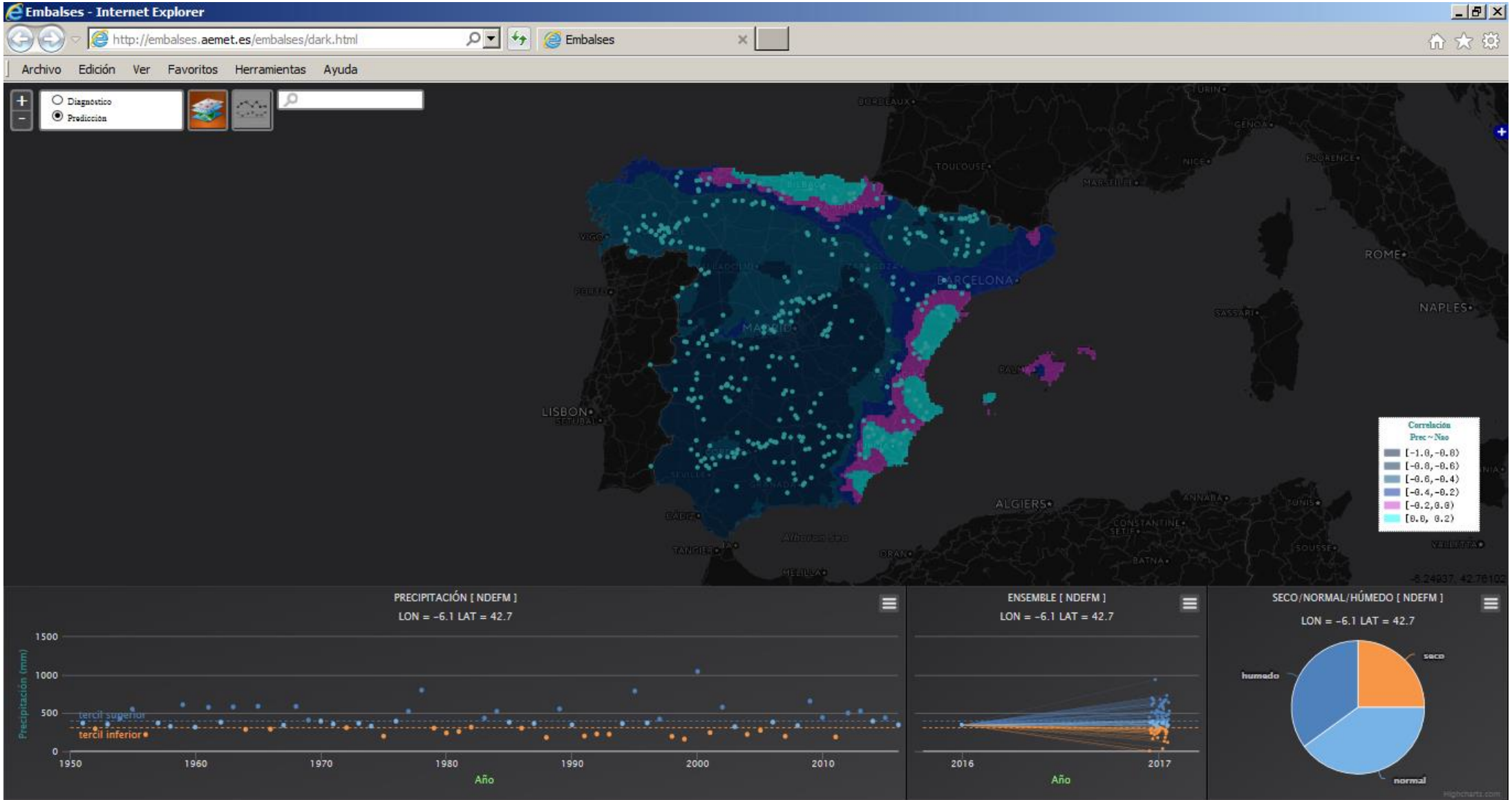


- S-ClimWare helps in the **decision making process**
- Developed by an **interdisciplinary team** headed by AEMET, CETaqua and the DGA
- It makes use of predictability **window of opportunity** for winter precipitation in Spain at seasonal scales
- A **probabilistic** forecasting statistical model has been implemented to forecast the reservoir inflow.
- This tool produces a **risk evaluation for each reservoir** based on its initial situation, the forecasts and the historical demands..

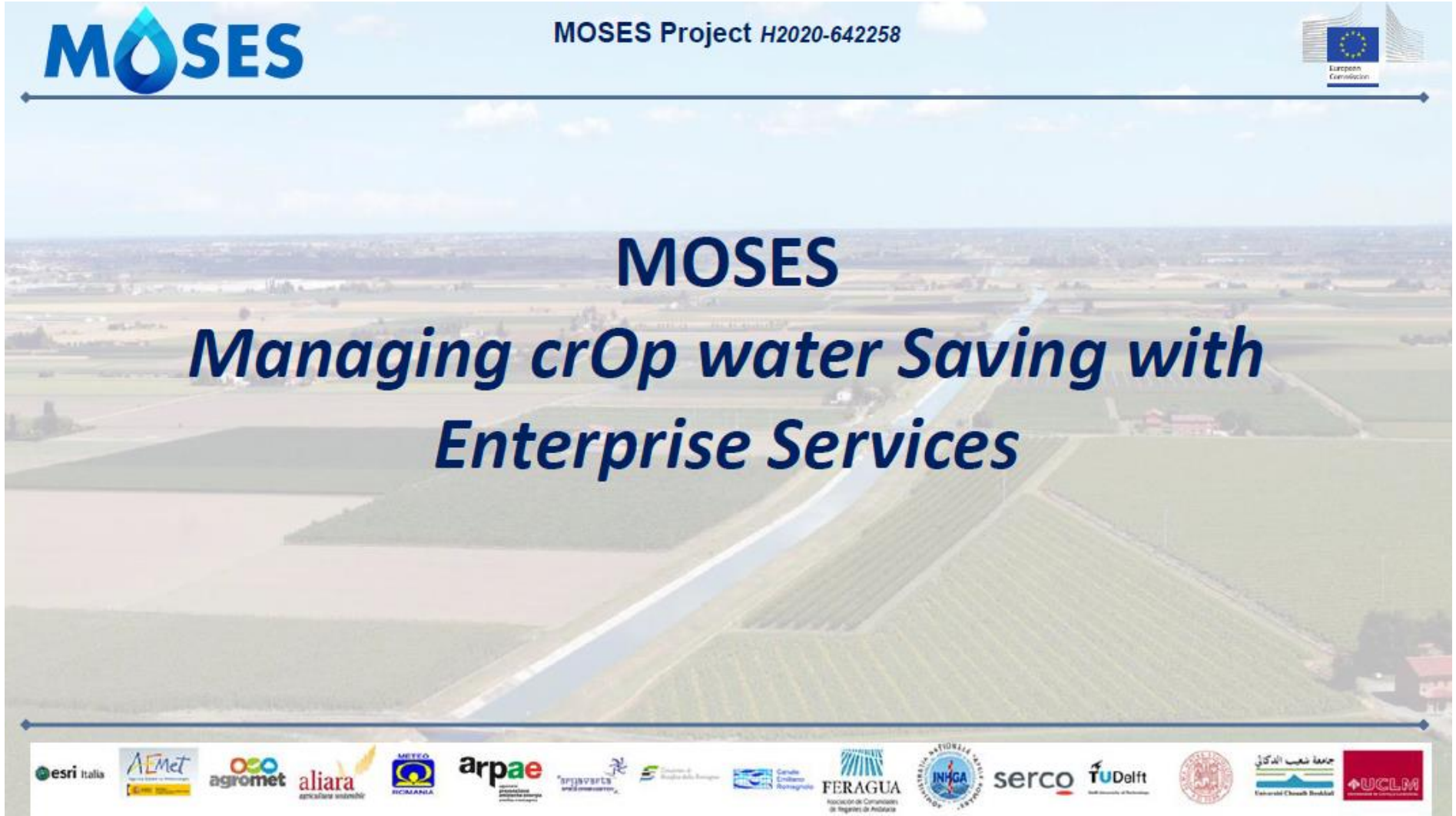
Example of web co-designed with users (I)



Example of web co-designed with users (II)



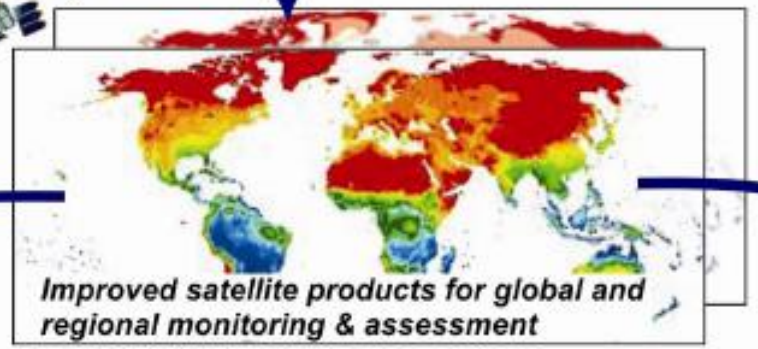
Example of prototype for optimal irrigation



From global data to local information

Broad range of high resolution satellite images and products

Information services

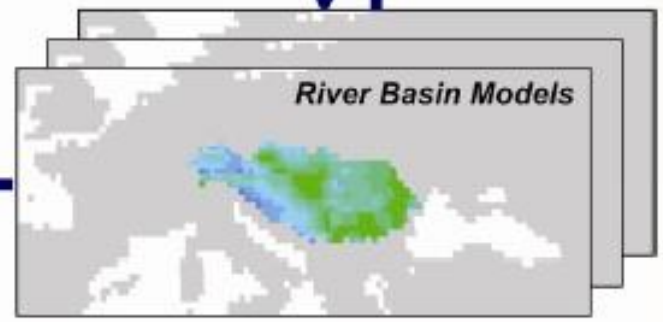


Improved satellite products for global and regional monitoring & assessment

Assimilation of existing and new EO data in the Earth System Model

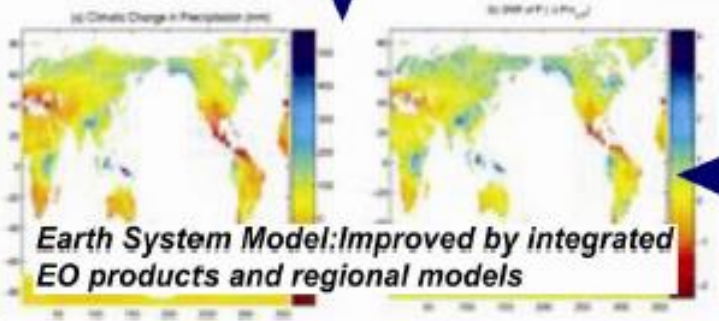
Improvement of water user information services

Assimilation of medium resolution EO data



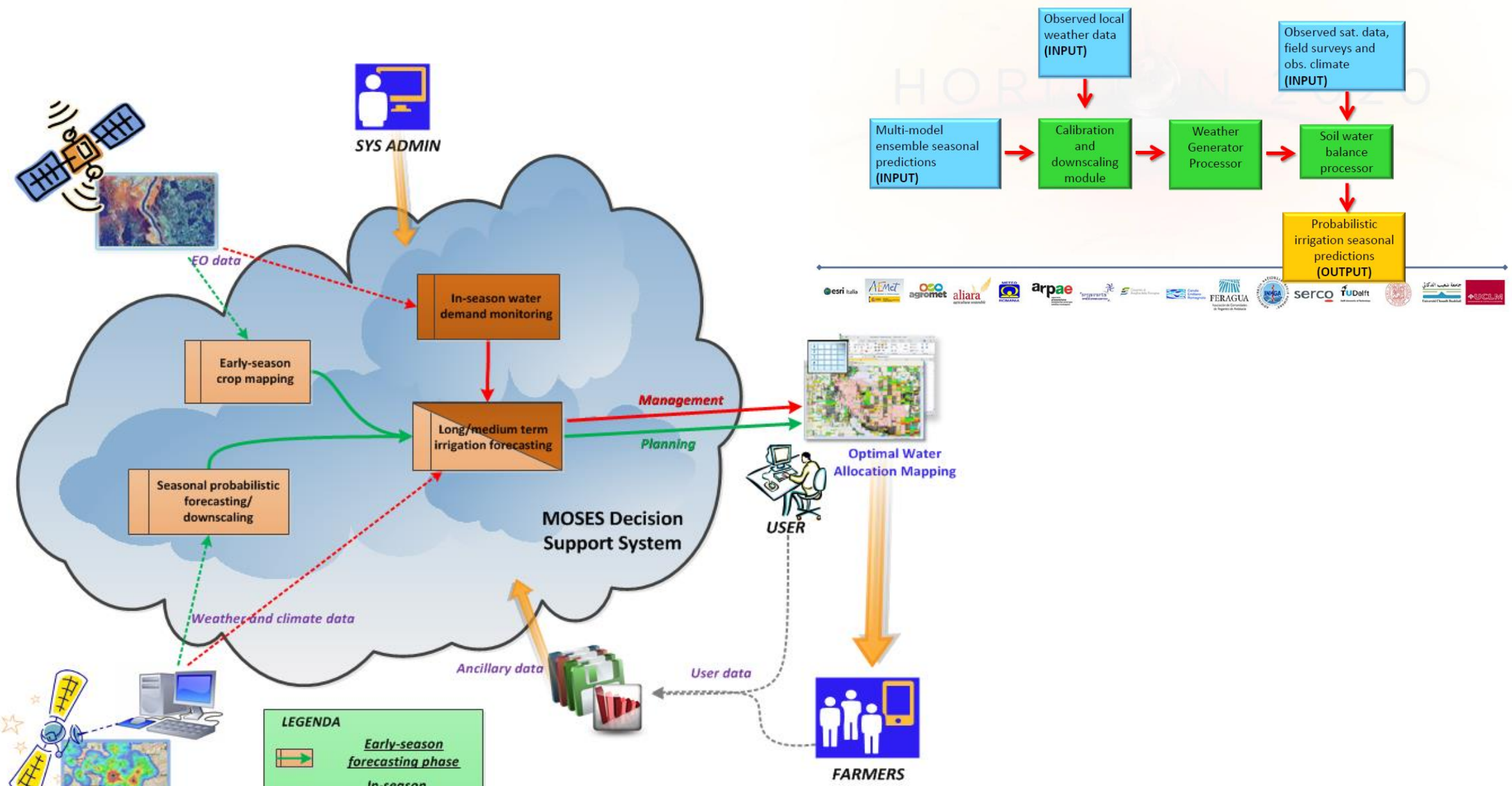
River Basin Models

Improved upscaling to global modelling



Earth System Model:Improved by integrated EO products and regional models

Scheme of the MOSES Seasonal Predictions module



Launch of MEDSCOPE (MEDiterranean Services Chain based On climate PrEdictions) (Oct 2017)

- Under EU **ERA4CS (European Research Area for Climate Services).** Topic B: Institutional Integration.
- Built upon previous initiatives within the Mediterranean region (e.g. CLIMRUN, EUPORIAS, MedCOF).
- The MEDSCOPE project aims at **developing climate forecast capabilities and related services on seasonal-to-decadal timescales.**
- The strategy will be based on :
  - **Exploiting existing datasets** to improve our understanding of sources and mechanisms of predictability.
  - Targeted sensitivity experiments focusing on **key drivers of Mediterranean climate variability**.
  - Develop innovative **empirical forecasting systems**.
  - Novel process-based methods for **bias correction, downscaling and optimal combination of sources of information**, all of which will be **publicly released via a toolbox**.
  - Sensitivity of climate predictions to models' climate drift, to spatial shifts of variability patterns and to the **selection of sub-ensembles representative** of the needs of specific applications.
- The added value provided by MEDSCOPE to climate services will be **assessed for various sectors** with high societal impact, e.g. **renewable energy, hydrology and agriculture and forestry**.

Lessons lernt

- **Co**-design, **co**-development, **co**-production with users → pluridisciplinary teams
- Progress **hand by hand with users**.
- Start with a simple prototype: a **toy model**
- In case of seasonal forecasts, benefit from the predictability **windows of opportunity**
- Speak with the **same language as users**. Translate climate variables (temp, prec) to users' relevant variables (e.g., dam inflow, optimal water allocation for irrig., $, €)
- (**Continuous) communication** with users
- **Demonstrate the skill/value** of simple prototype
- **Extend** the simple prototype (possibly based on empirical algorithms) to model outputs

Conclusions

- Three key messages:
  - Work jointly with users
  - Progress demonstrating value/skill of simple prototypes
  - Don’t invent the wheel → benefit from the experiences from other regions

Thanks for your attention

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