Climate Change

Climate services

What they are and how you use them

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Operational definition of climate service

A **Climate Service** is the provision of climate information to assist decision-making. The service must respond to user needs, must be based on scientifically credible information and expertise, and requires appropriate engagement between the users and providers.

https://www.climateurope.eu/

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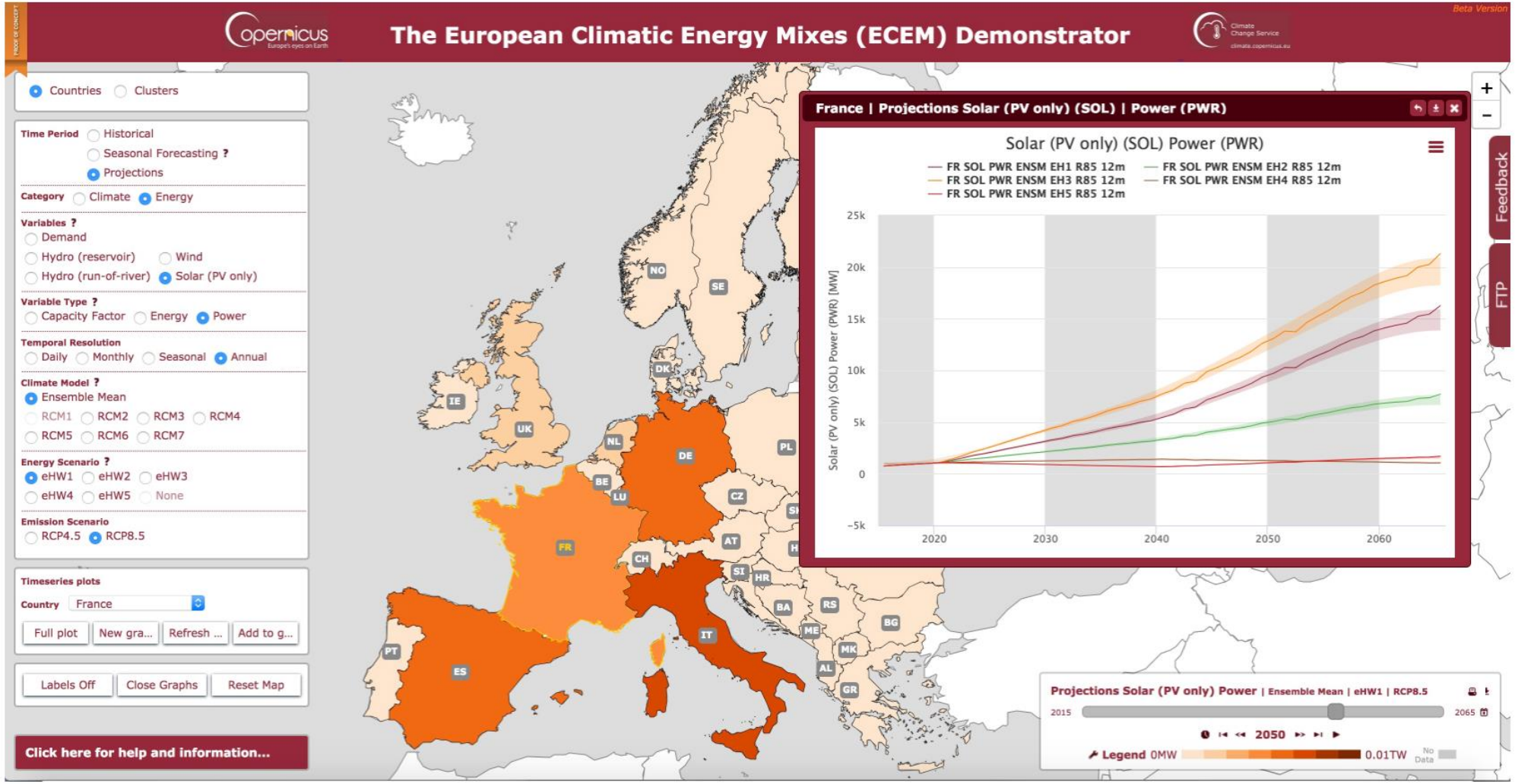
A usable tool for decision-making



An example of how solar power scenarios for the next decades are represented within the C3S Energy pre-operational Demonstrator.

A role for the private sector

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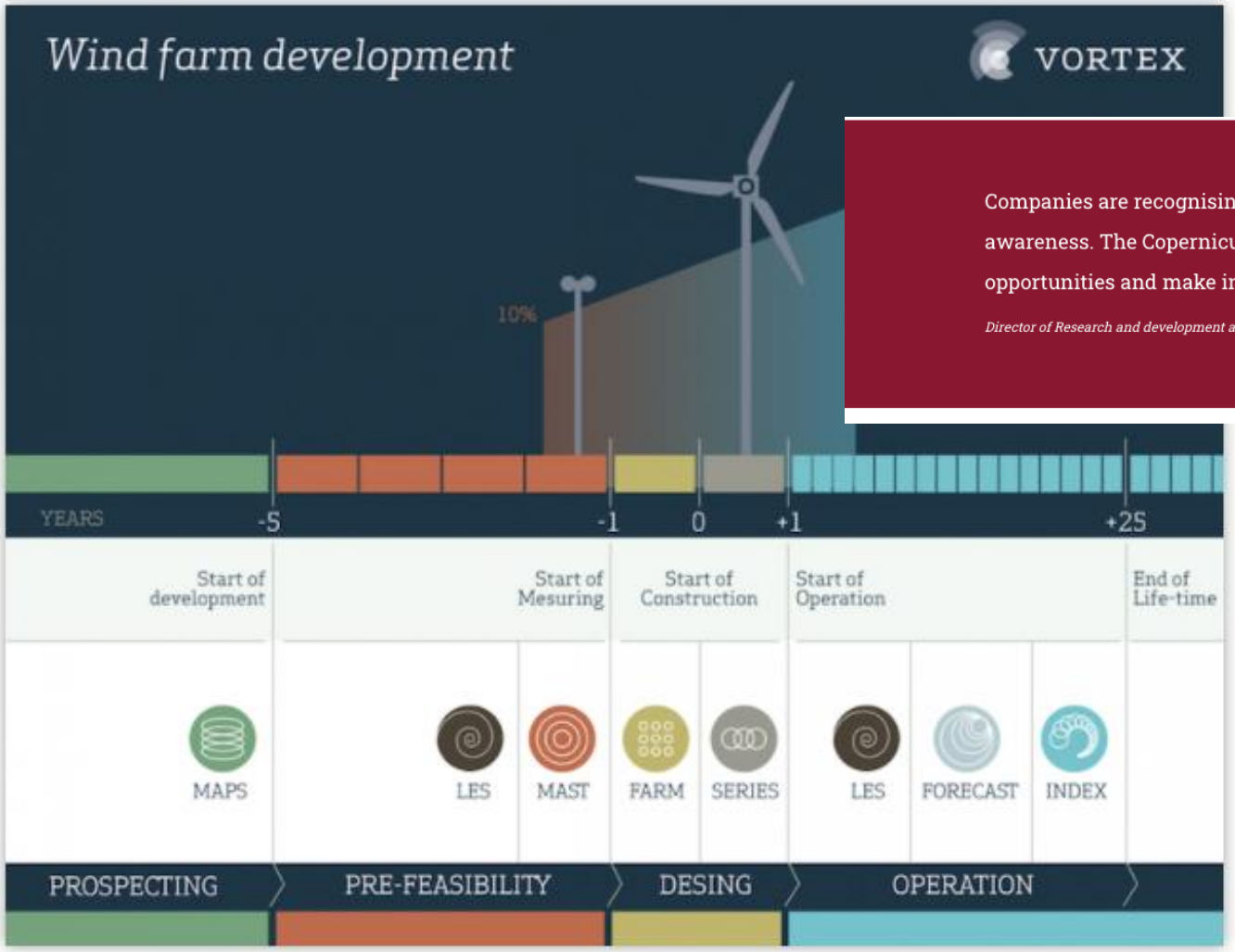

Companies are recognising that climate change could impact their revenue but we need to further increase awareness. The Copernicus Climate Change Service enables us to help these companies identify the risks and opportunities and make informed business decisions about existing or future wind energy projects *–Gil Lizcano, Director of Research and development at Vortex*

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How did it start?

2007 IPCC AR4 and a shift in priorities

GFCS GLOBAL FRAMEWORK FOR CLIMATE SERVICES

“ [..] Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level

Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations.

It is likely that there has been significant anthropogenic warming over the past 50 years averaged over each continent (except Antarctica) (Figure SPM.4). {2.4} [..]”

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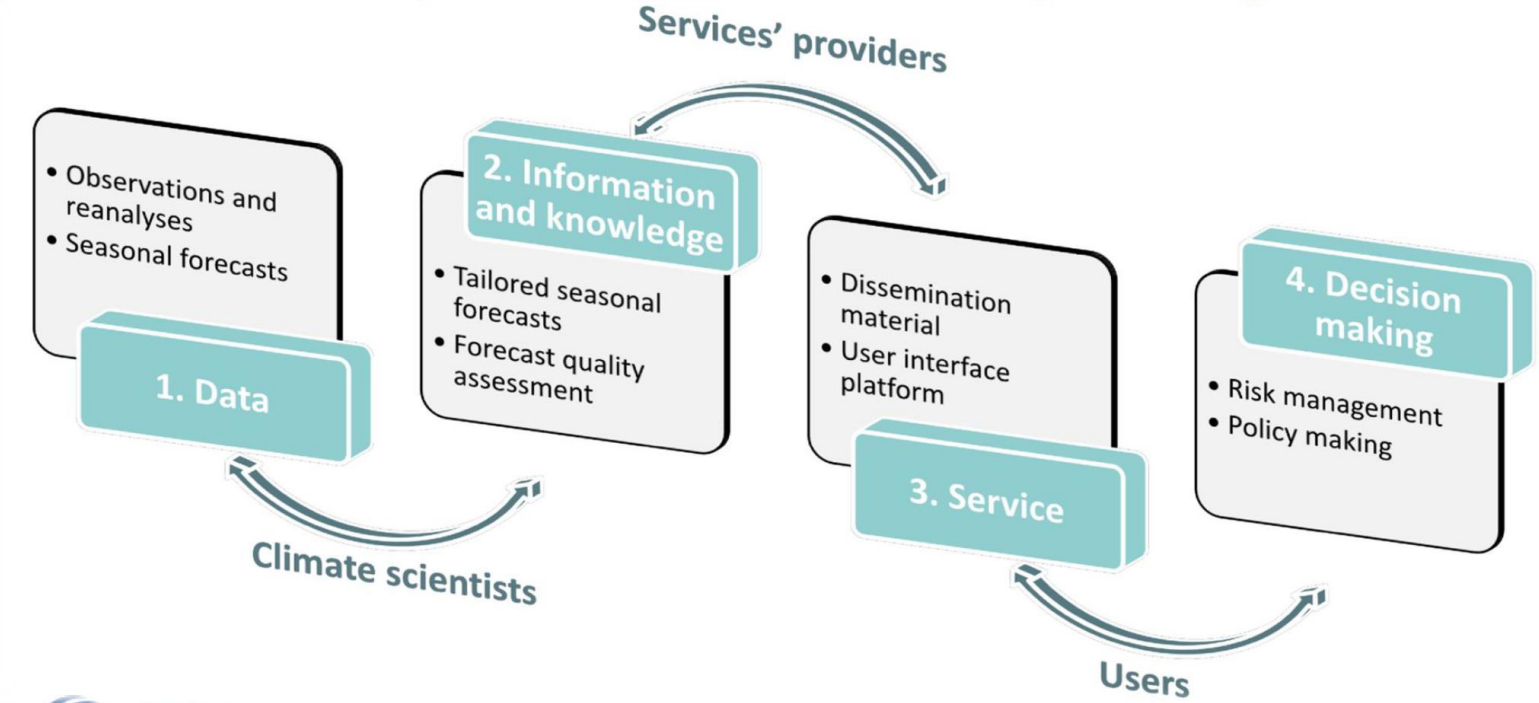
The research-provider-service paradigm

A service-oriented research agenda requires the traditional chain "research development-operations-service provision" to move both ways so that not only information quality is demonstrated, but user requirements are adequately addressed and value illustrate. This leaves a space for transdisciplinary research. This chain should not preclude basic research to take place though.



Barcelona Supercomputing Center
Centro Nacional de Supercomputación

Courtesy of Francisco Doblas-Reyes (ECMWF annual seminar 2019)

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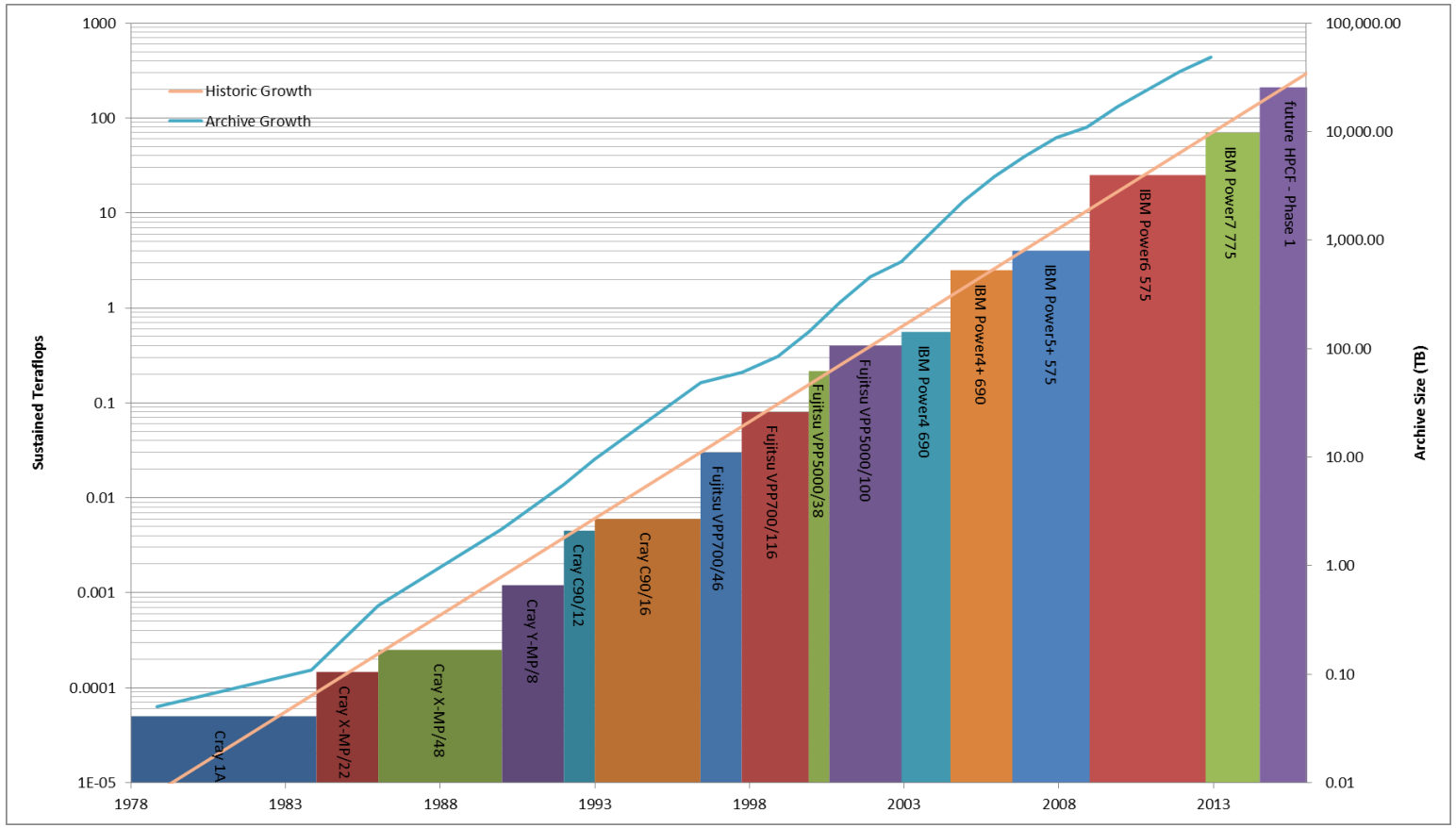
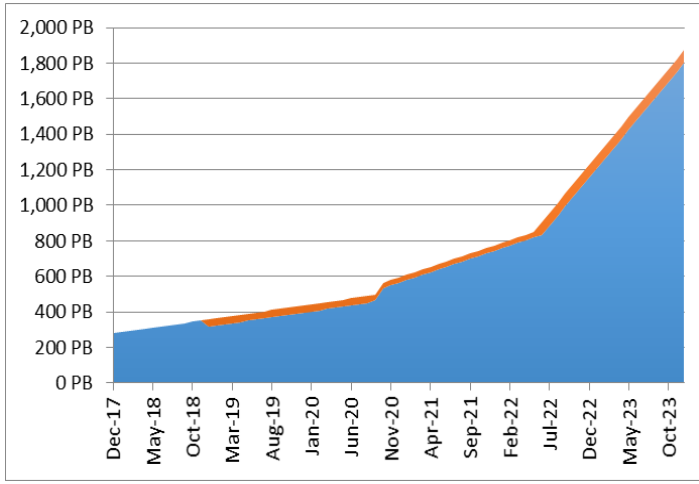
VOLUME: MOORE'S LAW IN ACTION



- In 1995, the archive was growing annually by 14 TB
- In 2012, the archive was growing daily by 28 TB
- In early 2018, the daily growth was 200 TB



- At the end of 2015, the archive held about 140 PB of data
- The current figure is about **250 PB** (Beginning 2018)

C3S portfolio

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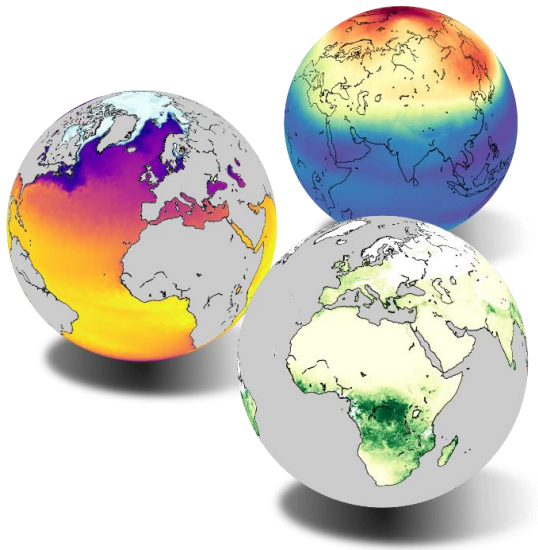
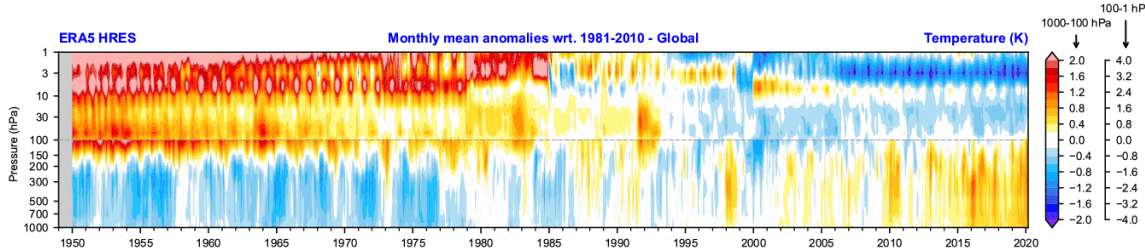
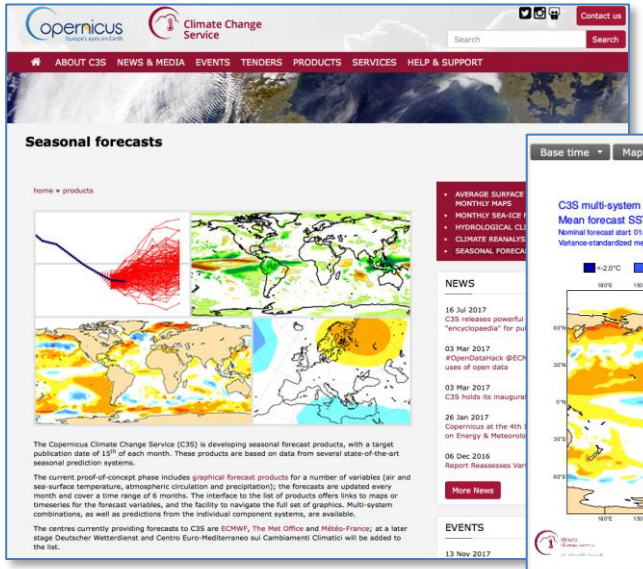
Observations, climate data records, ECVs and climate

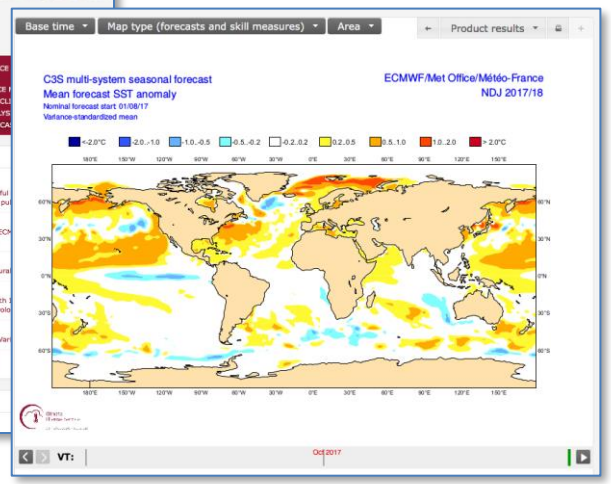


Global reanalyses



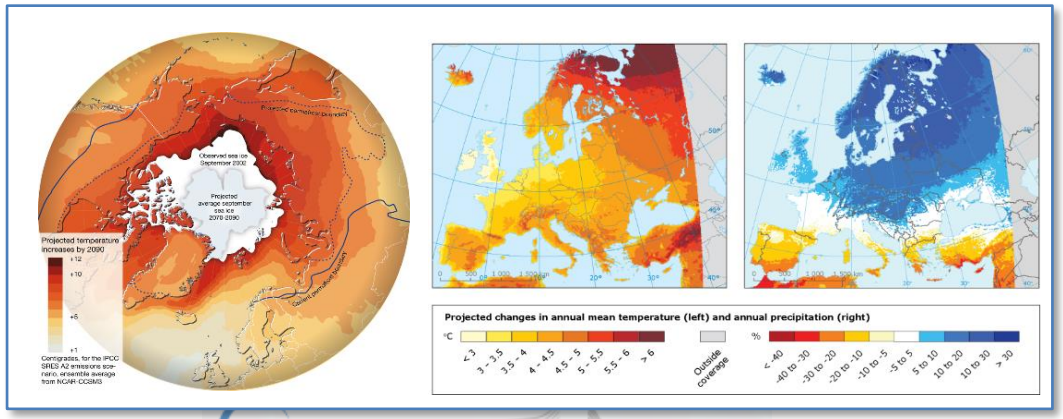
Seasonal forecast data and products





Climate model simulations

Sectoral climate impact indicators



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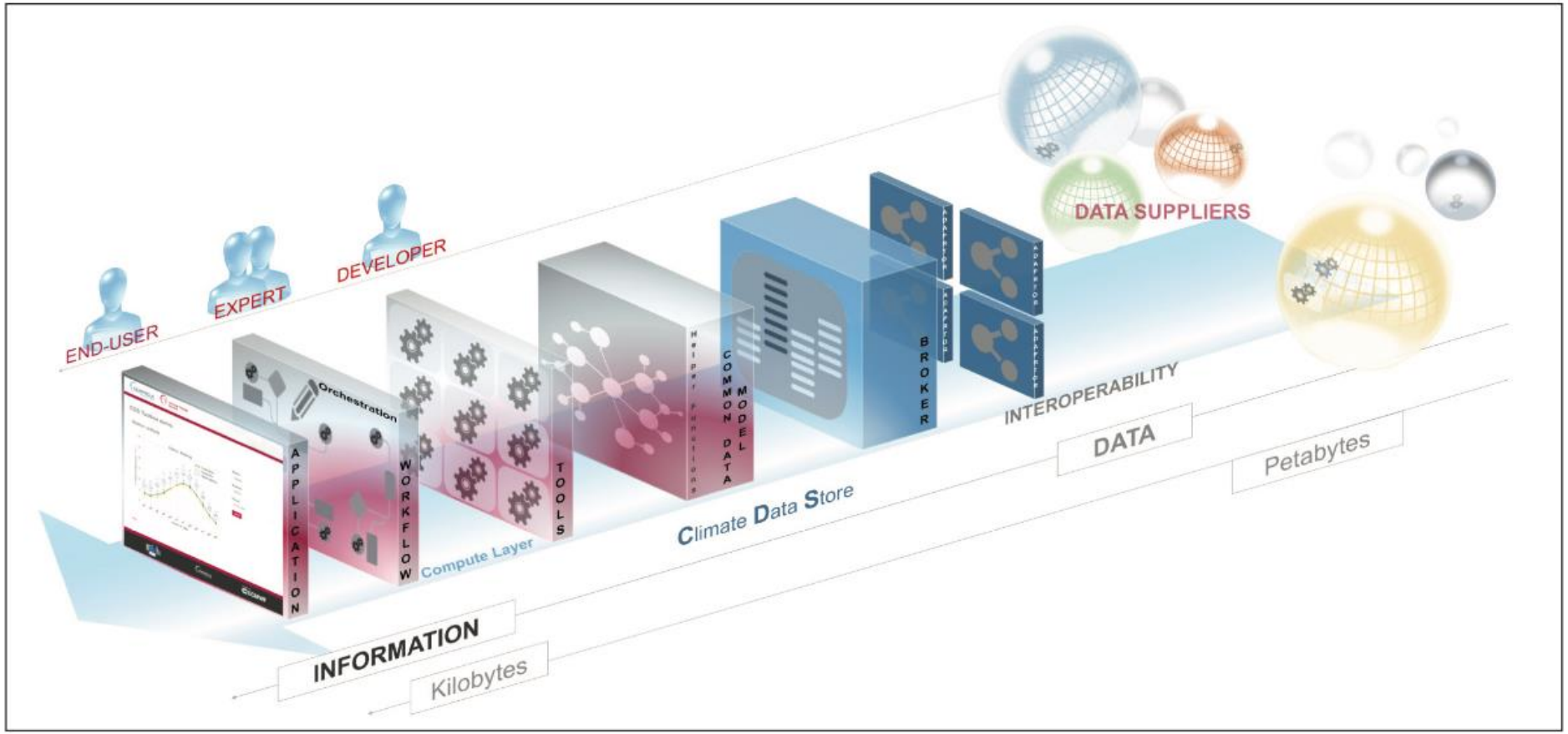
BRINGING THE USERS TO THE DATA: THE ADVENT OF CLOUD COMPUTING



As part of Copernicus, ECMWF is developing the "Climate Data Store", which is a Cloud-based service (SaaS) allowing solution to work directly on a number of (massive) datasets, stored at ECMWF and in a few other places in Europe (such as CMIP climate projections).
http://cds.climate.copernicus.eu

The Climate Data Store

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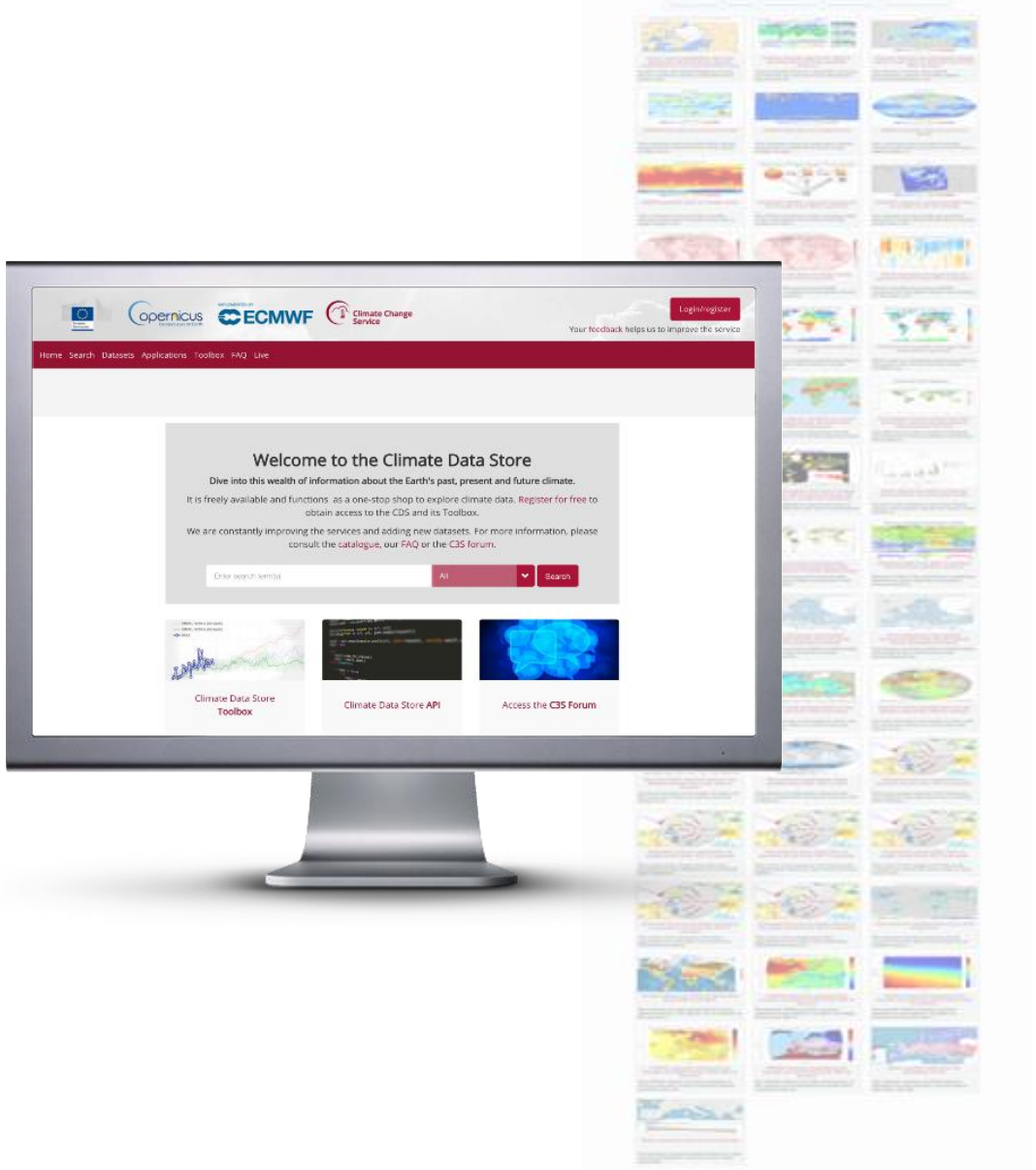

- Registered users: ~ **45 000**
  (it was **35 400 at the end of Feb)**
- TB/day: **~50** (30-60)
- Datasets: **65**

Status at end of May 2020

What are the objectives of the SIS?

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Agriculture


Insurance


Biodiversity


Shipping


Coastal areas


Storm surges


Energy


Tourism


Health


Water management


Infrastructure

USERS

CLIMATE DATA STORE

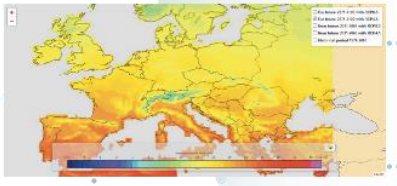
Benchmarks of good practice

Quality assured data

Tools

PRACTICAL EXAMPLES

Documentation



Tools and applications

Case studies


Sector relevant data

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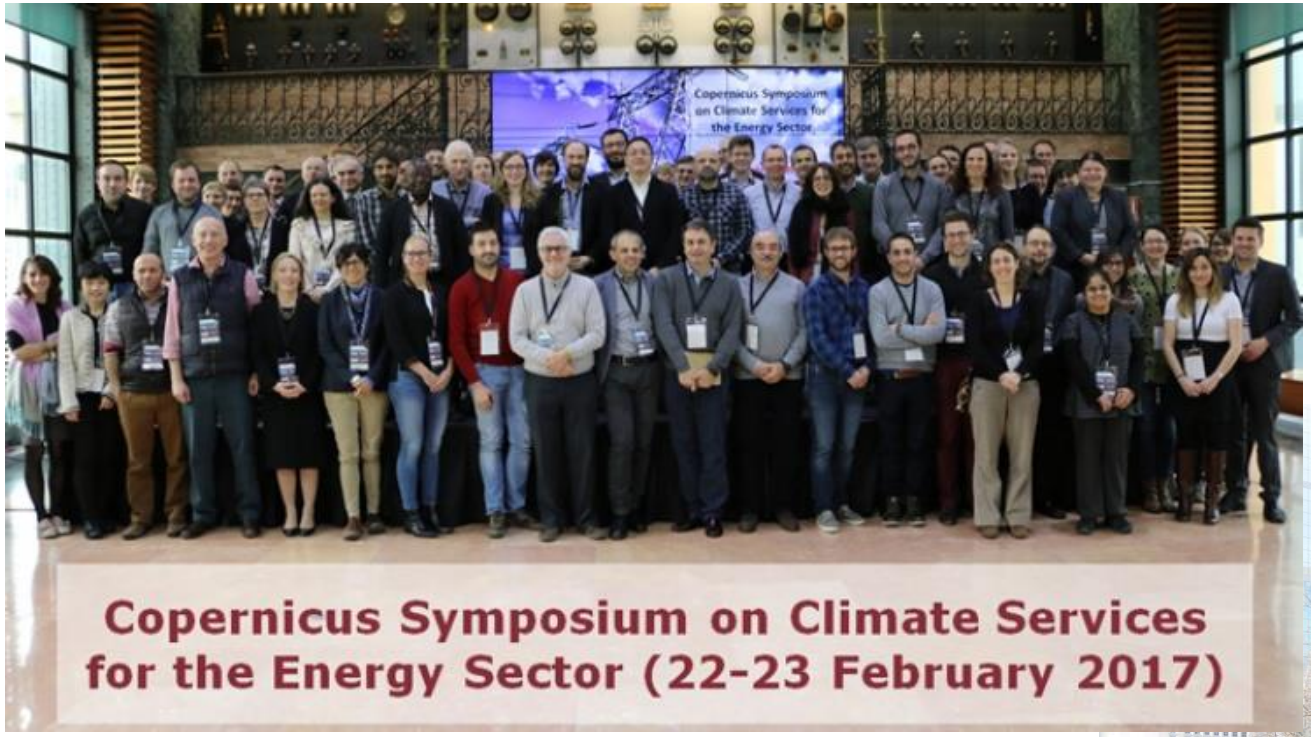
Collecting to user requirements



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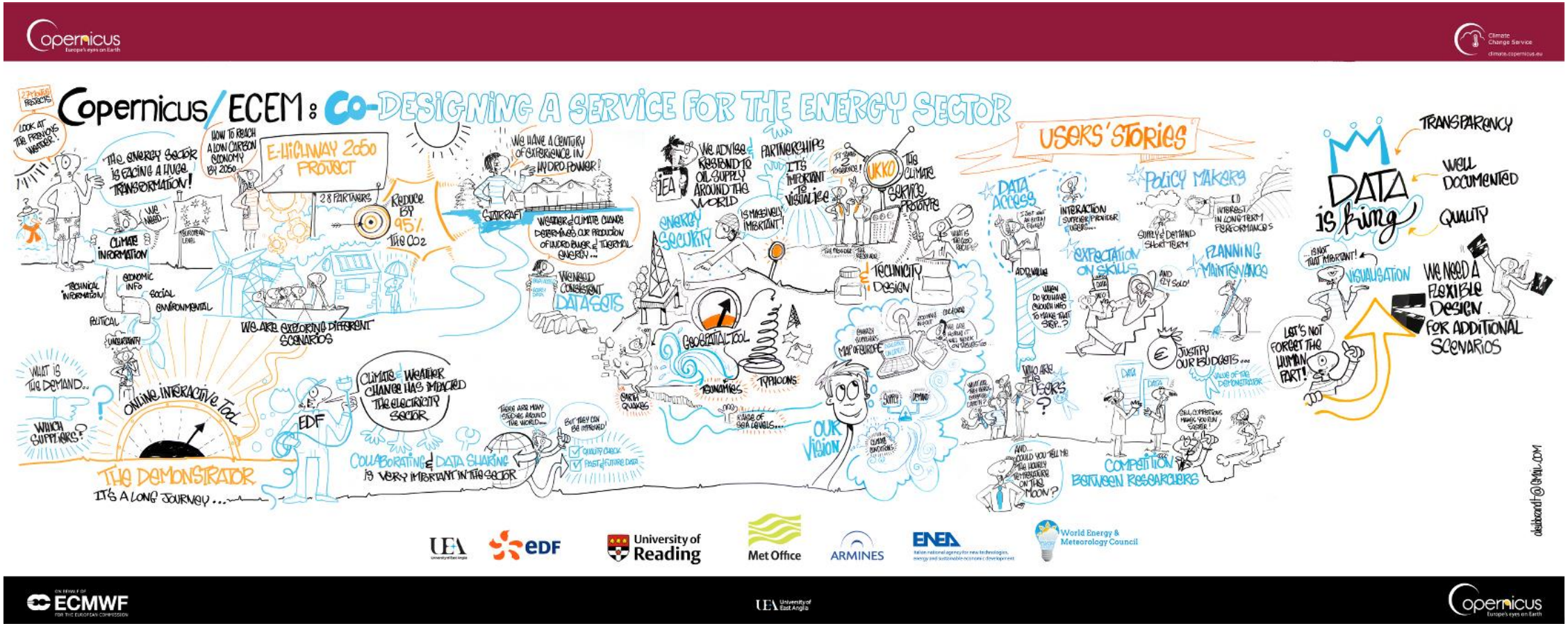
Documenting to user requirements



University of East Anglia

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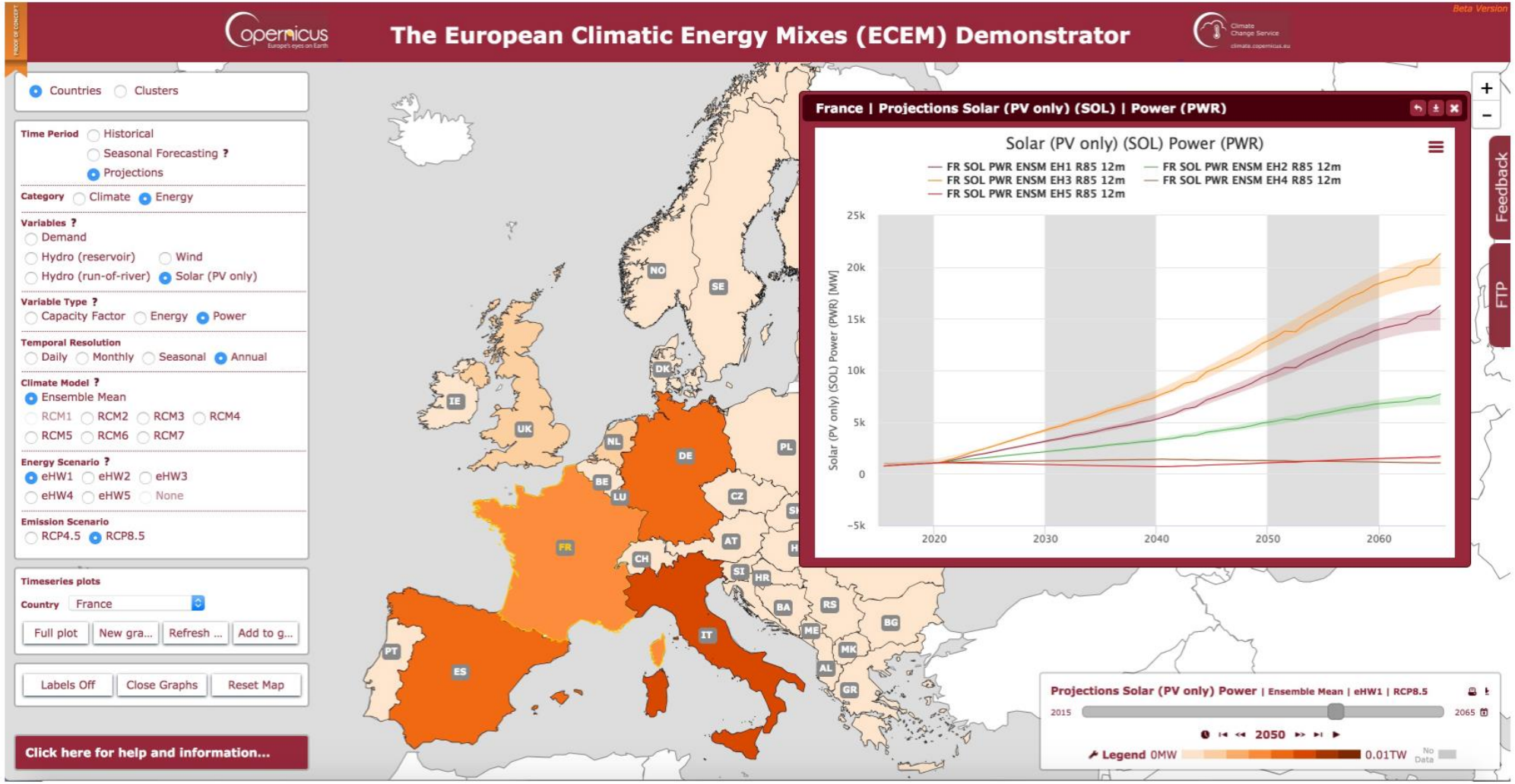

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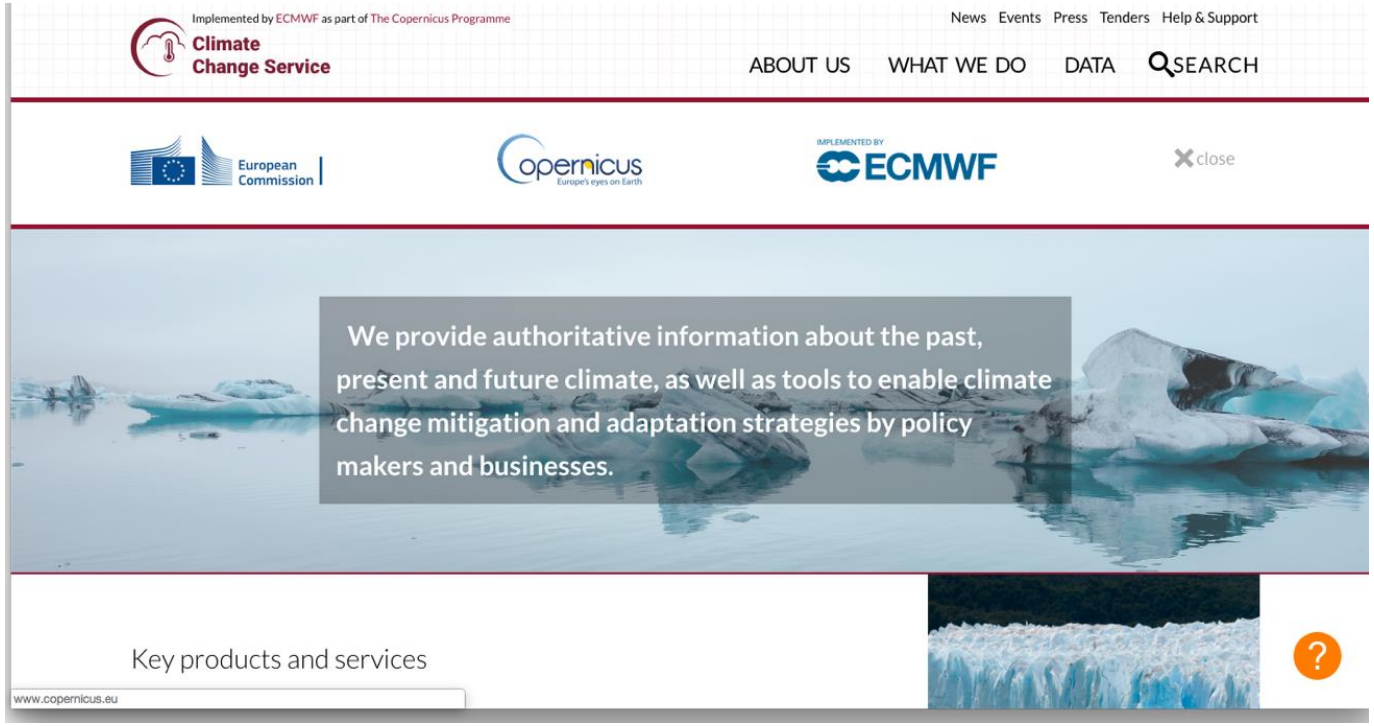
Thank you !

climate.copernicus.eu

For more info:

copernicus-support@ecmwf.int



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BIO

Carlo completed a PhD in physics at University of L'Aquila in 2004 then he moved to Canada for his post-doc before joining the Met Office.

Carlo worked at the Hadley Centre (Met Office) for nearly a decade where he led the climate adaptation team and then the climate service development team. In this role he led numerous projects involving climate change adaptation and regional modelling in Europe, Africa, Asia and North America.

In 2012 Carlo became the scientific coordinator of EUPORIAS, and project funded by the European Commission through the 7th framework programme.

Carlo Buontempo is currently the Director of Copernicus Climate Change Service (C3S) at ECMWF. He coordinates the activities of a large number research teams working on the generation of climate data and its interface to decision and policy makers

Dr. Carlo Buontempo
Director of Copernicus Climate Change Service