



## **The CLIMB Geoportal – A web-based dissemination and documentation platform for hydrological modelling data**

Michael Blaschek (1), Daniel Gerken (1), Ralf Ludwig (2), and Rainer Duttmann (1)

(1) Christian-Albrechts-Universität zu Kiel, Department of Geography, Ludewig-Meyn-Str. 14, D-24118 Kiel, (2) Ludwig-Maximilians-Universität München, Department of Geography, Luisenstr. 37, D-80333 Munich

Geoportals are important elements of spatial data infrastructures (SDIs) that are strongly based on GIS-related web services. These services are basically meant for distributing, documenting and visualizing (spatial) data in a standardized manner; an important but challenging task especially in large scientific projects with a high number of data suppliers and producers from various countries.

This presentation focuses on introducing the free and open-source based geoportal solution developed within the research project CLIMB (Climate Induced Changes on the Hydrology of Mediterranean Basins, [www.climb-fp7.eu](http://www.climb-fp7.eu)) that serves as the central platform for interchanging project-related spatial data and information. In this collaboration, financed by the EU-FP7-framework and coordinated at the LMU Munich, 21 partner institutions from nine European and non-European countries were involved. The CLIMB Geoportal ([lgi-climbsrv.geographie.uni-kiel.de](http://lgi-climbsrv.geographie.uni-kiel.de)) stores and provides spatially distributed data about the current state and future changes of the hydrological conditions within the seven CLIMB test sites around the Mediterranean. Hydrological modelling outcome – validated by the CLIMB partners – is offered to the public in forms of Web Map Services (WMS), whereas downloading the underlying data itself through Web Coverage Services (WCS) is possible for registered users only. A selection of common indicators such as discharge, drought index as well as uncertainty measures including their changes over time were used in different spatial resolution. Besides map information, the portal enables the graphical display of time series of selected variables calculated by the individual models applied within the CLIMB-project.

The implementation of the CLIMB Geoportal is finally based on version 2.0c5 of the open source geospatial content management system GeoNode. It includes a GeoServer instance for providing the OGC-compliant web services and comes with a metadata catalog (pycsw) as well as a built-in WebGIS-client based on GeoExt (GeoExplorer). PostgreSQL enhanced by PostGIS in versions 9.2.1/2.0.1 serves as database backend for all base data of the study sites and for the time series of relevant hydrological indicators. Spatial model results in raster-format are stored file-based as GeoTIFFs. Due to the high number of model outputs, the generation of metadata (xml) and graphical rendering instructions (sld) associated with each single layer of the WMS has been done automatically using the statistical software R. Additional applications that have been programmed during the project period include a Java-based interface for comfortable download of climate data that was initially needed as input data in hydrological modeling as well as a tool for displaying time series of selected risk indicators which is directly integrated into the portal structure implemented using Python (Django) and JavaScript.

The presented CLIMB Geoportal shows that relevant results of even large international research projects involving many partners and varying national standards in data handling, can be effectively disseminated to stakeholders, policy makers and other interested parties. Thus, it is a successful example of using free and open-source software for providing long-term visibility and access to data produced within a particular (environmental) research project.