Climate Information Portal

Climate Information Platform for Copernicus

CLIPC – exploiting existing solutions

Science & Technology Facilities Council
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technische universität dortmund
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CERFACS
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cmcc Centro euro-Mediterraneo sui Cambiamenti Climatici
FMI
Climate Service Center Germany
Eine Einrichtung des Helmholtz-Zentrums Geesthacht
JOINT RESEARCH CENTRE
Linköping University
magellium
Norwegian Meteorological Institute met.no
University of Reading
SYKE
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UAB
Met Office

www.clipc.eu
ECMWF, March 2015

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 607418

Climate Information Platform for Copernicus

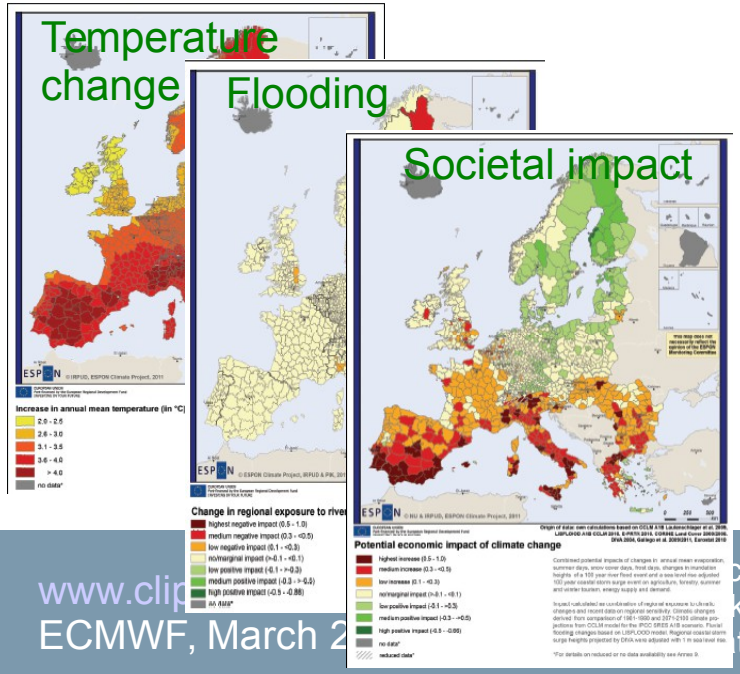
Project started Dec. 2013, first meeting Jan. 2014

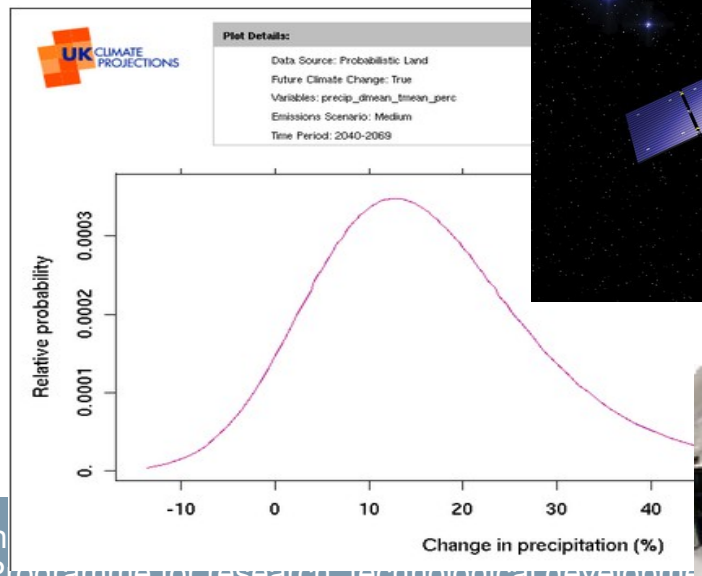
www.clipc.eu

This project has recei
Framework Programm
demonstration under

CLIPC Mission

- CLIPC will provide access to climate information of direct relevance to a wide variety of users, from scientists to policy makers and private sector decision makers;
- The “one-stop-shop” platform will provide data and information on climate and climate impacts, and ensure that the providence of science and policy relevant data products is thoroughly documented;
- Engage with user communities to inform development.





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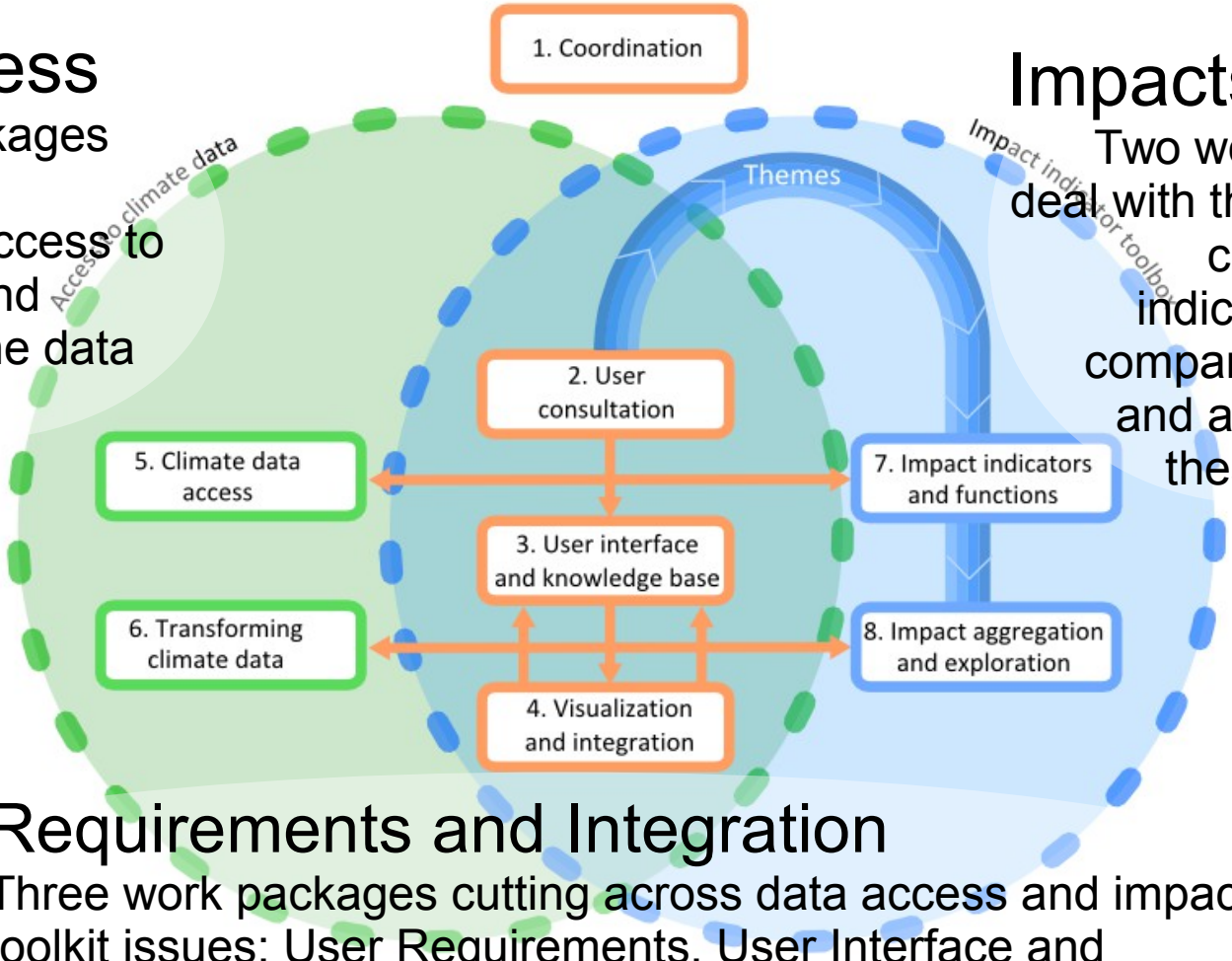
Data access

Two work packages dealing with harmonising access to climate data and harmonising the data itself.



Impacts toolkit

Two work packages deal with the creation of climate impact indicators and the comparison, ranking and aggregation of these indicators.

Requirements and Integration

Three work packages cutting across data access and impacts toolkit issues: User Requirements, User Interface and Knowledge Base, and Visualisation and Integration.

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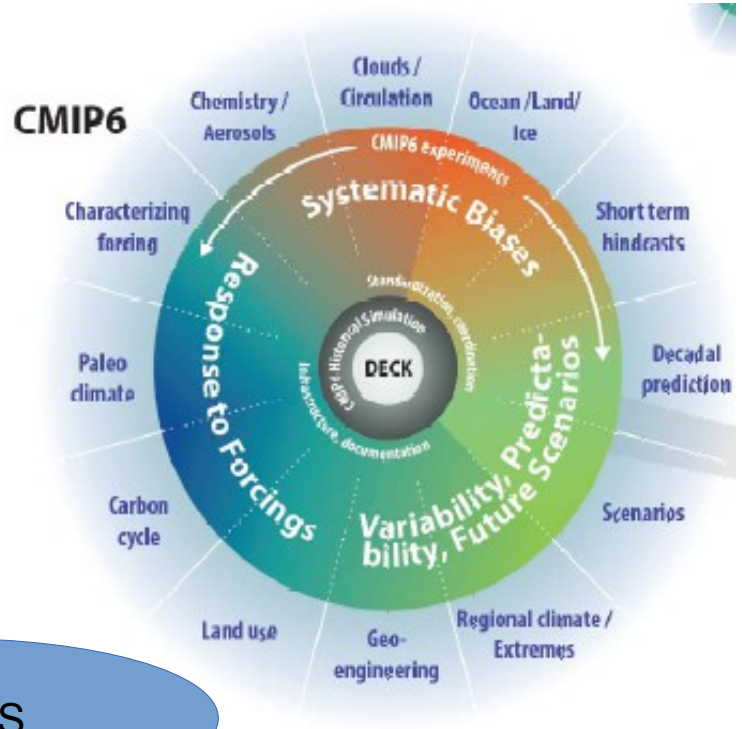
ESA Climate Change Initiative

CMIP6 – transforming climate projections



Global and regional re-analysis

HadOBS

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- Clear user requirements
- Comprehensive IPR policy
- Semantic links between vocabularies
- Structured vocabularies
- Flexible search interfaces
- Flexible data access services
- Data visualisation
- Value added climate data products
- Climate impact indicators
- Comparison, ranking and aggregation of indicators
- Knowledge base of climate information

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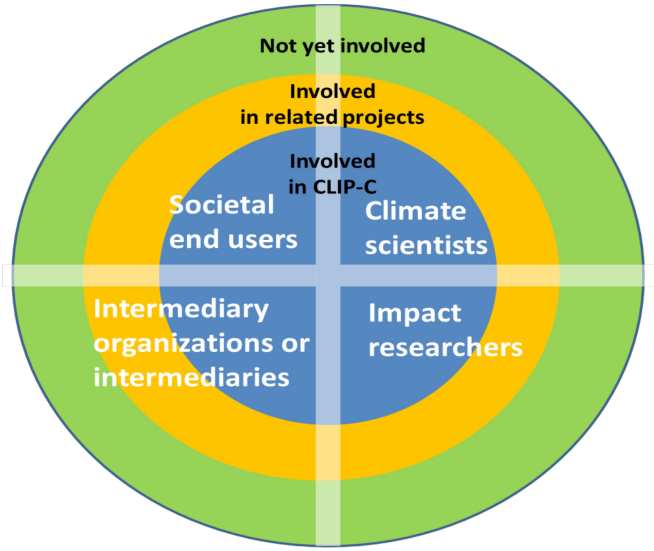
User requirements: adding value

- Review of past and ongoing projects
- Four different user categories
- User interaction strategy defined per priority user category
- First insights in user requirements



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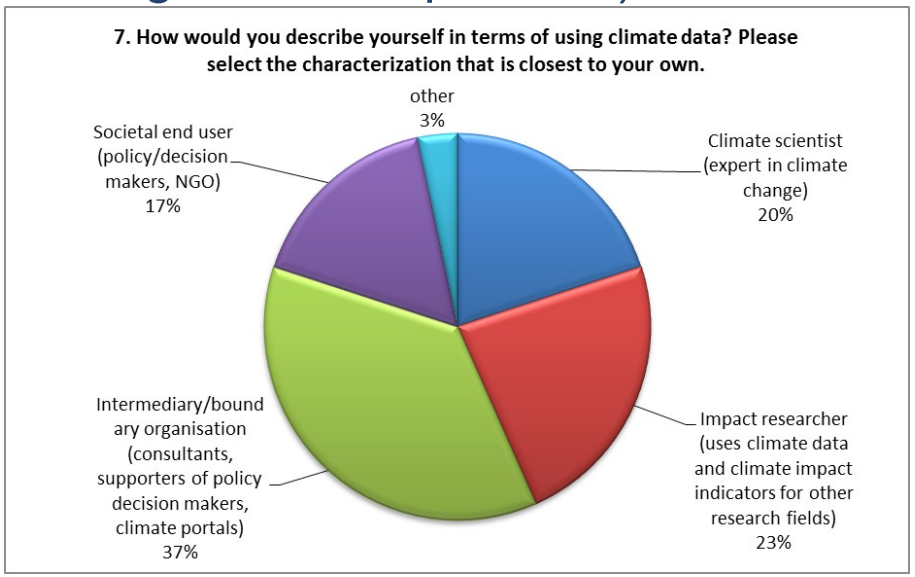
User requirements capture (ongoing)

- Meetings (CLIPC- EEA meeting, May, 2014; CIRCLE2 conference, March, 2014; EIONET Workshop on 'Climate Change Impacts, Vulnerability and Adaptation', 24 June 2014, Copenhagen, Network of European Environmental Protection Agencies, Sept. 2014)

- Database > 500 potential users
- Online survey:
  - 73 pos. responses
  - 53 will participate
- Qualitative interviews
- User workshop (Feb 3rd, 2015)



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Intellectual Property Rights Management

- The Copernicus enabling legislation is clear that Copernicus data will be free at the point of access (at least to designated users …..).
- Controls on data access may be implemented to monitor usage levels, manage resources, enable data recall, or gain agreement to term of use;
- In a distributed system, the costs of such access controls in terms of reduced flexibility are substantial;
- To avoid the requirement for access controls, need alternative approaches to usage monitoring, resource management and licensing.

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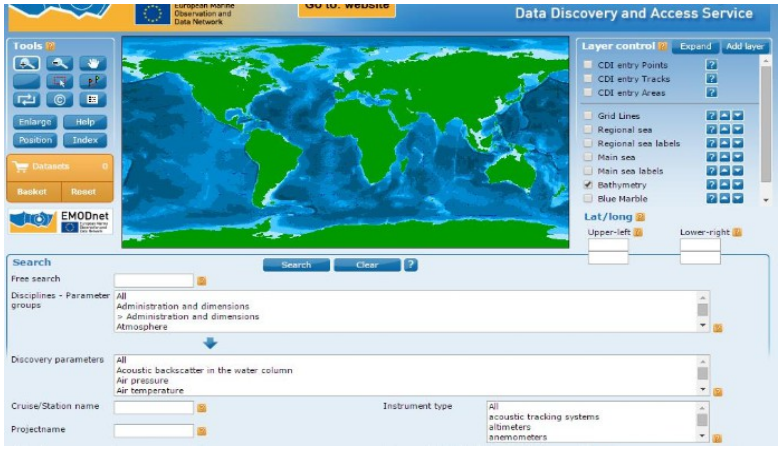
Mappings between terms and providing flexible search

Simple Knowledge Organization System (SKOS)
A W3C protocol for defining concepts and relationships between concepts.

W3C Semantic Web

EMODnet is developing a search interface which exploits SKOS semantics.



CLIPC approach
- Build on work done for EMODnet
- Tools for managing mappings
- Enter mappings into SKOS

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Vocabularies: contrasting examples

European Space Agency (ESA) Climate Change Initiative (CCI)

- Programme (ESA-CCI)
- CCI Project (ECV)
- Data Type (Variable name)
- Product (variations in scientific and technical process)
- Additional Seg. (extendable, structured term)
- Indicative time
- Data specification version, file version

CLIPC approach

- Use/extend existing frameworks
- New set of vocabularies for indicators
- Mappings between frameworks
- Support GRIB to NetCDF mappings

World Climate Research Programme (WCRP) Coupled Model Intercomparison Project (CMIP)

- Activity/Institute/Model/Experiment/Ensemble
- Realm/Variable name
- Frequency/Table
- Start and end dates

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Advanced data services: case study

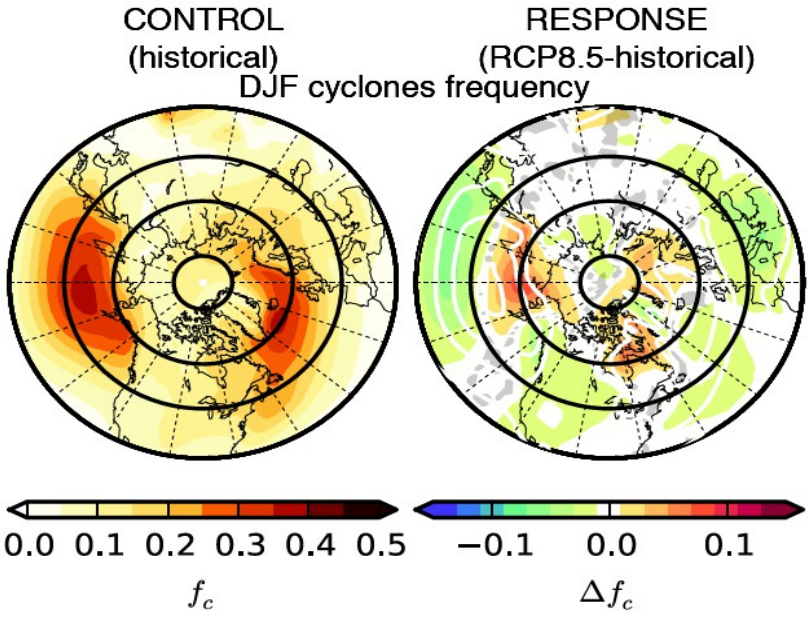
ExArch

Laliberte et al, submitted to BAMS

Complex query:
Six-hourly winds, temperature, specific humidity, sea-level pressure for DJF of 1981-1999 (experiment historical) and 2081-2099 (experiments rcp45, rcp85), from all models which provide this data.

Verify file metadata matches catalogue;

Access data required (spatial and temporal subsets)



CLIPC approach
•Expand range of datasets in ESGF

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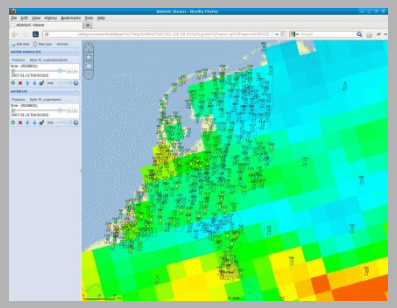
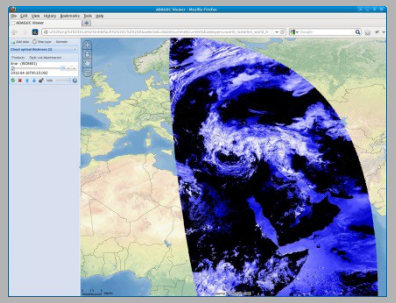
Climate Information Platform for Copernicus

Observations

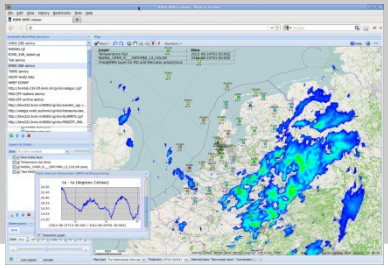


Radar

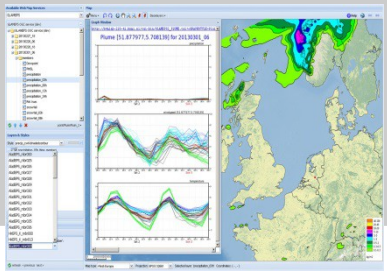
Satellite



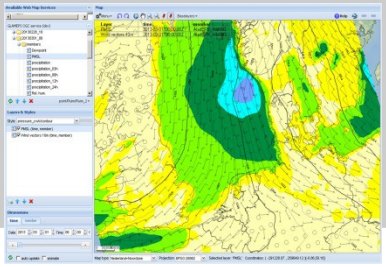
Timeseries



Ensembles



Meteorology



Visualisation framework based on KNMI AGUDUC service.

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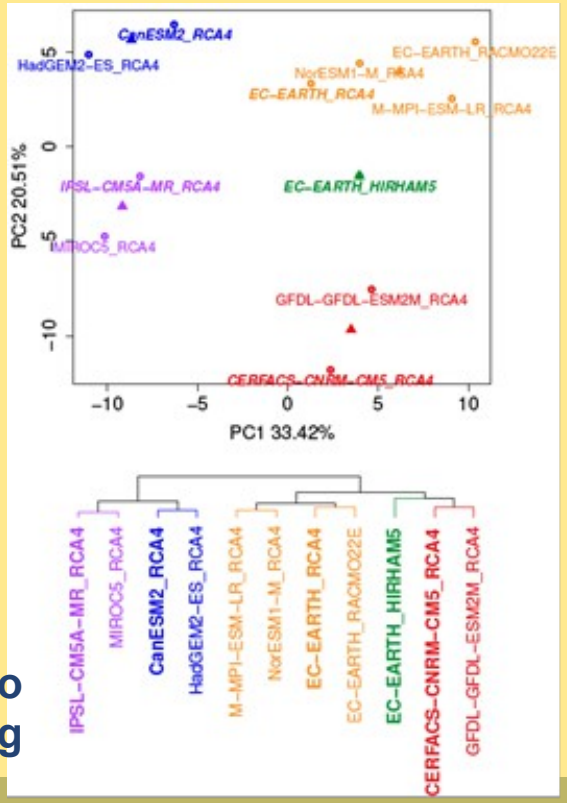
Bias-Correction Intercomparison Project
Multi-project initiative to develope authoritative bias-adjusted datasets

- Working at three spatial resolutions:
  global (GCM) scale ~100-200 km
  CORDEX EUR-44 ~50 km
  CORDEX EUR-11 ~12 km

CLIPC is addressing the demand for harmonised data through bias adjustment and reduced ensembles



Generation of reduced ensembles to support impacts modelling

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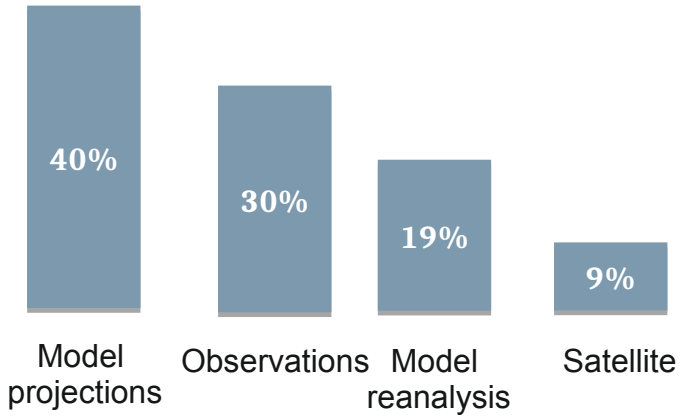
Indicator database

Description of methodological base	Nr
Transformation of a single climate variable	33
Metric combining several climate variables	12
Metric aggregating climate & non-climate data	12
Metric from bio-physical data other than climate	9
Output of biophysical or economic model.	1

- 81 entries to date;
- Tier 3 indicators hard to capture;
- Climate statistics well covered (but more work on the urban theme).



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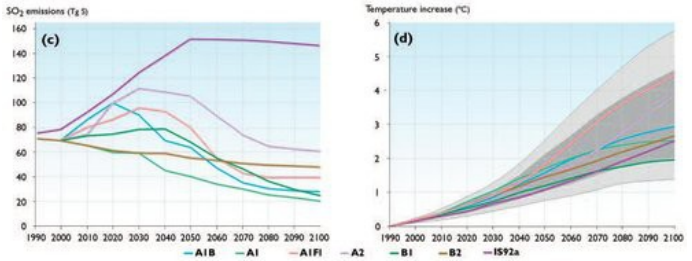
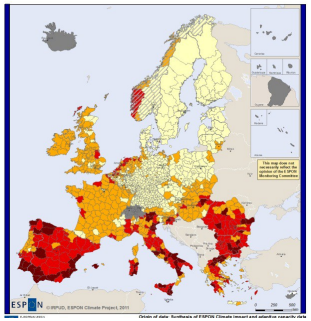
Scenario-based exploration tools

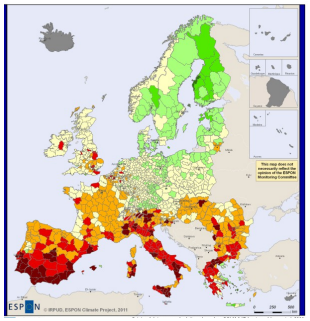
Interactive tools that allow users to:

- explore alternative scenarios of climate change impacts.
- compare, rank or aggregate impact indicators.

The tools will exploit the processing service element of the KNMI AGUDUC portal, building on work done in IS-ENES and ExArch.







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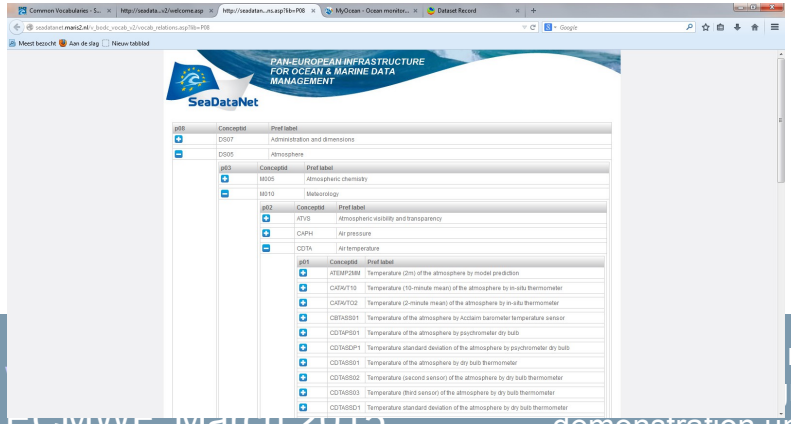
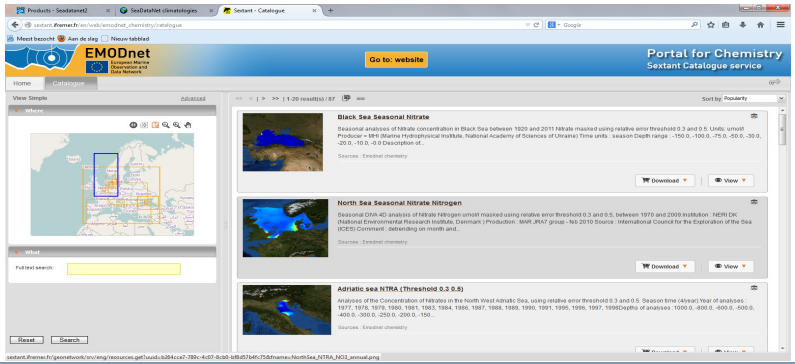
Knowledge base

- Catalogue (Scientific information) –- harvested INSPIRE & ISO11195 compliant metadata and Digital Object Identifiers for citation;
- Commentary –- from the user community via CHARMe; including quantitative quality information;
- Technical documentation – e.g. Common Information Model, ngEO;
- Glossary of terminology – searchable, structured vocabularies using “Simple Knowledge Organization System” (following SeaDataNet);
- Literature – searchable registry of grey literature.





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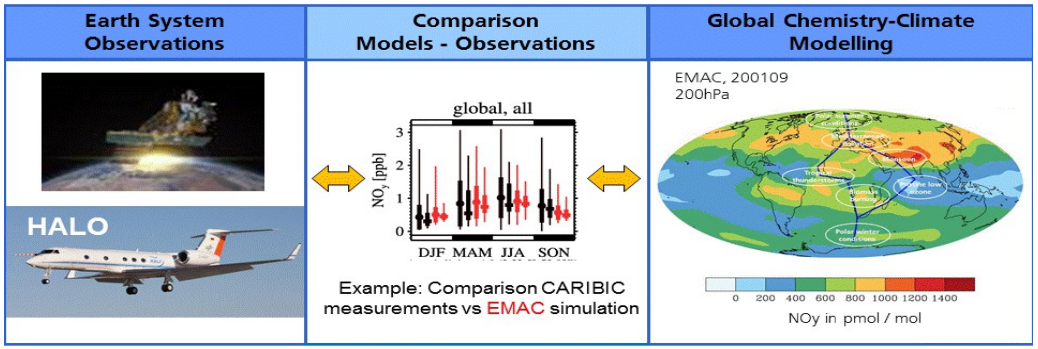
ESMVAL: Supporting evaluation of climate models and climate projections

EMBRACE

Improved Process Understanding and Climate Projections through comparisons of models and observations



Earth System Model Validation (ESMVal) Project

DLR

Lead: Veronika Eyring

ESMVAL objective: run a comprehensive suite of evaluation diagnostics on the CMIP6 projections at regular intervals as the archive grows.

CLIPC approach
- Support data standards specification;
- Support data replication (with IS-ENES2);

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THANK YOU!