Climate Change

From MAGIC to reality:
Facilitating access to sector-specific climate projection information

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EMS
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Barcelona Supercomputing Center
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WORDS

Lisle Letters
MACAULAY
THE DEATH OF KINGS
BIG CHIEF ELIZABETH
IRELAND
Gettysburg July 1
THE HOUSE OF TUDOR
Master of Bengal
RAJIV GANDHI
PAVILIONS OF THE HEART
AUSCHWITZ
LAURENCE REES

Source: Guardian

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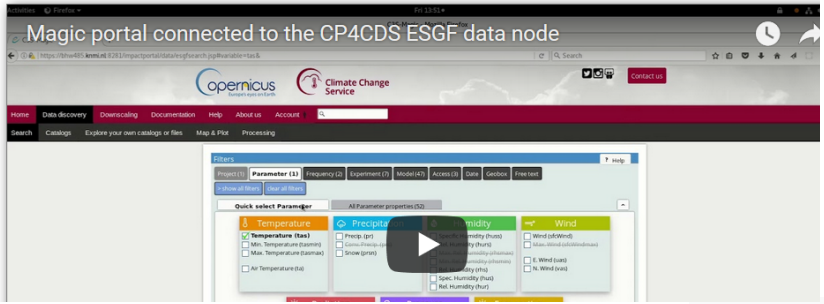
C3S-MAGIC portal

C3S-Magic (C3S 34a Lot2)

The Metrics and Access to Global Indices for Climate Projections (MAGIC) portal provides the functions as requested in the C3S tender "Global Climate Projections: Data Access, product generation and impact of front-line developments" (GCP). It provides solutions that allow to assess GCM projections using well-established metrics, and manipulation tools to allow tailoring the outputs to the users' needs.

Currently it is a demonstration version of the portal, demonstrating the functionality we have prepared up to June 2018.

Data Discovery



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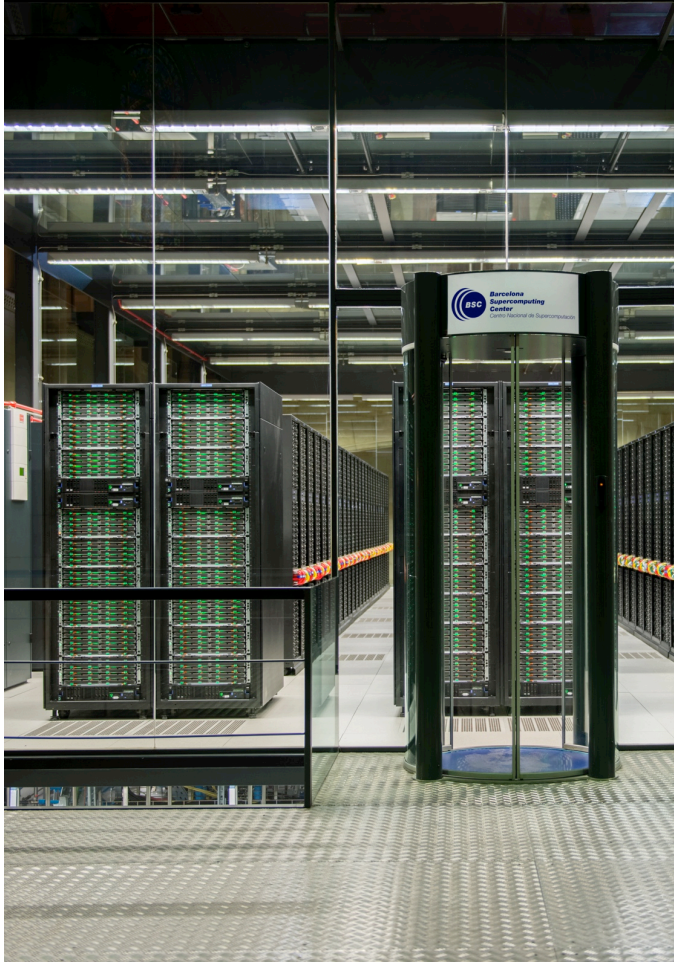
Bringing calculation to the data

The platform implements High Performance Computing and Big Data techniques

Uses developed ESMVal Tool recipes



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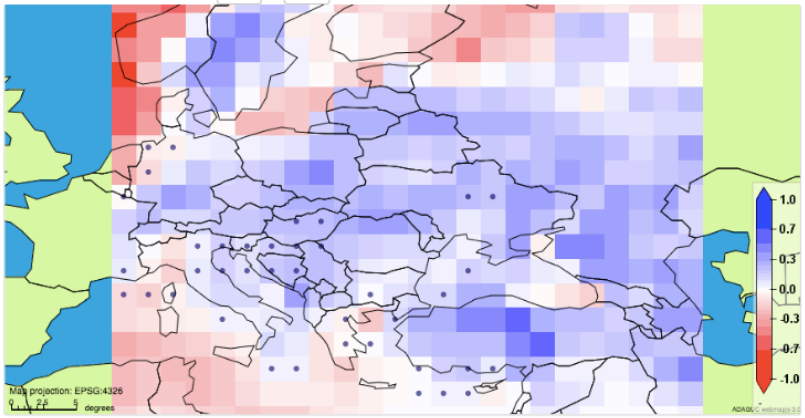
Precipitation quantile bias

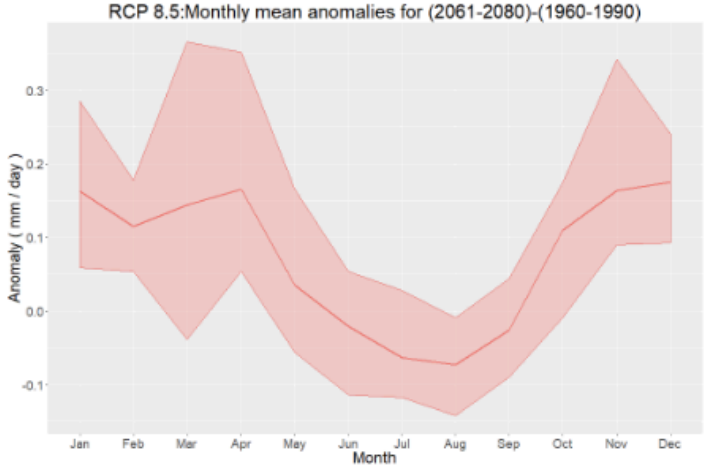
Ensemble anomaly plots

Maps with percentage of models agreeing on the sign of (sub-)ensemble-mean anomalies
Stippling (% of members agreeing):

50 %



Generic multi-model products



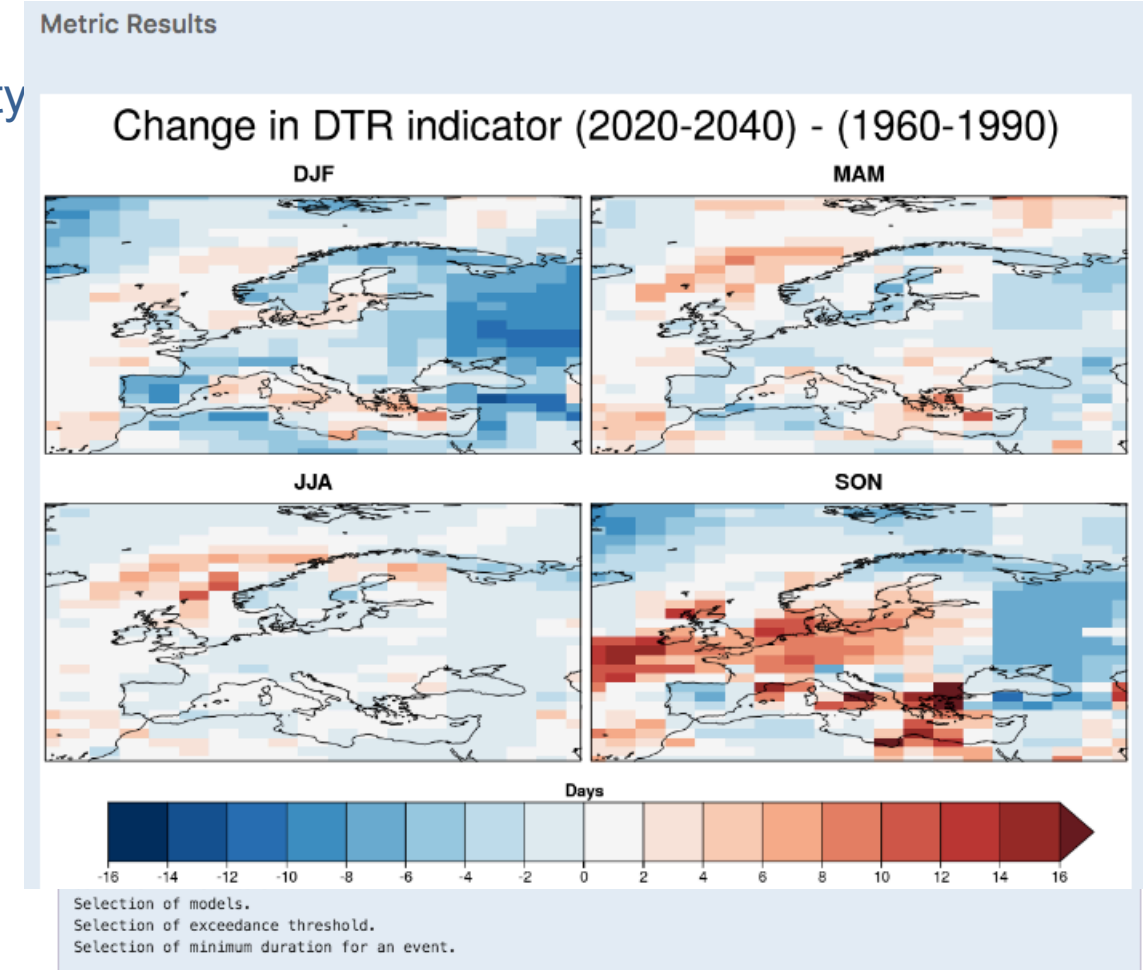
Tools to compute the ensemble mean anomaly and the ensemble variance and agreement and plot the results as maps and time series.

Energy sector: demand and supply

Demand - based on temp. variability

- Extreme spells
- Diurnal temperature indicator

Supply – wind capacity factor



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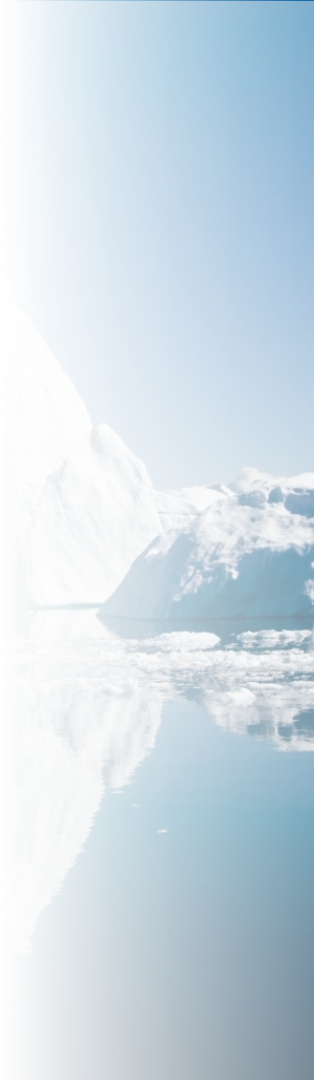
Costal areas: storm surge estimator

Estimates surge height from anomalies in mean sea level pressure and wind

Simple and fast

Intended to quickly browse large data volumes and identify "interesting" cases



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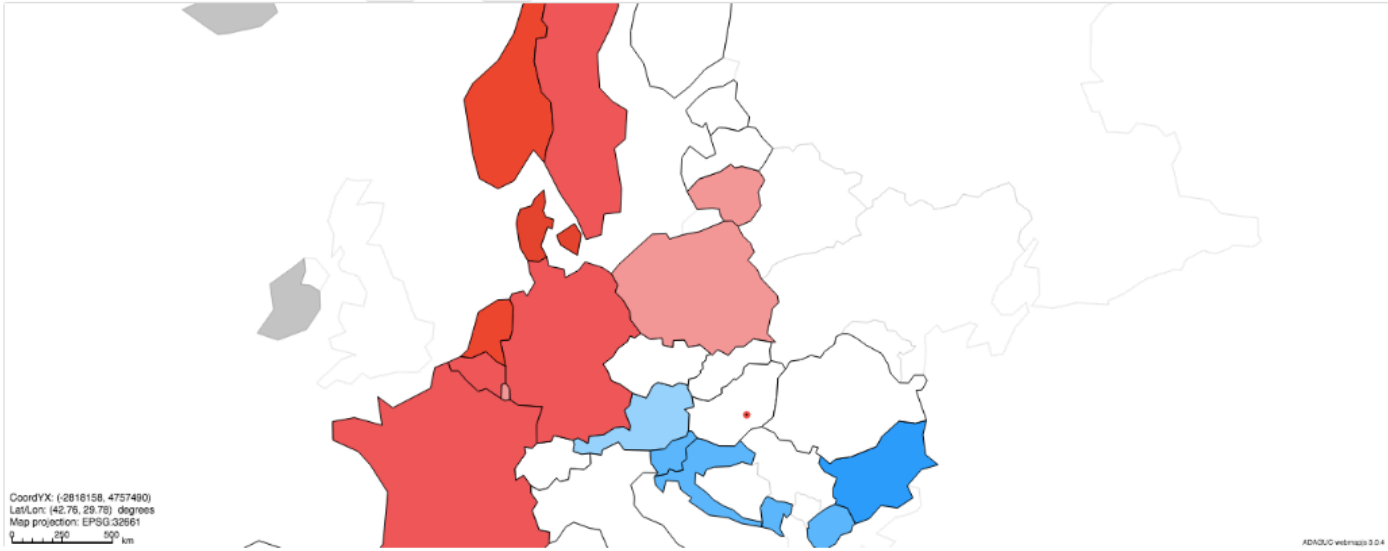
The changing risks between the recent past and the future are of great interest to the insurance industry because even slight changes in climate characteristics can translate into large impacts on risk distribution/management and expected losses. Comprehensive risk indices such as the ACRI, which integrates changes in frequency and magnitude of key climate indicators and elements of hazard, exposure and vulnerability, are crucial for decision making processes.

Year: 1960

Standard deviations:

- 2 or more
- 1.5 till 2.0
- 1.0 till 1.5
- 0.5 till 1.0
- 0.25 till 0.5
- -0.25 till 0.25
- -0.25 till -0.5
- -0.5 till -1.0
- -1.0 till -1.5
- -1.5 till -2.0
- -2 or more



Checkout our video about actuaries.

Actuaries Climate Index

Model:

IPSL

Metrics

tx90p

Scenario:

rcp26 rcp85

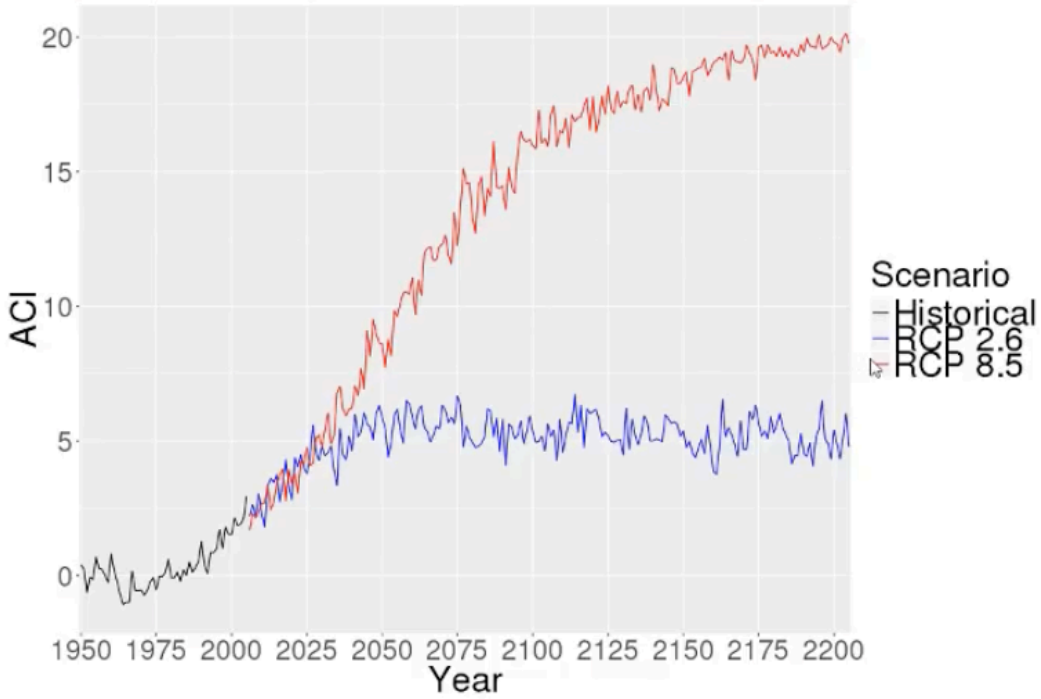
Base range:

1950 1960 1990 2005

Plot year:

2006

Plot



Tool to compute extreme indices relevant to the insurance industry. These indices are based on the ETCCDI indices, and there are currently 5 available for extreme heati (tx90p), cold (tx10p), wind (wx), drought(cdd) and flooding (rx5day). The individual indices can be combined into a single index with or without weightings for each component. This combined index is roughly analagous to the Actuaries Climate Risk Index.

```
Description of user-changeable settings on webpage':'
Selection of period for defining the baseline thresholds (1960-1990 by default).
Selection of indice.
Selection of period for projections.
Selection of RCP scenario.
Selection of longitudes and latitudes.
Selection of models.
```

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Dataset: WP7_BSC_Energy

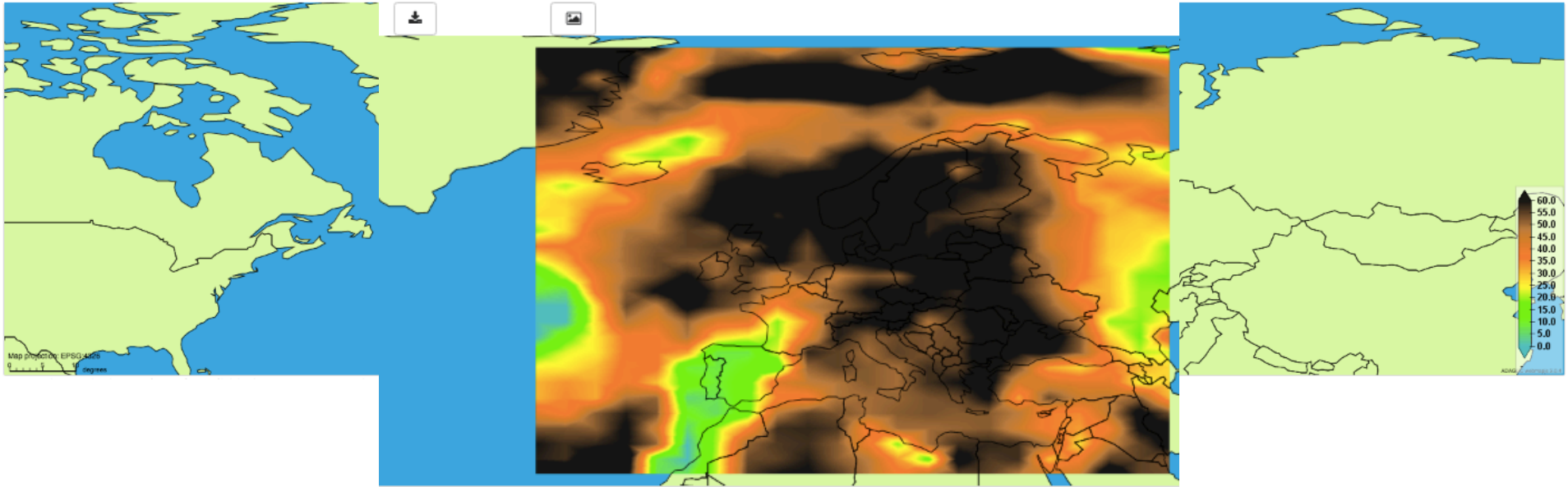
Layer: index from tasmax_extreme_spell_duration_IPSL-CM5A-LR_rcp85_2020-01-01_2040-12-01.nc (5 layers)

Style: tasmax-extreme-spell-1/bilinear

Projection: World Lat/Lon

Time:
Timevalue (UTC)

2035-05-31T23:00:00Z (16/21)



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Collaboration with users

- Private sector
- Water and DRR Consultancy
- Insurance sector
- Energy sector
- Scientists
- Water utility

Everyone welcome to evaluate the platform!

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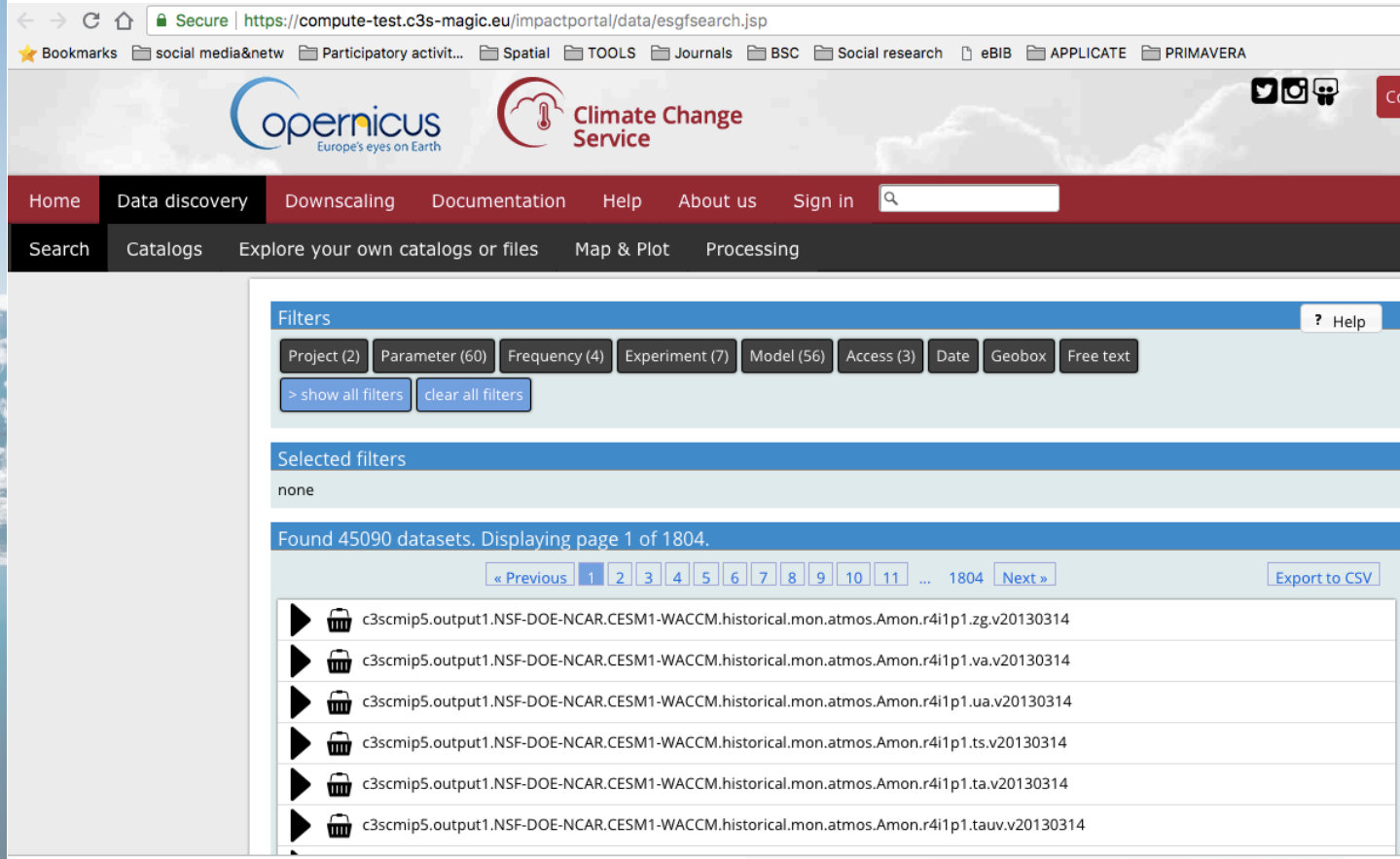
Collaboration with other C3S



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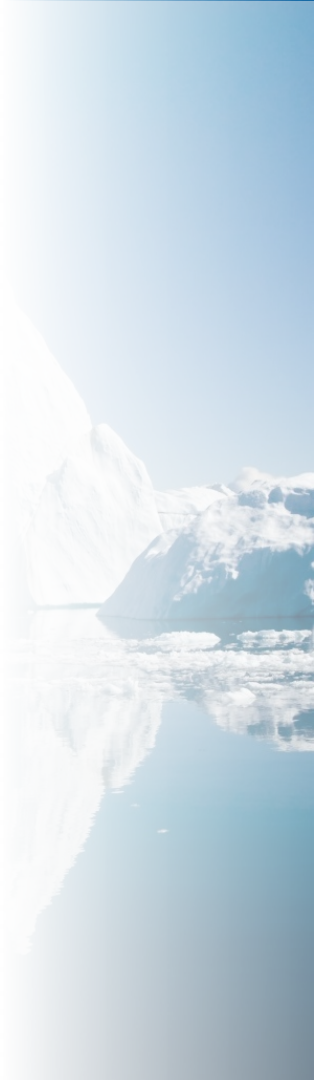

portal.c3s-magic.eu

Thank you for your attention!

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