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The climate4impact portal: bridging the CMIP5 and CORDEX data infrastructure to impact users

Maarten Plieger (1), Wim Som de Cerff (1), Christian Pagé (2), Natalia Tatarinova (2), Antonio Cofiño (3), Manuel Vega Saldarriaga (3), Ronald Hutjes (4), Fokke de Jong (4), Lars Bärring (5), and Elin Sjökvist (5)

(1) Royal Netherlands Meteorological Institute (KNMI), R&D Observations and Data Technology, De Bilt, Netherlands (plieger@knmi.nl), (2) Centre Européen de Recherche et de Formation Avancée (CERFACS), (3) University of Cantabria (UNICAN), (4) Wageningen University (WUR), (5) Swedish Meteorological and Hydrological Institute (SMHI)

The aim of climate4impact is to enhance the use of Climate Research Data and to enhance the interaction with climate effect/impact communities. The portal is based on 21 impact use cases from 5 different European countries, and is evaluated by a user panel consisting of use case owners. It has been developed within the European projects IS-ENES and IS-ENES2 for more than 5 years, and its development currently continues within IS-ENES2 and CLIPC. As the climate impact community is very broad, the focus is mainly on the scientific impact community. This work has resulted in the ENES portal interface for climate impact communities and can be visited at www.climate4impact.eu.

The climate4impact is connected to the Earth System Grid Federation (ESGF) nodes containing global climate model data (GCM data) from the fifth phase of the Coupled Model Intercomparison Project (CMIP5) and regional climate model data (RCM) data from the Coordinated Regional Climate Downscaling Experiment (CORDEX). This global network of climate model data centers offers services for data description, discovery and download. The climate4impact portal connects to these services using OpenID, and offers a user interface for searching, visualizing and downloading global climate model data and more. A challenging task was to describe the available model data and how it can be used. The portal tries to inform users about possible caveats when using climate model data. All impact use cases are described in the documentation section, using highlighted keywords pointing to detailed information in the glossary. During the project, the content management system Drupal was used to enable partners to contribute on the documentation section.

In this presentation the architecture and following items will be detailed:
- Visualization: Visualize data from ESGF data nodes using ADAGUC Web Map Services.
- Processing: Transform data, subset, export into other formats, and perform climate indices calculations using Web Processing Services implemented by PyWPS, based on NCAR NCPP OpenClimateGIS and IS-ENES2 icclim.
- Security: Login using OpenID for access to the ESGF data nodes. The ESGF works in conjunction with several external websites and systems. The climate4impact portal uses X509 based short lived credentials, generated on behalf of the user with a MyProxy service. Single Sign-on (SSO) is used to make these websites and systems work together.
- Discovery: Facetted search based on e.g. variable name, model and institute using the ESGF search services. A catalog browser allows for browsing through CMIP5 and any other climate model data catalogues (e.g. ESSENCE, EOBS, UNIDATA).
- Download: Directly from ESGF nodes and other THREDDS catalogs
This architecture will also be used for the future Copernicus platform, developed in the EU FP7 CLIPC project.
- Connection with the downscaling portal of the university of Cantabria
- Experiences on the question and answer site via Askbot

The current main objectives for climate4impact can be summarized in two objectives. The first one is to work on a web interface which automatically generates a graphical user interface on WPS endpoints. The WPS calculates climate indices and subset data using OpenClimateGIS/icclim on data stored in ESGF data nodes. Data is then transmitted from ESGF nodes over secured OpenDAP and becomes available in a new, per user, secured OpenDAP server. The results can then be visualized again using ADAGUC WMS. Dedicated wizards for processing of climate indices will be developed in close collaboration with users. The second one is to expose

climate4impact services, so as to offer standardized services which can be used by other portals. This has the advantage to add interoperability between several portals, as well as to enable the design of specific portals aimed at different impact communities, either thematic or national, for example.