Climate Induced Changes on the Hydrology of Mediterranean Basins

Reducing Uncertainty and Qualifying Risk through an Integrated Monitoring and Modeling System

Intro

The strategy of CLIMB is aiming to employ and integrate advanced field monitoring techniques, remote sensing analyses and retrievals, integrated hydrologic (and biological) modeling and socioeconomic factor assessment in a new conceptual framework to significantly reduce existing uncertainties in climate change impact analysis and to create an integrated risk assessment tool for adaptive water resources management and best agricultural practice under climate change conditions. To cover many of the most evident and expected climate change and water security related problems in the region of interest, the Consortium has identified seven study sites in Southern Europe, North Africa, the Middle East and Canada. The work plan is divided in eight work packages (WPs).

WP 0: Synergies and Policy Outreach

Partner: (1) LMU, (19) BayFOR
Leader:    Prof. Dr. Ralf Ludwig

The main objective of WP0 is to establish links and synergies between CLIMB and projects covering the same theme of the call, as well as with relevant initiatives in Southern Europe and neighbouring countries. In addition, the WP will build up relationships with relevant policy representatives and stakeholders at EU level and in the SICA countries covered by the project. READ MORE

WP 1: Co-ordination & Management

Partner: (1) LMU, (19) BayFOR
Leader:    Prof. Dr. Ralf Ludwig

Main objectives are:
1.1 Scientific, financial and organisational management of the project
1.2 To negotiate the contract and to fulfill all contractual requirements
1.3 To organize the internal communication and evaluation READ MORE
WP 2: Geodatamanagement
Leader: Prof. Dr. Rainer Duttmann

Geoinformation systems (GIS) and spatial databases serve as a major platform to manage, capture, analyze and visualize geographical data. For instance, network-based GIS server architectures are used to offer distributed access as well as editing and analysing capabilities based on a central spatial database. Therefore, such systems are in particular useful in joining a plenty of distributed available data of different topical and geometrical properties in order to provide the involved project participants with a consistent and standardised spatial database.

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WP 3: Study Site Characterization and Monitoring
Partner: (1) LMU, (2) AGRIS, (3) CAU, (4) CEMAGREF, (5) CERTE, (10) GIT, (11) INRS, (13) UA, (14) IUG, (15) UNIPD, (16) UNITN, (17) UZ, (18) VISTA
Leader: Dr. Sihem Benabdallah

Monitoring is a vital component in the quest for information about the soils characteristics, land uses and water quality of a particular watershed. A well conducted monitoring program, comprising concerted data collection, field measurement programs and remote sensing techniques, can provide information about soils and land changes in time, deterioration or staying about under certain uses and management practices.

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WP 4: Climate Models Auditing and Downscaling
Partner: (6) CINFAI, (7) CRS4
Leader: Dr. Roberto Deidda

Several numerical climate models (global and regional) are used by the scientific community for reconstructing the past and present climate and predicting the future state of the Earth at different spatial and temporal scales. Recently, the outputs of a large set of climate models have been made available thanks to open data access projects, such as the PRUDENCE project of the 5th European Union Framework Program for regional climate models, the ENSEMBLES project of the 6th European Union Framework Programme and the US project PCMDI/CMIP3 for global climate models.

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WP 5: Integrated Hydrological Modeling
Partner: (1) LMU, (5) CERTE, (6) CINFAI, (7) CRS4, (9) FZJ, (10) GIT, (11) INRS, (13) UA, (14) IUG, (15) UNIPD, (16) UNITN, (17) UZ, (18) VISTA
Leader: Prof. Alberto Bellin

The objective of this WP is to apply hydrological modeling in order to predict the response of the watershed to changing driving forces such as climate, land use, urbanization, and human activities as predicted by the socio-economic scenarios provided by the WP 4. In order to better quantify the hydrological model uncertainty, an ensemble of different models with varying complexity in parameter space is applied in each study site. READ MORE

WP 6: Uncertainty Analysis, Socioeconomic Factor Assessment and Risk Modeling
Leader: Dr. Franz Pretenthaler

The main objectives of this work package is to establish a comprehensive risk modeling approach for water resource problems under anticipated climate change in the Mediterranean Basins (selected study sites) integrating both the existing uncertainties (link to WP 6.1) and important vulnerability factors (link to WP 6.2) The results of the risk model are used to give recommendations for future water management. READ MORE

WP 7: Interaction with Stakeholders and Dissemination
Partner: (1) LMU, (2) AGRIS, (3) CAU, (5) CERTE, (8) DLR, (10) GIT, (13) UA, (14) IUG, (17) UZ, (18) VISTA, (19) BayFOR
Leader: Dr. Isabelle La Jeunesse

The objective of the WP 7 is to assess with stakeholders the impact of climate change on uses and rivalries of water resources at the catchment scale. This WP will be implemented in two steps: first of all an analysis of local uses and rivalries will be set up on local case studies; secondly, on the basis of these analysis confronted to the results of hydrological modeling, interactive workshops will be organised with the stakeholders involved in each local case under investigation, in order to assess the impact of CC on those uses and rivalries and to design the way they would plan to regulate it. READ MORE

Contact
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