

The climate4 impact portal: bridging the CMIP5 data infrastructure to impact users Maarten Plieger¹, Wim Som de Cerff¹, Christian Page², Ronald Hutjes³, Fokke de Jong³, Lars Barring⁴, and Elin Sjökvist⁴

Some of our use cases

Fews NHI - Deltares

Delivery of climate model data from different runs to the FEWS/NHI system. The use case describes the situation where data is ingested directly by FEWS and the situation where a Hydrologist interactively selects climate data for input in FEWS

Climate data for METAPHOR - WUR

Delivery of climate model data from different scenario runs for the Metaphor model. Daily averaged, high resolution model data from severa ensemble runs is needed. (Dispersion model for plants and animals)

Natuurplanner - WUR

Delivery of climate model data from different scenario runs to the Natuurplanner. (Model and data manager for ecological models)

EU-CLUE scanner (Land use) – VU / Spinlab The EU CLUE and the Land Use Scanner models simulate (future) landuse change over Europe, using Socio-economic and climatic changes as



Deltares 🚄



Earth System Grid Federation - ESGF

ESGF P2P is a component architecture expressly designed to handle large-scale data management for worldwide distribution. Model simulations, satellite observations, and reanalysis products are all being served from the ESGF P2P distributed data archive.

Users can access ESGF data using Web browsers, scripts, and client applications. ESGF is separated into gateways and data nodes. Gateways handle user registration and management and allow users to search, discover, and request data. Data nodes are located where the data resides, allowing data to be published (or exposed) on disk or through tertiary mass store (i.e., tape archive) to any gateway. They also handle data reduction, analysis, and visualization. ESGF currently comprises eight national and international gateways, four of which hold special status in housing CMIP5/AR5 replication data sets: LLNL/PCMDI, the British Atmospheric Data Center (BADC), the German Climate Computing Centre (DKRZ), and the Australian National University (ANU) National Computational Infrastructure (NCI). Users have access to all data from the federation regardless of which gateway is used.

ESGF nodes interact with each other as peers – i.e. no node is privileged over the others, and each node can join or leave the federation independently, without affecting the working state of the other nodes. All nodes are aware of each other through the ESGF registry – a document that each node produces and continuously updates by collecting information from all other nodes. Users and rich clients can start from any ESGF node and find, download and analyze data from anyother node. This works because all nodes interoperate through the adoption of common services and APIs, which are based on industry standards such as OpenID, SSL, PKI, SAML, OPeNDAP Data AccessProtocol, and Solr.

OpenDAP

OpenDAP provides functionality to access and subset large datasets over the web without the need for downloading a full copy. OpenDAP is great for centralized data access and data exploration. An OpenDAP server is usually used to serve NetCDF files. The NetCDF library can open a NetCDF file remotely via OpenDAP over the internet. It is transparent to the user whether the file resides on his own computer or in a webserver on the web.

OGC Services on OpenDAP

Visualizing remote datasets using WMS is achieved by adding OpenDAP URL's as extra key value parameter to the ADAGUC OGC service (&source=). This enables automatic visualization of OpenDAP datasets without necessary configuration.

Currently the software is capable of providing visualizations from datasets in raster format described by the Climate and Forecast (CF) conventions. The server detects the minimum and maximum values automatically and scales the colors according to these values. Additionally, the server is able to detect colors and legends based on standard names defined by the CF Conventions.

ADAGUC uses the NetCDF-C library to access data, which has built-in support for OpenDAP.

The same method is used to create OGC Web Coverage Services (WCS), allowing for data reprojection, subsetting and conversion to other formats. Using the services described above, OpenDAP datasets can become available to Geographical

Information Systems. Bridging OpenDAP and GIS allows these datasets to be used by a new and broader user community.

ADAGUC

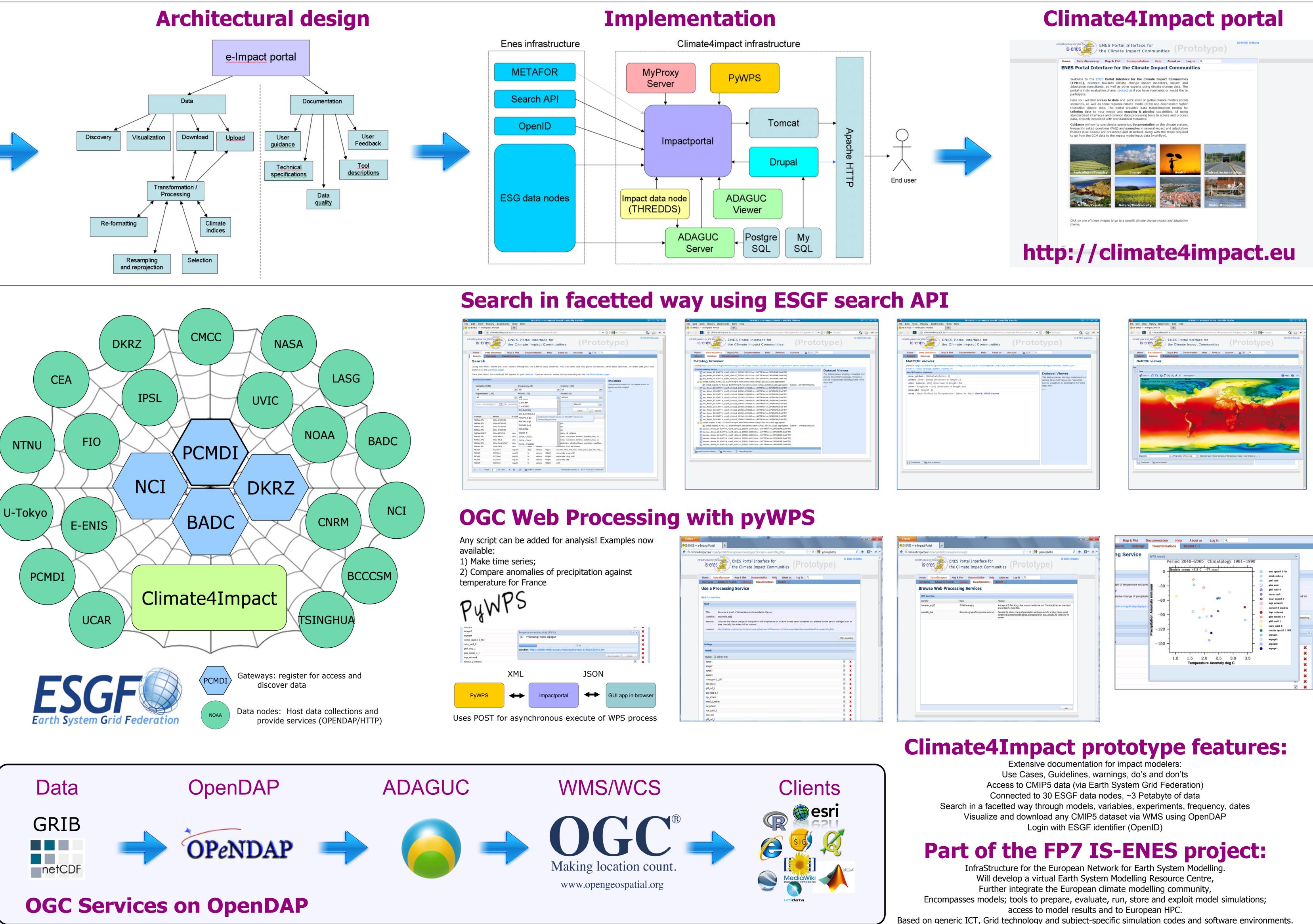
ADAGUC is a geographical information system to visualize netCDF files via the web. The software consists of a server side C++ application and a client side JavaScript application. ADAGUC provides several features to access and visualize data over the web. ADAGUC makes use of OGC standards for data dissemination.

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Royal Netherlands Meteorological Institute Ministry of Infrastructure and the Environment

KNMI¹, CERFACS², WUR³, SMHI⁴, CNR-IPSL, INHGA, CMCC, MF-CNRM



Based on generic ICT, Grid technology and subject-specific simulation codes and software environments. More information on: http://is.enes.org/



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