

TERENO-MED

- Adaptation to the Conditions of Water Scarcity -

Coordinating Team:

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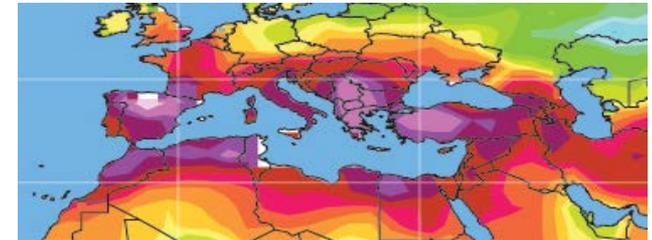
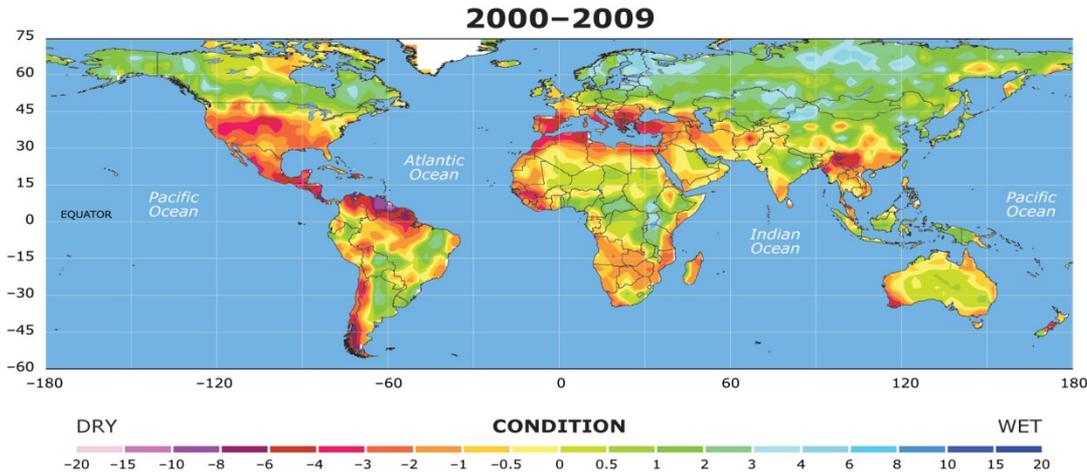
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TERENO-MED
TERRESTRIAL ENVIRONMENTAL OBSERVATORIES IN THE MEDITERRANEAN

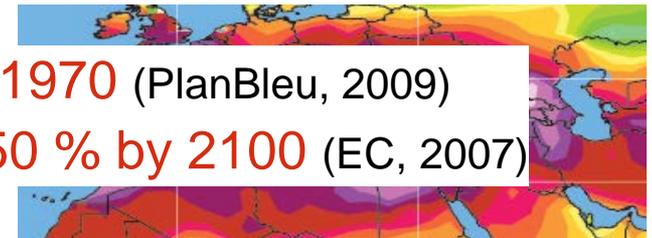
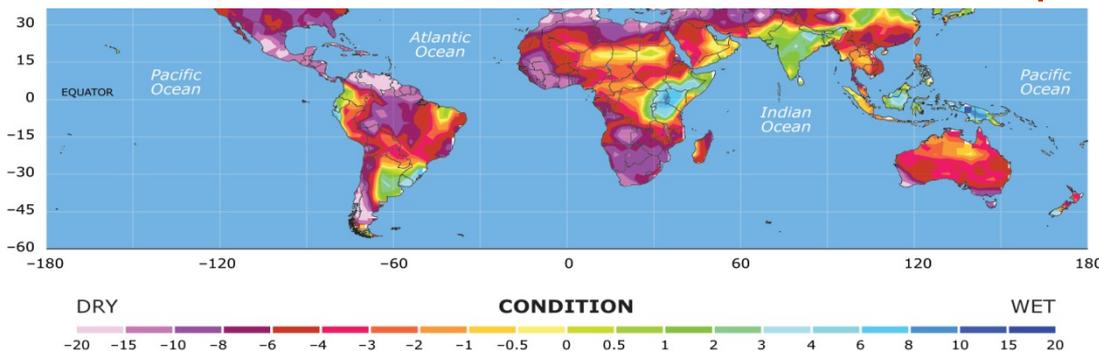
Challenges in the Mediterranean region:

Increasing number & severity of droughts (Palmer Drought Severity Index*)



2030-2039

7 **Temperature: + 2°C, Precipitation: - 20% since 1970** (PlanBleu, 2009)
6 **Decrease in available water resources: upto 50 % by 2100** (EC, 2007)



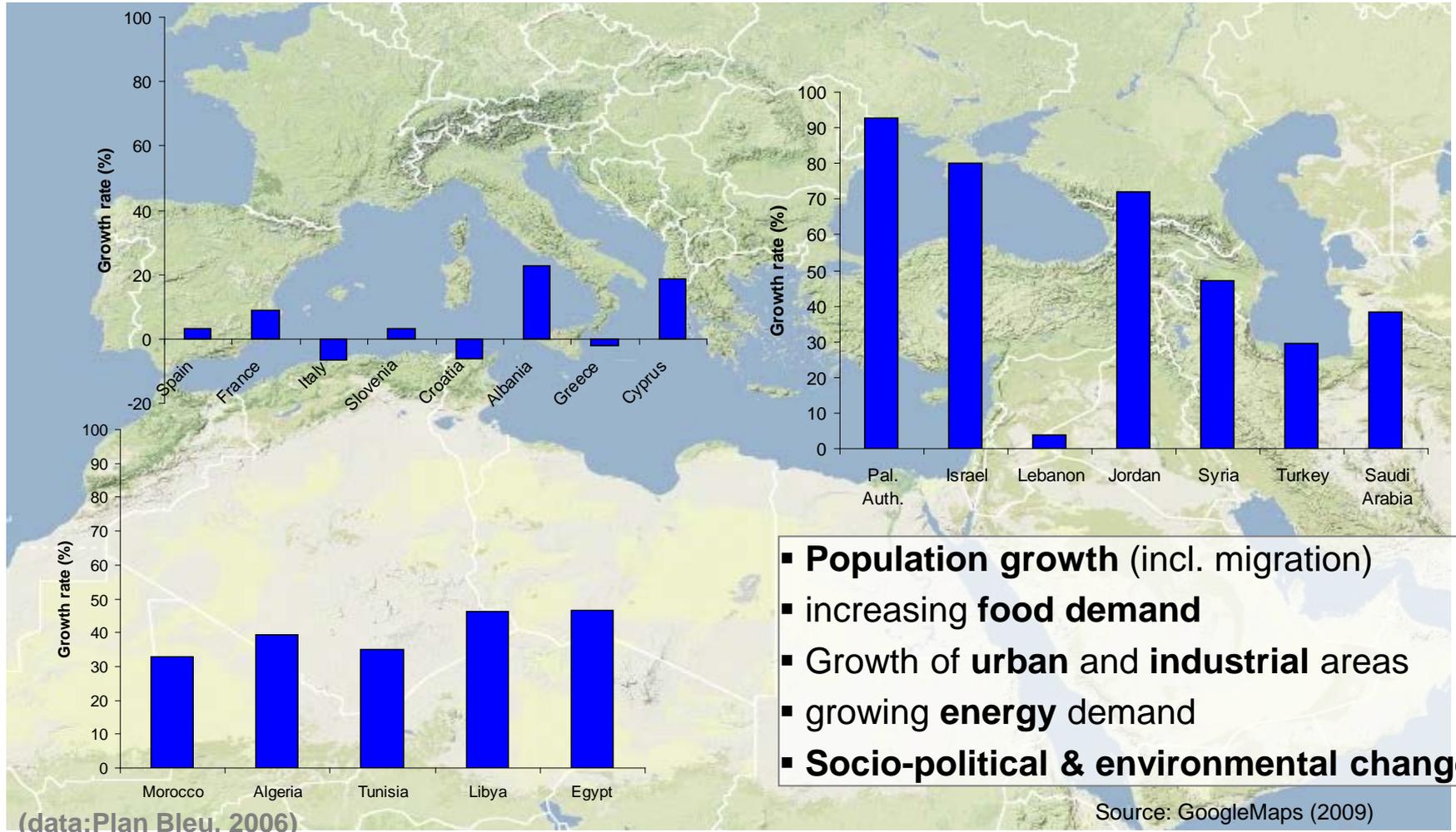
2060-2069

* Determines aridity through precipitation and temperature information (part. for long-term prognoses; < -4 = extreme drought)

source: NCAR images, 2010

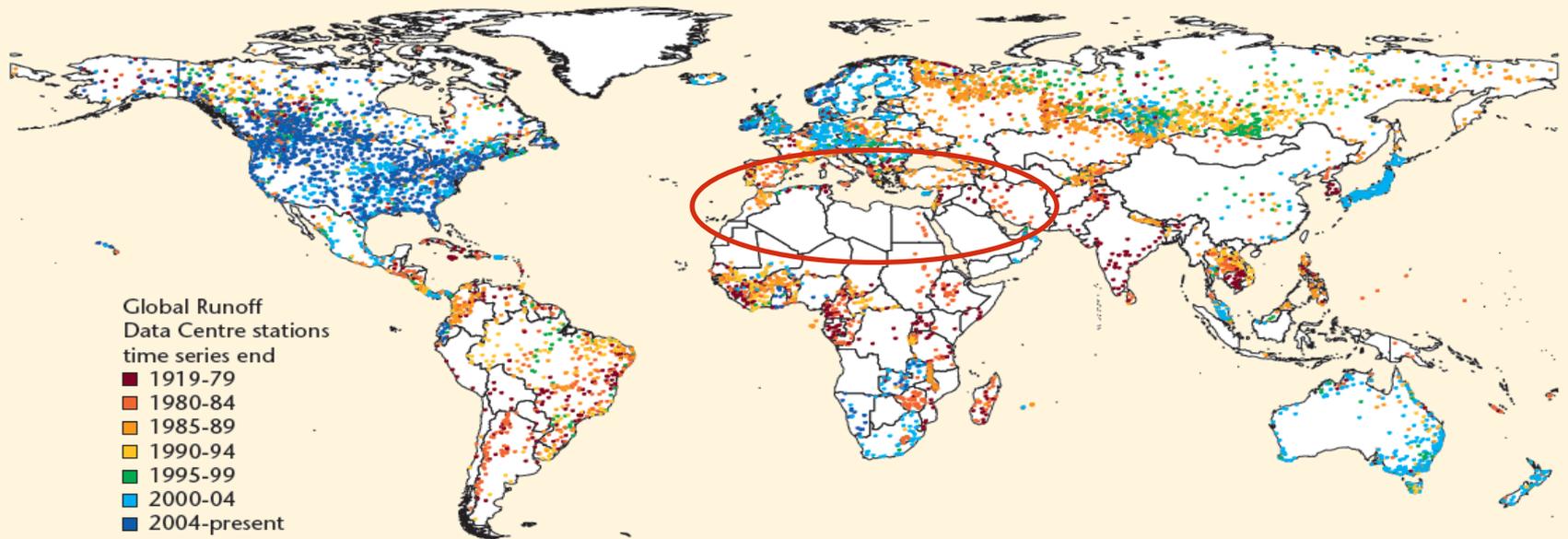
Challenges in the Mediterranean :

Distribution of Expected Population Growth by 2050



Lack of basis for future scenarios: scarce data/long-term monitoring sites

Map 13.1 Distribution of Global Runoff Data Centre streamflow gauges



Source: Global Runoff Data Centre (<http://grdc.bafg.de/>).

TERENO-MED

- Observatory network in the **Mediterranean region**
- Number of planned sites: ~ 8
- Concept based on TERENO (integrated global change observatories)
- Initial **focus on water**
- Funding: € 6.8 million, (UFZ, FZJ)
- Planned start of funding: 2013

Why the Mediterranean...?

Development of an integrated monitoring concept in Mediterranean catchments

International Network of Global Change Observatories (8-10 sites) → mesoscale river catchments, investigate impacts of global change on Mediterranean water resources and ecosystems → building on the national TERENO concept

Run long-term (minimum 15 years) observation network in a Euromediterranean partnership

Model based regionalisation

Airborne campaigns

Satellites (e.g. SMOS)

⇒ continuous monitoring

EMIRAD, PLMR, SAR
⇒ momentary imaging



Groundwater monitoring



Wireless soil moisture sensor network



Water quality monitoring



Eddy-Flux-Tower



Rainscanner



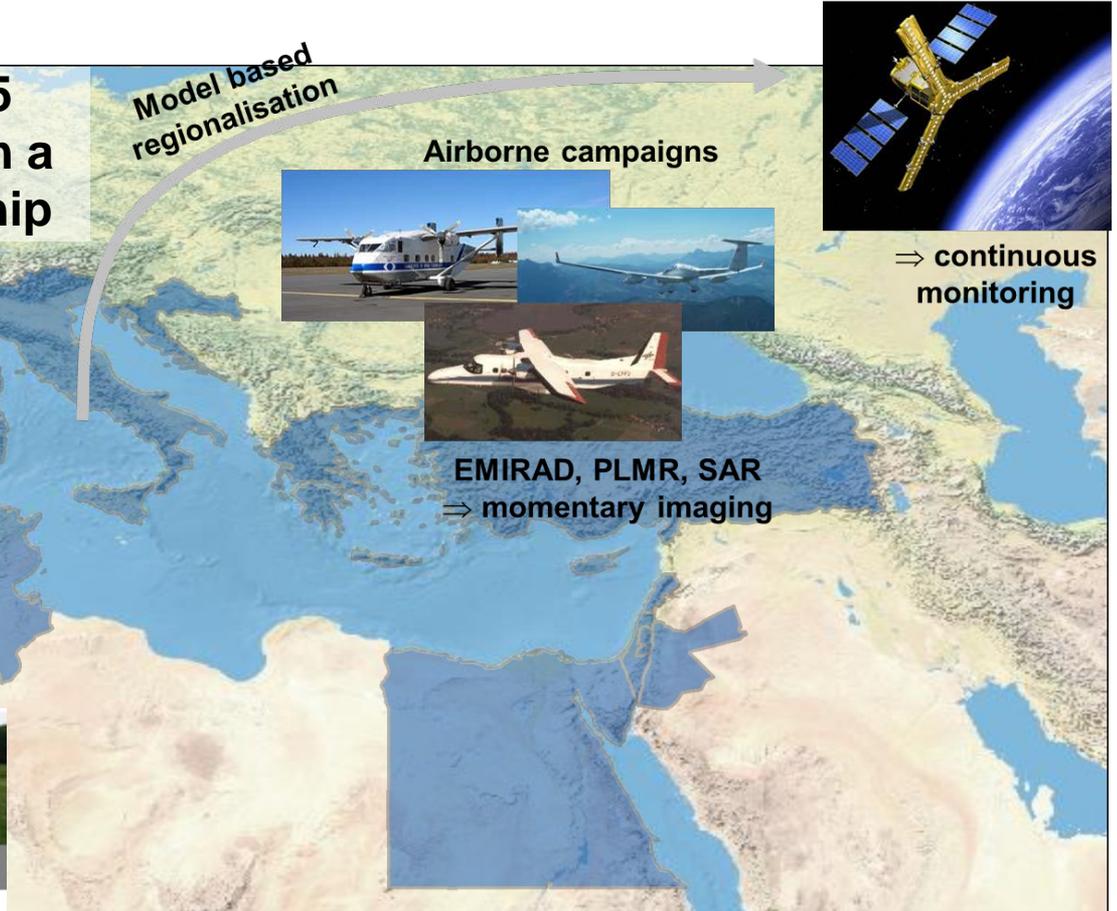
Modelling Platform



Remote Sensing



Geophysics



Overall goal

- Develop solutions to overcome/adapt to water scarcity
- Improve water quality, supply and sanitation systems
- Improve water efficiency, in particular in agriculture
- Develop „intelligent“ solutions for a sustainable resources management

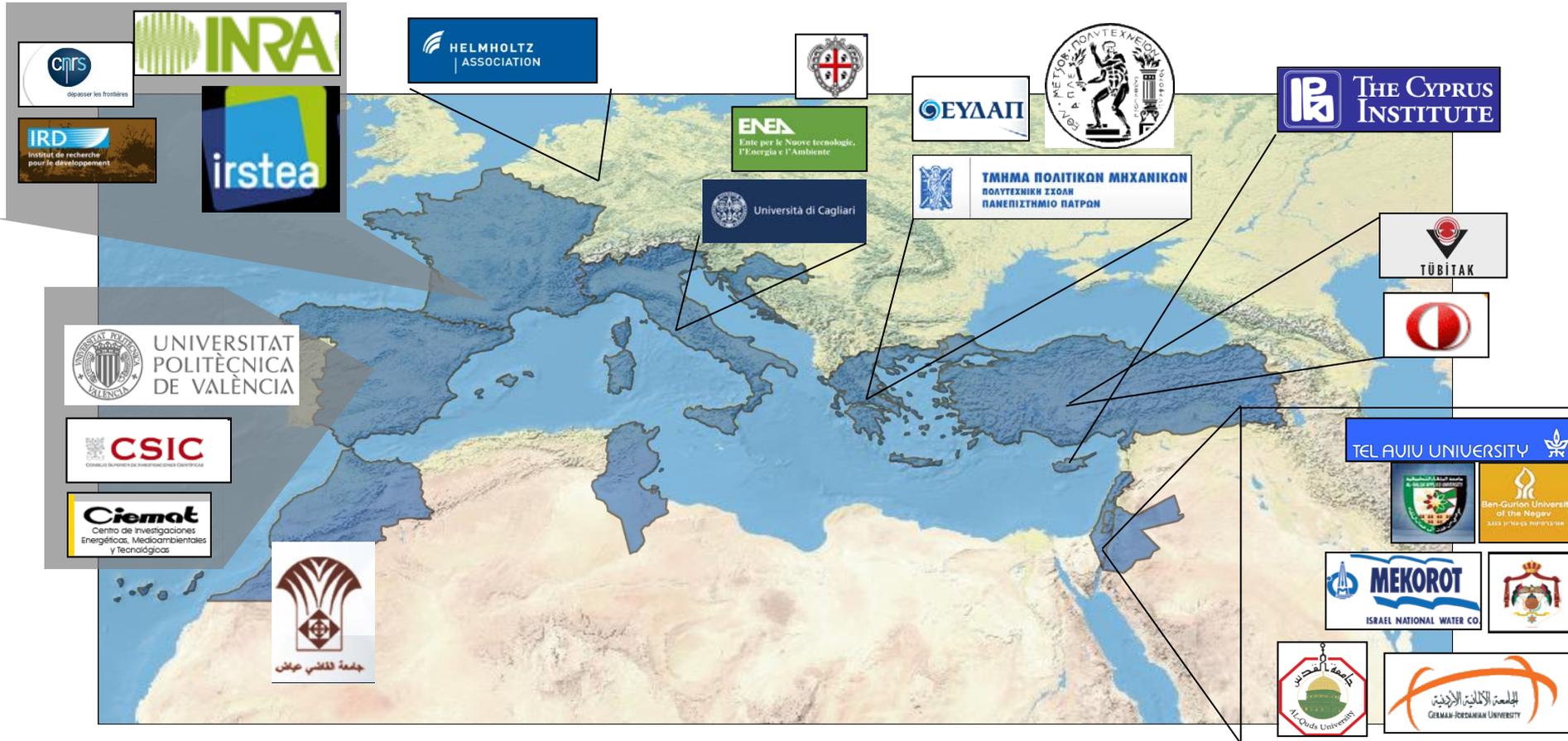
TERENO-MED -sites

- **Scientific concept developed jointly with local researchers and German TERENO-MED team (based on TERENO concept)**
 - Specific (local), water-related problem of **high relevance**
 - Building on **local expertise and capacities**
 - Joint installation of equipment funded by UFZ & JULICH
 - Operation and maintenance provided by local partners
 - **joint research projects**
 - bring together scientists from different scientific communities and **integrate disciplines**
 - establish **common measurement platforms** as the basis for long term data sets
 - combine **observation, experimentation and modelling**
 - **foster synergies** between research organizations (national & international)

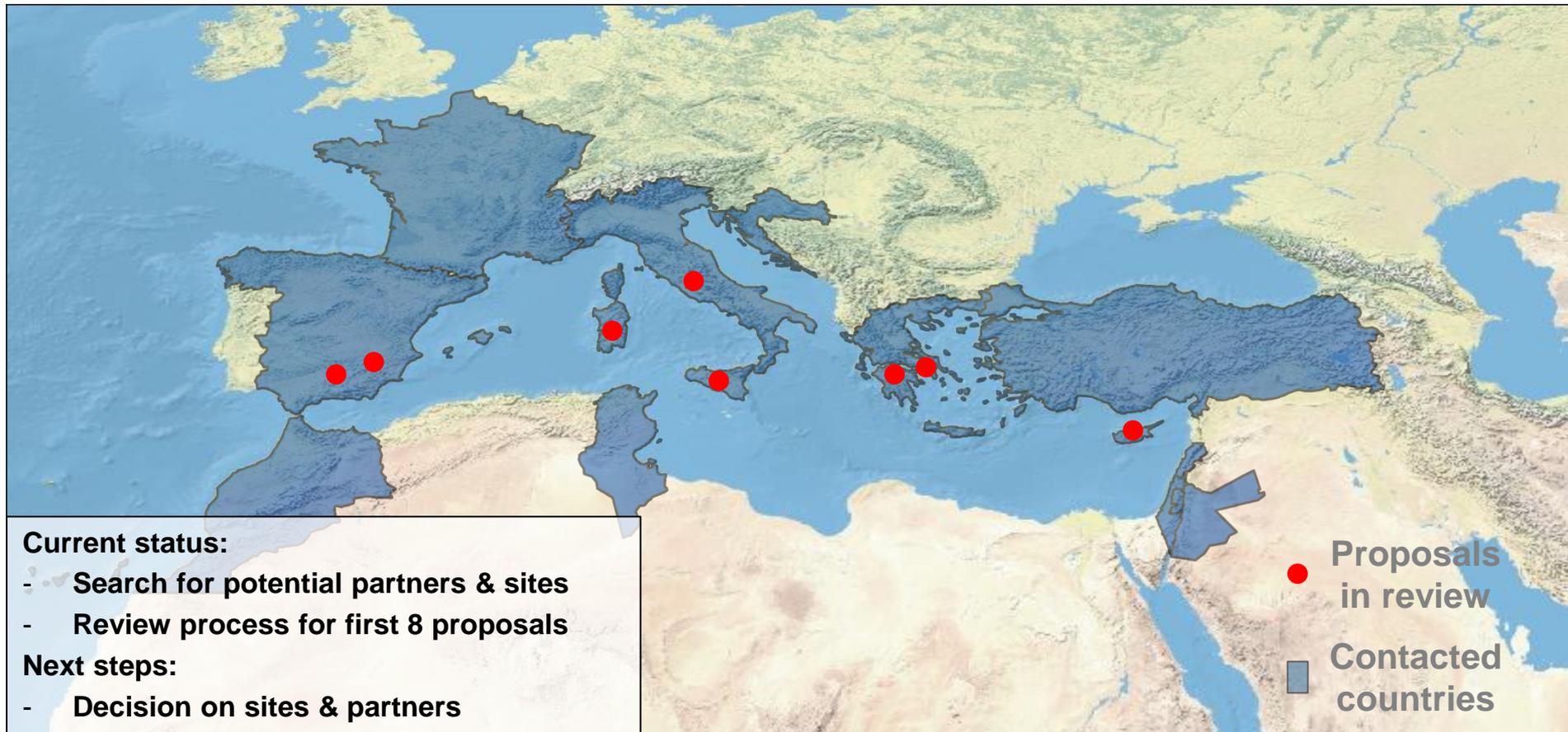
Linking up with existing activities

- Build on experiences from past & running **projects** (e.g. CLIMB, WasserMed, MELIA, SCENES, ...)
- MoU signed between French „**SICMED**“ initiative & TERENO-MED (Oct. 2011)
- Discussions with **HYMEX** for possible cooperation
 - European Drought Observatory (**EDO**), **ICOS**, **ILTER**, etc.
 - **SEIS (EEA)**, **GRDC**
 - Other infrastructure measures from Helmholtz (e.g. ACROSS, GEMIS, TANDEM-L)
- Creation of a **Mediterranean Water Science Alliance** ?!

TERENO-MED – potential partners



TERENO-MED – Circum-Mediterranean Network



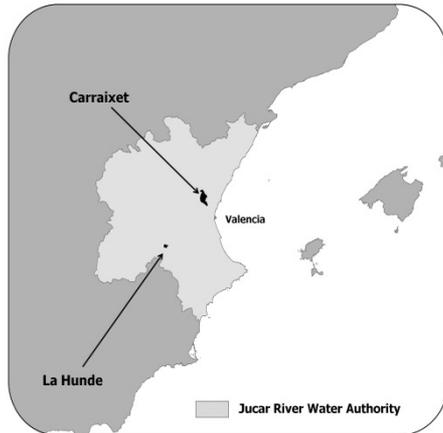
Current status:

- Search for potential partners & sites
- Review process for first 8 proposals

Next steps:

- Decision on sites & partners
- Negotiation of cooperation contracts
- Set-up of observatory sites and data infrastructure (linked to TEODOOR)

Jucar River Basin Observatory



- 2 sub-catchments selected
 - Carraixet – 128 km²
 - La Hunde – 20 km²
- Scientific Partner – Technical University of Valencia
- Study and integration of current natural and human-driven changes in land use in representative regions of Mediterranean Spain
 - Forested mediterranean catchments, interactions vegetation and water cycle, abandonment of marginal agricultural fields, nitrate leaching and migration into multi-aquifer systems