

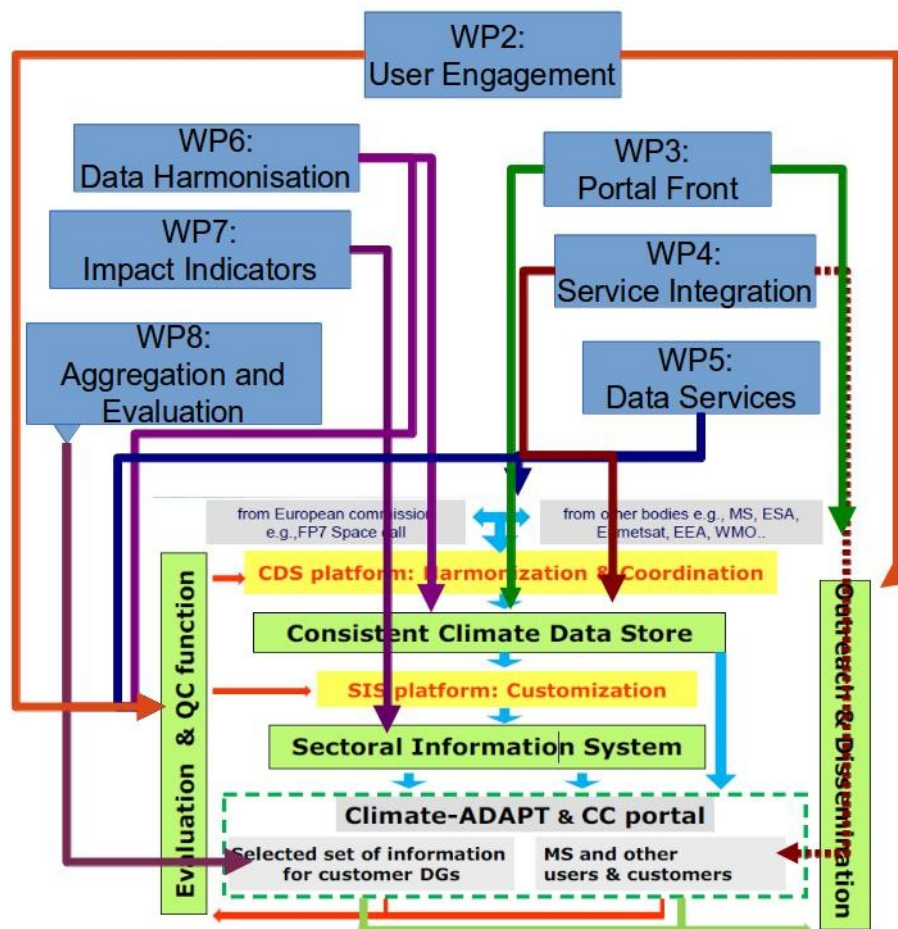


Helping Europe respond to the impact of climate change

## CLIPC: A Climate Information Platform for Copernicus

Martin Juckes, Rob Swart, Lars Bärring, Annemarie Groot, Peter Thyse, Wim Som de Cerff, Victoria Bennett, Luis Costa, Johannes Lückenkötter, Sarah Callaghan and the CLIPC team.





- Duration: 3 years, start Dec 2013
- Consortium: 22 Partners
- Coordination: Martin Jukes, STFC
- Lead: STFC ([www.stfc.ac.uk](http://www.stfc.ac.uk))
- Budget: 6 million €

- A “one-stop-shop” platform will provide data and information on climate and climate impacts



# User Engagement

## D2.1: User Requirements, Part 1 ([w3id.org/clipc/docs/D2\\_1](http://w3id.org/clipc/docs/D2_1))

- light review of 55 FP7 projects;
- detailed reviews of 11 of these;
- identified 4 key user categories;
- → user consultation strategy. ★

## D2.2: User Requirements, Part 2 ([w3id.org/clipc/docs/D2\\_2](http://w3id.org/clipc/docs/D2_2))

- online survey; telephone interviews; workshops; ★
- identified priorities:
  - *multiple routes to data;*
  - *easy access to ancillary information;*
  - *personalised browsing.*

## User Categories

- Climate Scientist
- Impact Scientist
- Boundary worker (e.g. environment agency, consultancy)
- End user (e.g. decision maker)

## MS6: User Evaluation Report ([w3id.org/clipc/docs/MS6](http://w3id.org/clipc/docs/MS6))

- virtual workshops for specific user groups;
  - discussion of prototype options;
  - preparing for final event:
    - October 20<sup>th</sup>, Brussels
- [tinyurl.com/CLIPCworkshopRegister](http://tinyurl.com/CLIPCworkshopRegister)*

## Bias

Inter-comparison of bias adjustment techniques

## Uncertainty

Workshop and report on communication of uncertainty in the climate service context.

## Ensembles

Production of reduced ensembles;  
Initial investigation of application of uncertainty assessment to reduced ensembles.

## Impact Indicators

Catalogue of indicators;  
Systematic classification of indicators;



# Standards

## File meta-data standards

- *Climate projections:*
  - *global;*
  - *regional;*
- Regional re-analysis (with UERRA);
- Observations (space) (with ESA CCI);
- Observations (in situ);
- Impact Indicators;

CMIP style

## Vocabularies

CF Standard Names  
Essential Climate Variables  
Platforms  
Sensor  
..... and many more

## Catalogue

INSPIRE compliant (UK Gemini profile);  
Keywords as SKOS identifiers;

Also:

- Dataset uncertainty/quality assessment;
- Using OGC services (WPS, WMS, CSW);
- “Open door” data policy;

# Technology

**CLIPC Portal**  
Flexible user interface

**climate4impact.eu**  
Service integration

Imports data via  
OPeNDAP from multiple  
sources; exports via OGC  
services

KNMI  
FTP  
server

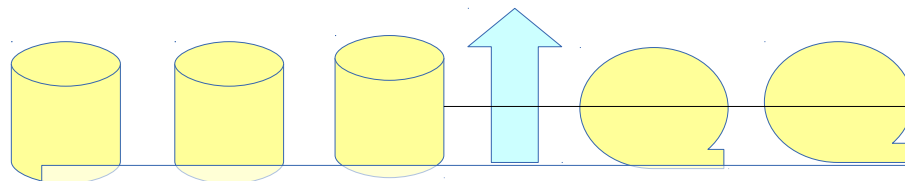
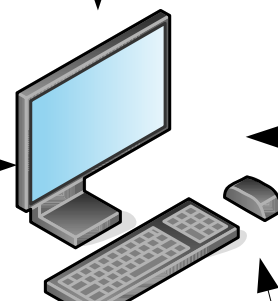
Earth System Grid Federation (ESGF)  
Globally distributed data broker

Data published through ESGF or  
placed on KNMI server.

Climate Change Impact  
Indicators

This project has received funding from the European Union's Horizon  
Framework Programme for research, technological development and  
demonstration under grant agreement No 101019719

Global projections; regional projections;  
regional re-analysis; satellite  
observations; in situ observations.



# Technology

**CLIPC Portal**  
Flexible user interface

- One stop shop ....
- But many entrances for different user requirements

Imports data via OPeNDAP from multiple sources; exports via OGC services

KNMI  
FTP  
server

Data published through ESGF or placed on KNMI server.

Earth System Grid Federation (ESGF)  
Globally distributed data broker

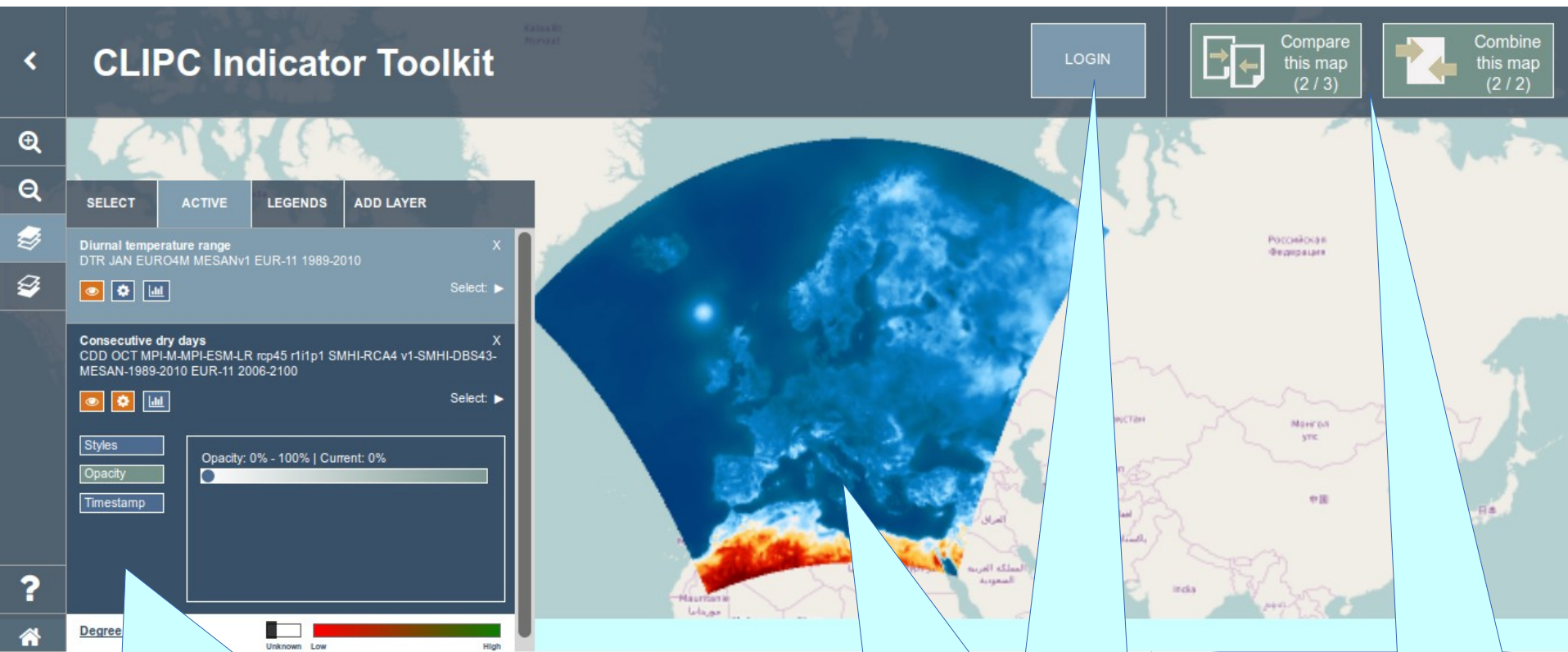
Global projections; regional projections; regional re-analysis; satellite observations; in situ observations.

Climate Change Impact  
Indicators

This project has received funding from the European Union's Horizon Framework Programme for research, technological development and demonstration under grant agreement No 101019719.



## CLIPC Data Viewer



Collapsing box for  
settings, data selection  
and ancillary information

Full screen data display

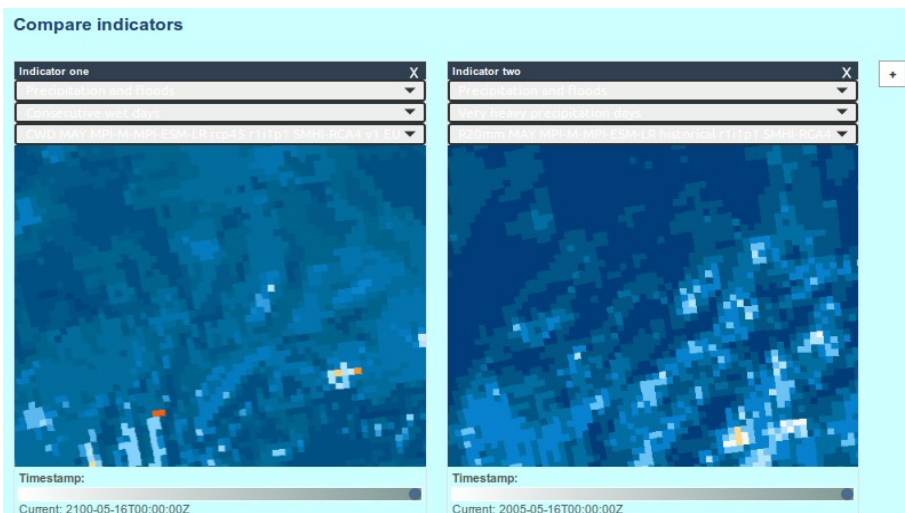
Additional views to  
compare and  
combine data

This  
Frame  
demo

Logon to access "MyData"



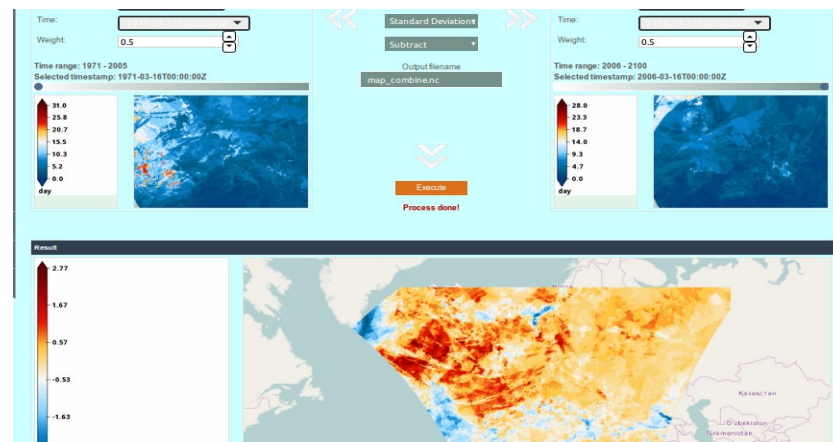




The **compare** tool allows 2 or more datasets to be viewed next to each other; also provides a metadata comparison.

The **combine** tool allows datasets to be combined to produce a new data set.

Login with social media account gives access to personal history and data products.



- The portal is running for evaluation, providing data access, visualisation and transformation;
- Data standards for all data types are in use; CLIPC contributed to these standards for EO data and regional re-analysis, and led on in situ observations and climate change impact indicators;
- Vocabulary identifiers embedded in INSPIRE compliant catalogue records for reliable indexing;
- Dissemination through ESGF (globally federated climate data archive) of ESA CCI data (superseded by ESA CCI portal), in situ observations, regional re-analysis.
- Uncertainty methodology implemented: uncertainty reports in parallel to ensemble based
- Well developed framework for user consultation and agile development of portal;
- CLIPC partners involved in SIS projects (ABC4CDE, SECTEUR, CLIM4ENERGY, SWIICCA, URBAN SIS) and in CP4CDS, C3S\_23a;

# Further Work

- Sustainable framework for maintenance and extension of data standards – spanning operational services and research communities;
- Publication through ESGF of observations and indicators;

## Infrastructure Needs

- Research Infrastructure for climate data;
- Research Infrastructure for climate impact data;

# Research Needs

- Maintenance and extension of uncertainty framework; unification of IPCC and observational frameworks (translation and/or convergence?);
- Treatment of bias and unstructured ensembles;
- Flexible architecture to allow adaptation of interfaces to user needs (creating new portals on a stable platform);
- Deep meta-data standards (such as WCRP CMIP and WMO GRIB protocols) for climate service data;
- Perception of climate change risks and uncertainties by climate policy actors;

# Conclusions

- **The CLIPC portal** provides a rich data viewing and processing portal built on a scalable data service infrastructure;
- **Conflicting requirements** for the user interface lead to separate viewers for (1) climate science data (time series of gridded data from models and observations) and (2) climate change impact indicators (e.g. flood risk);
- **User engagement and data standards** both played important roles in promoting communication among the many science and technology specialities;

Final evaluation workshop: October 20<sup>th</sup>, Brussels.  
See <http://tinyurl.com/CLIPCworkshop>  
Or: see “News” section of [www.clipc.eu](http://www.clipc.eu)



# THANK YOU!

## Harmonised services through user engagement and vocabularies

Vocabularies for data description and reference: a comprehensive suite of vocabularies.

Data Services

Synthesis and harmonisation

Vocabularies  
SKOS

Climate Impact Indicators

Visualisation and processing

User engagement

User engagement ensuring well integrated services

## Objectives

- Harmonised Data Access
- Harmonised Data
- Systematic generation of climate impact indicators
- Ranking and Aggregation of impact indicators
- Provision of clear information of data quality
- Visualisation and Manipulation of data
- Convergence with Marine Service
- **Harmonised services**

## **Background**

- Users
- Science
- Technology
- Standards

## **Outcome**

- The CLIPC Portal

# Four aspects of the platform

## Users

Review 50+ FP7 surveys;  
Foci: climate science, impact science,  
boundary work, end user;  
Ongoing conversation.

## Science

- Complex ensembles;
- Addressing bias;
- Assessing and communicating uncertainty.

## Technology

- View, Compare and Combine functions;
- Reliance on standards, reliable meta-data;

## Standards

- File meta-data;
- Vocabularies;
- Catalogue records;
- Uncertainty fact sheet;





**CLIPC: Constructing Europe's Climate Information Portal**  
CLIPC will provide access to climate datasets, and software and information to assess indicators for climate impact.

- Duration: 3 years, start Dec 2013
  - Consortium: 22 Partners
  - Coordination: Martin Jukes, STFC
  - Lead: STFC ([www.stfc.ac.uk](http://www.stfc.ac.uk))
  - Budget: 6 million €
- A “one-stop-shop” platform will provide data and information on climate and climate impacts