Climate changes challenges in the Mediterranean Region: what about local awareness?

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Climate induces changes on water security

http://www.climb-fp7.eu

http://www.cliwasec.eu
CLIMB – conceptual framework

Study Site Characterization
Conventional data (soil, DEM, vegetation, water availability and consumption etc.)

Remote Sensing
Parameter retrieval & Data assimilation

Geophysical Data Acquisition

Climate Model Audit & Uncertainty Assessment
GCM / RCM 1
GCM / RCM 2
GCM / RCM n

Hydrological Models
Audit & Uncertainty Assessment

Socioeconomic Factor Assessment

Risk Model
Vulnerability & Risk Assessment

Adapted Management

Dissemination & Stakeholder Interaction
(Questionairs, Web-GIS Server, Website)
CLIMB – Study Sites: catchments

1) Thau – 280 km² - Coastal Lagoon - Southern France
2) Rio Mannu di San Sperate – 473 km² - Sardinia – Italy
3) Chiba - 286 km² - Cap Bon – Tunisia
4) Noce - 1367 km² – Southern Alps – Italy
5) Izmit Bay – 673 km² - Kocaeli - Turkey
6) Nile Delta – 1000 km² - Nile - Egypt
7) Gaza Aquifer – 365 km² - Gaza – Palest.-admin. areas

Climate induced changes in:
→ water availability, runoff regimes, groundwater recharge
→ high agricultural productivity, irrigation, salt water intrusion
Dissemination – objectives & actions

- **A complete dissemination strategy**
  - 2 ways of interactions at multi spatial and time scales

  → CLIMB Dissemination management plan including CLIWASEC
  → Case studies investigation: analysis of local water uses
Dissemination – Interactions with stakeholders

- **Focus on local dissemination through interactions with stakeholders:**
  - engage them at the beginning of the project
  - inform them of the evolution of the work
  - based on the **pivot role of case study leaders**
    - know case studies (physical knowledge)
    - know stakeholders (some)
    - know CLIMB (partner)
    - they will stay in the case study after the end of the project
Dissemination – The use of water uses study

- **Interactions with stakeholders:**
  - 165 questionnaires filled (managers and users)
  - 133 interviews by UTours
  - 100 hours of records exploited
  - 5 different languages
  - 4 local dissemination meetings / case study
  - + virtual conferences

→ create confidence
→ understand water uses
→ design water governance
→ increase case study leader local network
Water uses study – main results

- Representation of water uses by stakeholders
  - difficulties to represent all water uses
  - difficulties to represent limits of the water system

Ex.:
  - water coming from dams
  - domestic water includes water for tourism industry
Water uses study – main results

• Water issues according to local stakeholders (past/future)
  • “climate change” terms not used (questionnaires, interviews)
    → Non-local appropriation of local climate change impacts on water
  • urbanization: main issue for water for past/future
    → Urban planning: the level to integrate climate change impacts?
  • increase of the deterioration of water quality is feared
    → awareness of impact on human activities on water resource
Response to water scarcity – (Mal)Adaptation?

- **New water resources induced new consumptions**
  - Saving water
    - → increase of irrigated areas (Ex. Noce, Thau)
  - Arrival of new water resources to adapt to water scarcity (storage basins, externalisation)
    - → arrival of new irrigated crops
    - → increase of water consumption! (Ex. Thau, Chiba)
Response to water scarcity – Externalisation

- **Externalisation of water resource**
  
  - Water is coming from other catchments
  - Desalination is an option for all coastal case studies

  - Ex. Thau (France)
    - Water from the Hérault, and Rhône River since 2012
    - Desalination presented as local solution to escape Rhône water uses
Conclusions

• Security of water uses is achieved (except for Gaza)

• Water uses are not sustainable

• Challenges of climate change are not perceived at local scale

• Water managers have to deal with increasing management complexity

One question: how to deal with desalination option in the WFD?
Thanks for your attention