Climate Change

Climate Change Service

An introduction

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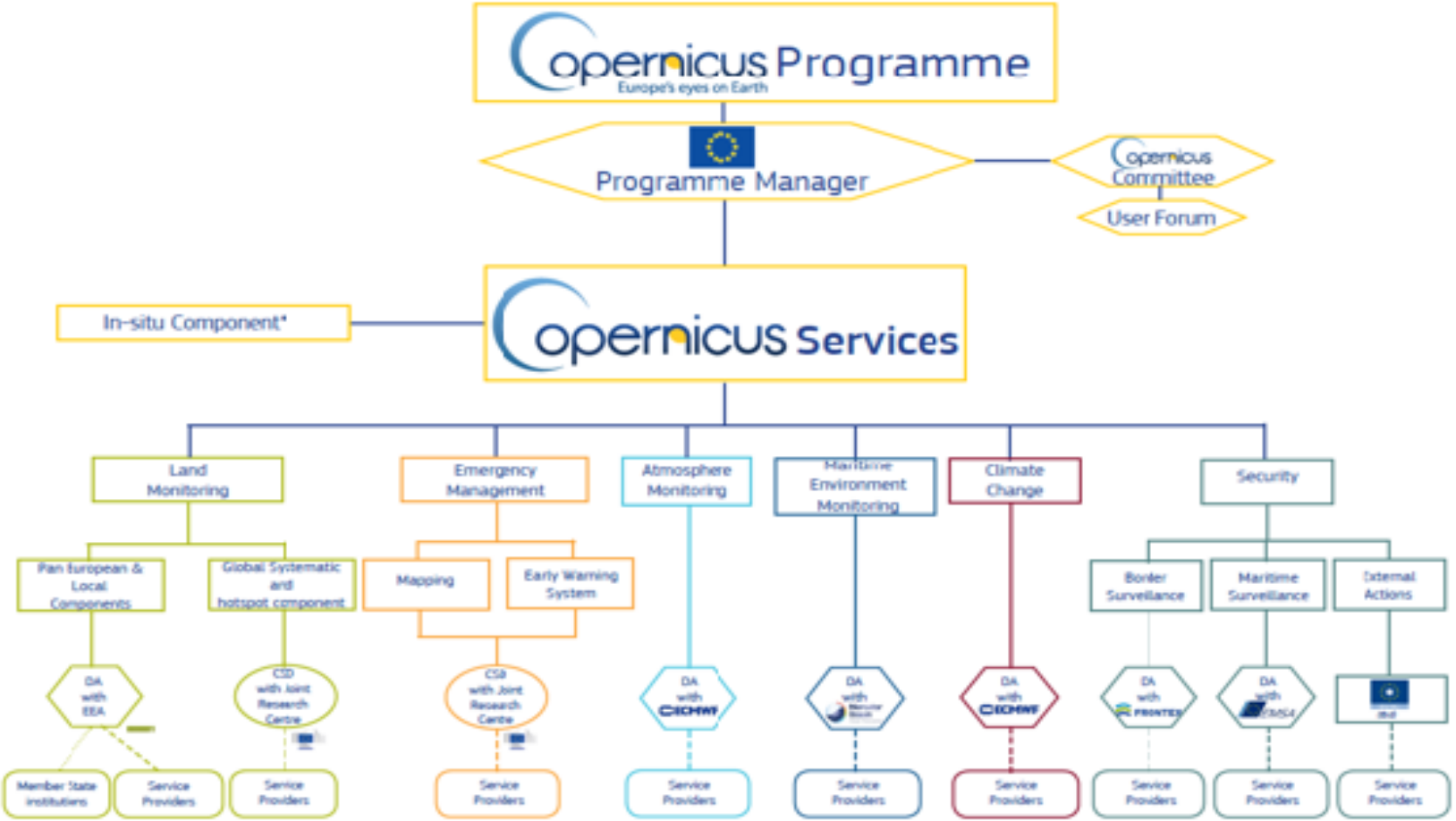
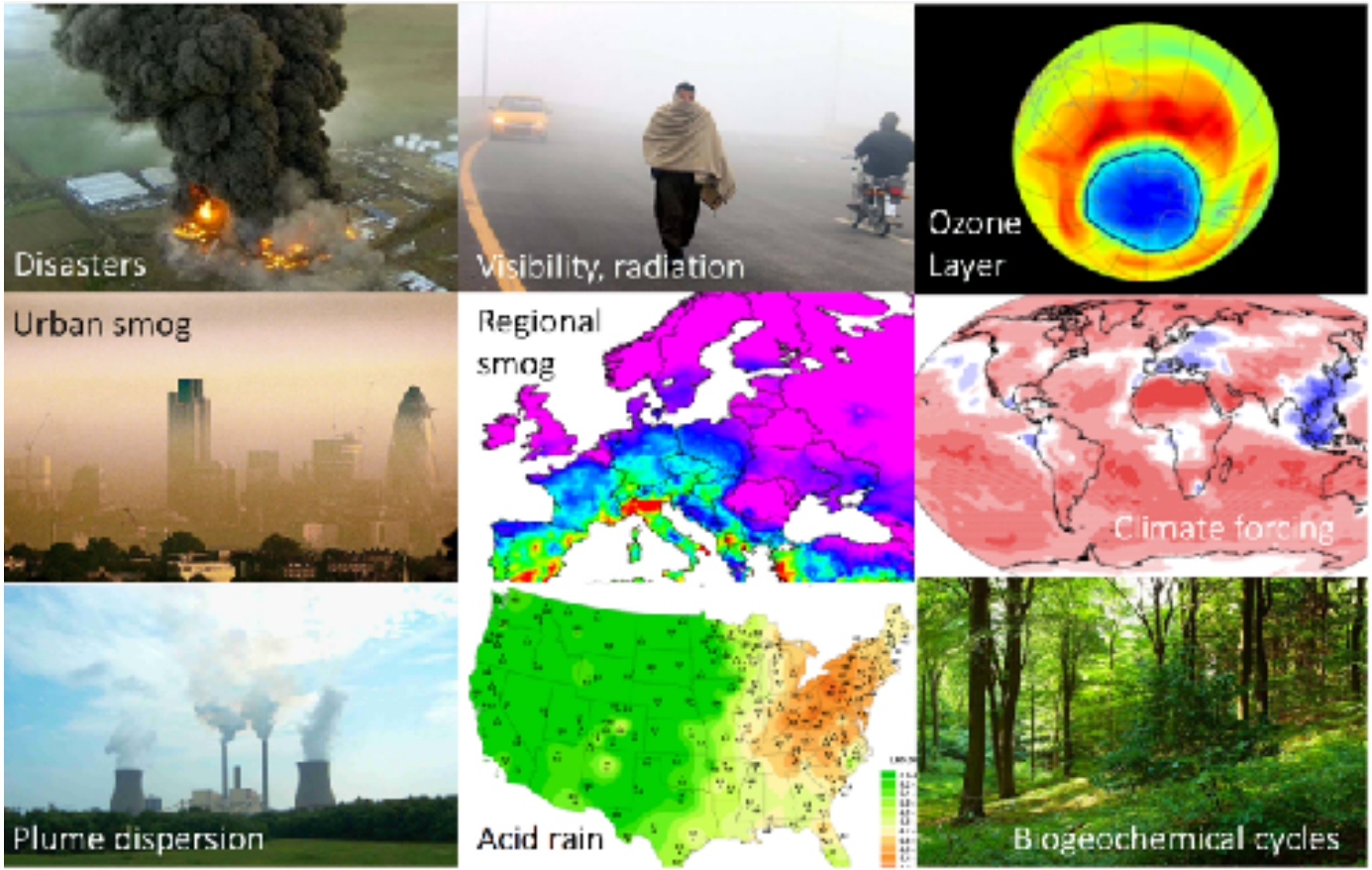
Climate Change



ECMWF: Centro Europeo de previsione meteorologica a plazo medio

Atmosphere Monitoring

REASONS TO CARE ABOUT ATMOSPHERIC COMPOSITION



from D. Jacob

USING CAMS AND KEEPING UP WITH IT

Atmosphere Monitoring

Website

http://atmosphere.copernicus.eu

Newsletter

Social media

@CopernicusECMWF

We are building a store.
Soon we will open the door to customers.

We are currently putting the products on the shelves.

Climate Change

Scientific basis:

- Essential Climate Variables as defined by GCOS
- GCOS Status Report and Implementation Plan
- IPCC, CMIP

Action engaged

In preparation (PIN or ITT out)

Not started

Observations	Global estimates of ECVs from satellite and in-situ observations	Reprocessed CDRs, reference observations	Support for data rescue, climate data collections	Climate Indicators
Climate reanalysis	Global atmosphere, ocean, land	Regional reanalysis for Europe	Coupled climate reanalysis for 100 years	
Model output	Multi-model seasonal forecast products	Access to CMIP data and products (global and regional)	Reference set of climate projections for Europe	

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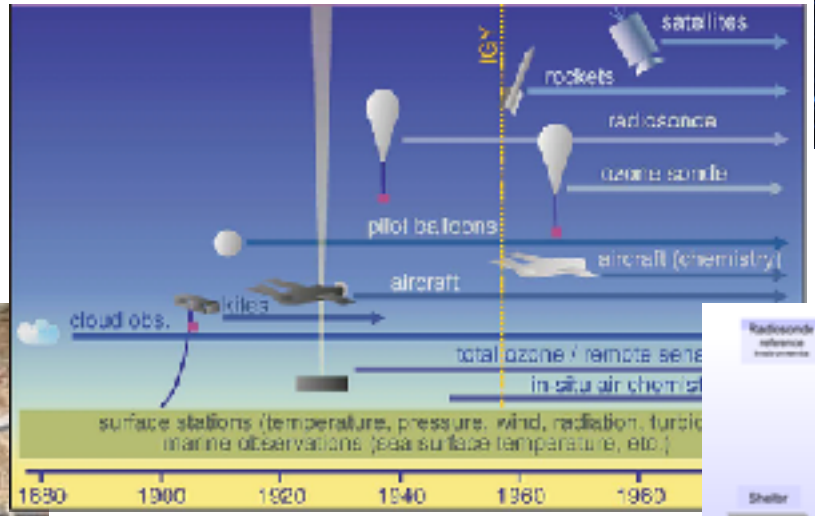
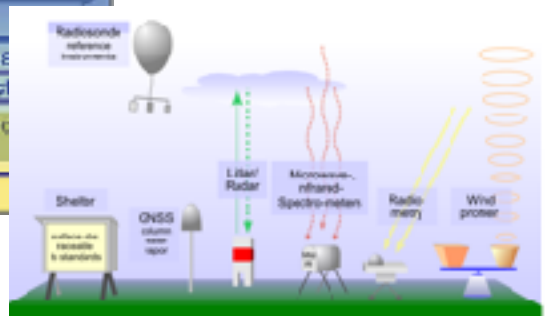
Service: Providing users with full access to the *in situ* instrumental data record, in usable form





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- The ECV is derived from **satellite altimetry**

- Strong **interaction and complementarity** with the **Copernicus Marine Service (CMEMS):**
  - **C3S**: retrieval of **long-term variability** and focus on the **Mean Sea Level stability** with a stable altimeter constellation in time.
  - **CMEMS**: focus on the **mesoscale estimation** with all satellites missions available to provide the best sampling.

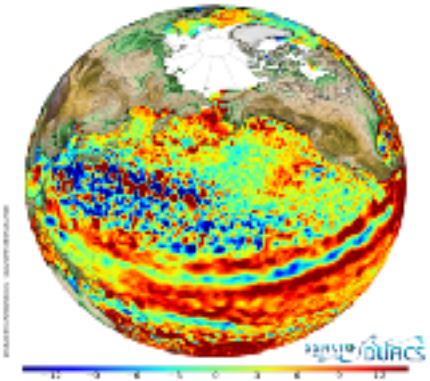
- Regions of interest: **global ocean**, **Med. sea** and **Black sea**
- **Type of products:**

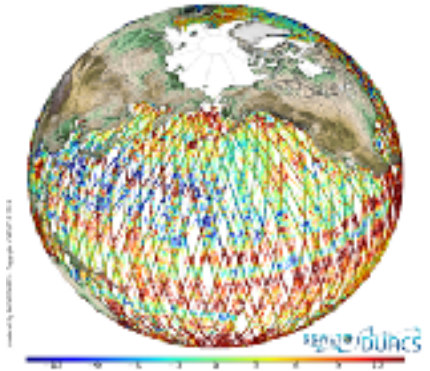
Gridded daily maps:

1/4° (global) and 1/8° (Med. And Black seas) of:

- **Absolute Dynamic Topography**
- **Sea Level Anomalies**
- **Geostrophic velocities**

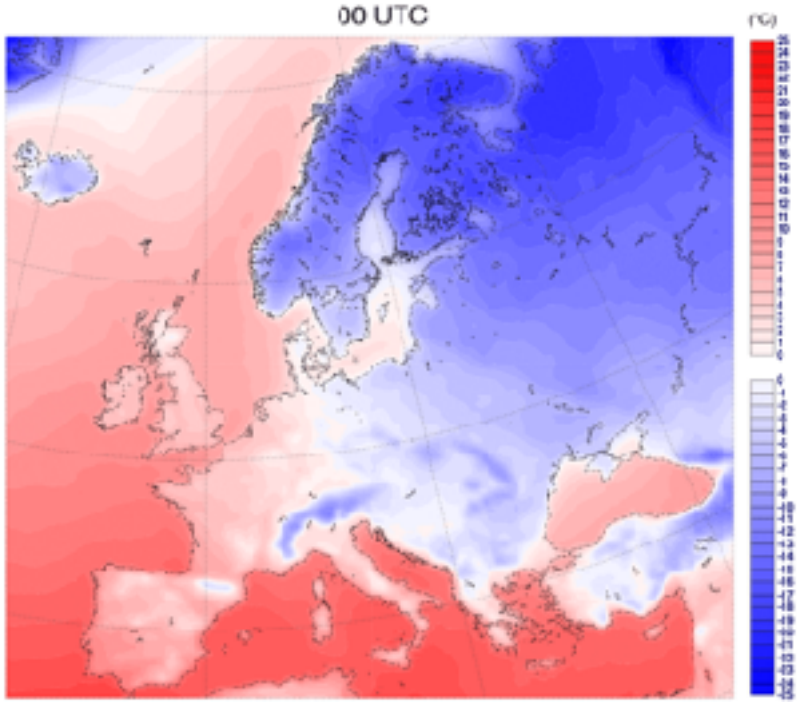
- The existing Sea Level ECV will be first delivered in April 2017 and the record will be regularly updated.
- A **full reprocessing** will be delivered in March 2018
- **Interactions** with **spaces agencies** will ensure the **service quality and evolution.**





- Atmosphere/land/wave parameters
- 31 km global resolution, 137 levels
- Hourly output from 1979 onward

- Using 2016 ECMWF forecast system
- Using improved input observations
- Ensemble data assimilation method
- Uncertainty estimates for all ECVs



Data release plan:

Nov 2016	Test data (Jan-Feb 2016)
Sep 2017	Hourly data from 2010 - 2016
Oct 2017	Daily updates at short delay
Apr 2018	Complete from 1979 onward

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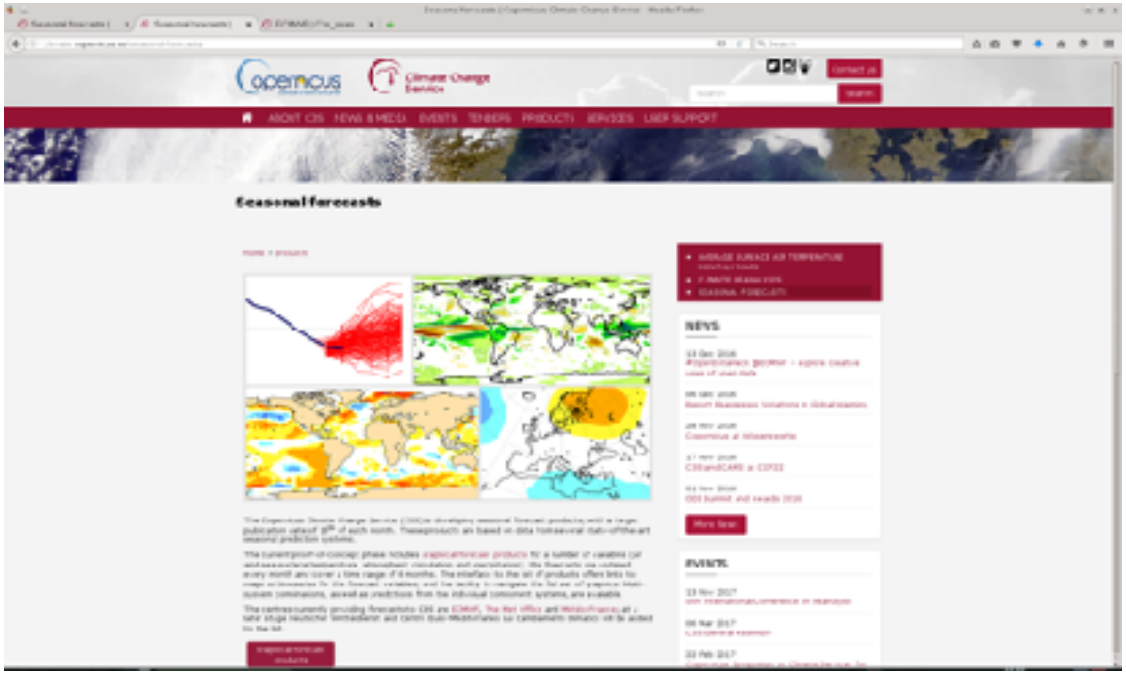
Seasonal forecasts- first release 12/2016

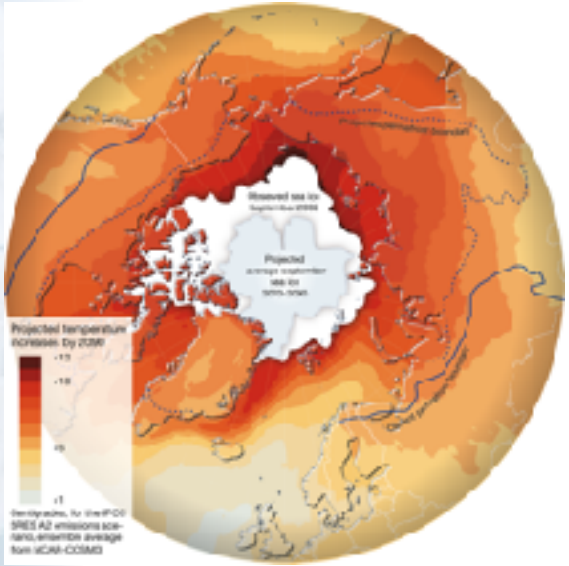
Now:
Météo-France
UK Met Office
ECMWF

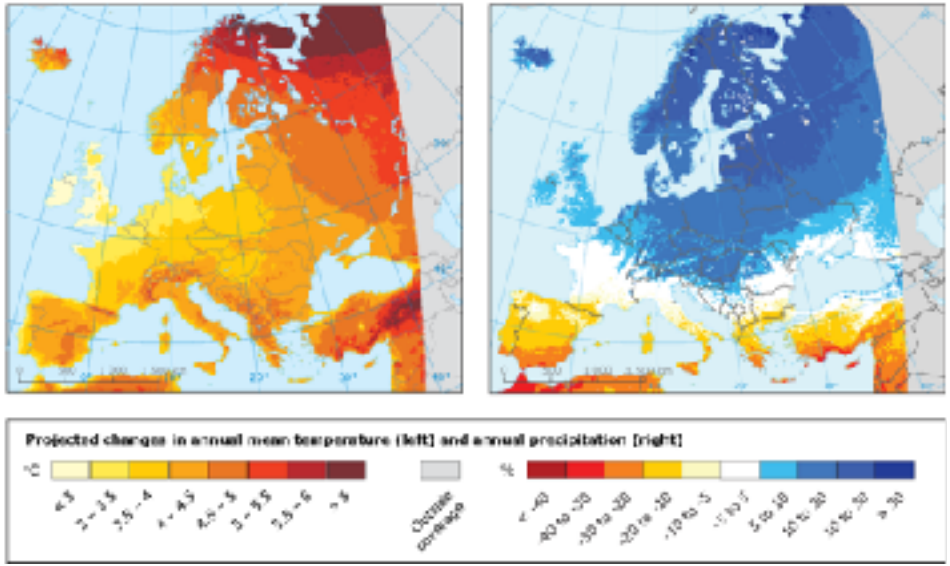
From next year:
DWD
CMCC
NCEP
JMA
BOM



http://climate.copernicus.eu/seasonal-forecasts

Service: Providing users with timely access to climate change scenarios produced with state-of-the-art climate models (CMIP, CORDEX)





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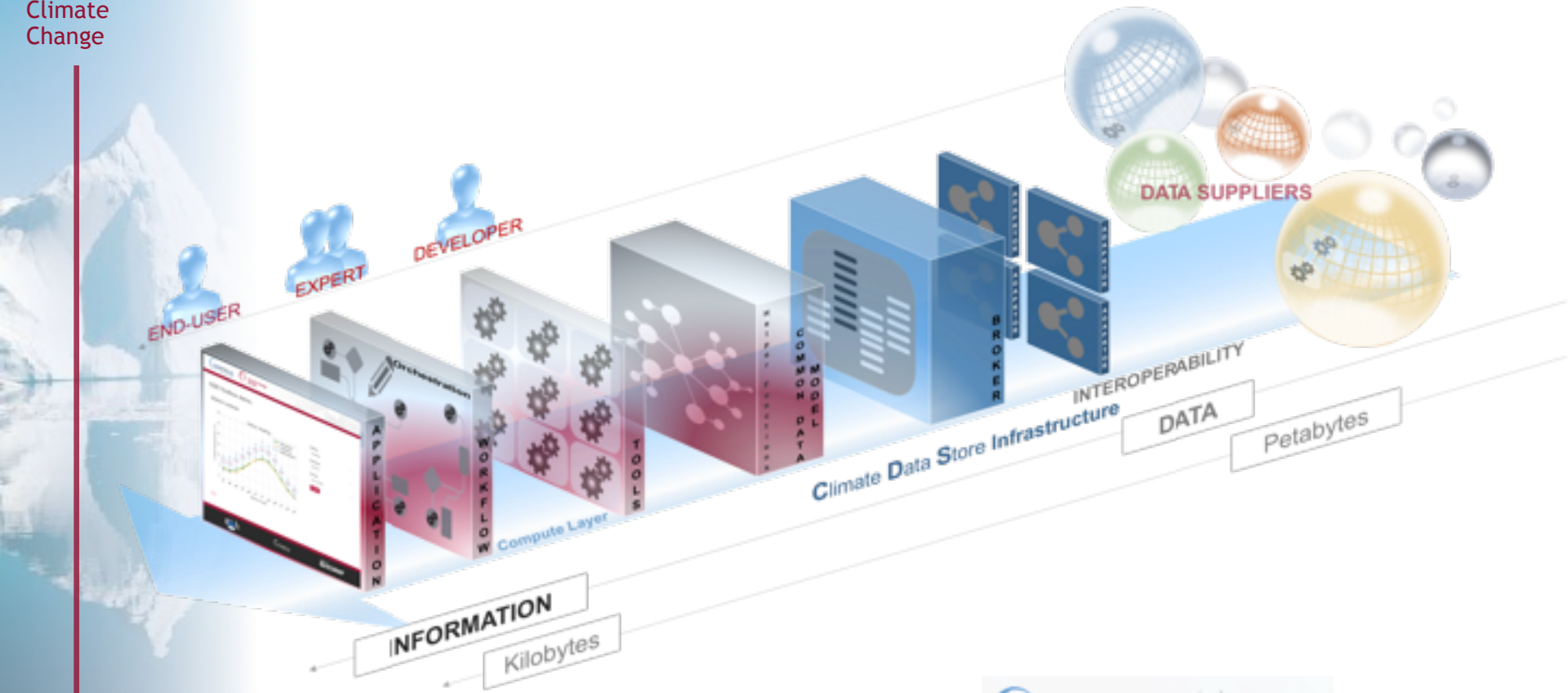
CDS infrastructure and toolbox



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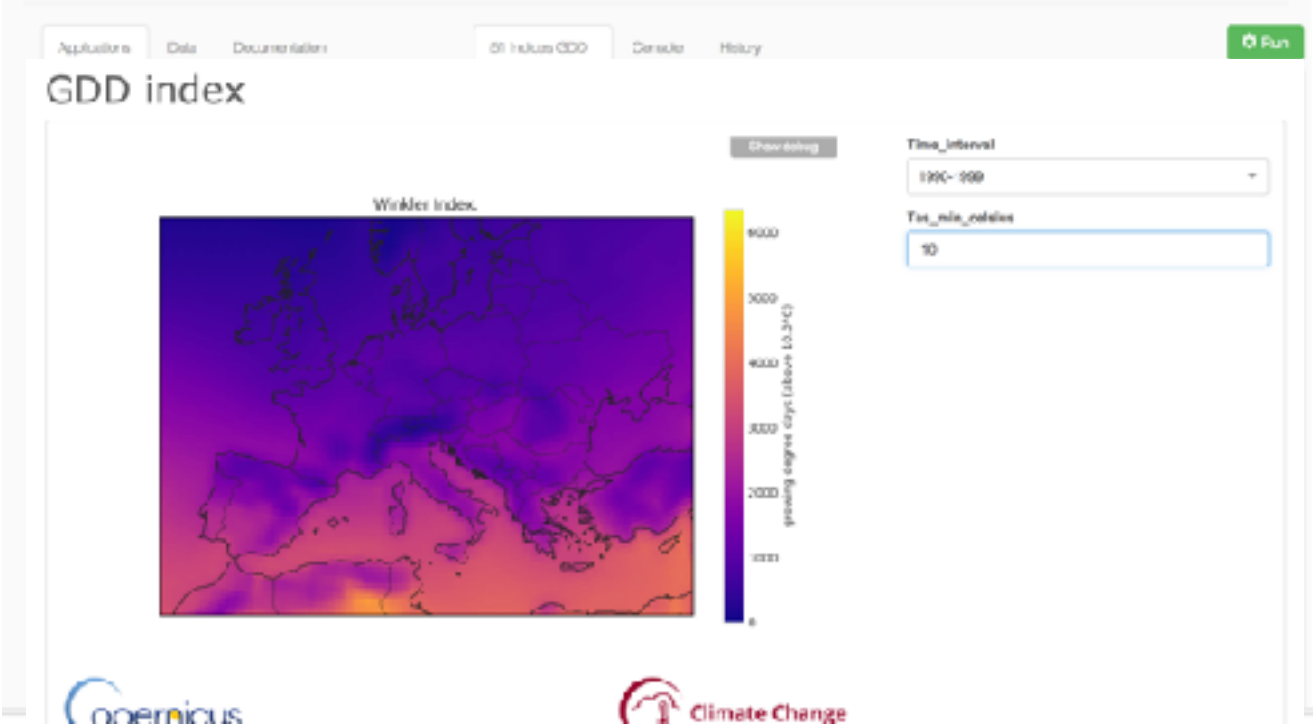
Technical Concept:
Orchestrated Python workflows written by Experts



WHAT WILL THE INFORMATION BE USED FOR?

The wealth of climate information will be the basis for generating a wide variety of climate indicators aimed at supporting adaptation and mitigation policies in Europe in a number of sectors. These include, but are not limited to, the following:

C3S WILL DELIVER SUBSTANTIAL ECONOMIC VALUE TO EUROPE BY:

1. **INFORMING**
   POLICY DEVELOPMENT TO PROTECT CITIZENS FROM CLIMATE-RELATED HAZARDS SUCH AS HIGH-IMPACT WEATHER EVENTS
2. **IMPROVING**
   PLANNING OF MITIGATION AND ADAPTATION PRACTICES FOR KEY HUMAN AND SOCIETAL ACTIVITIES
3. **PROMOTING**
   THE DEVELOPMENT OF NEW SERVICES FOR THE BENEFIT OF SOCIETY

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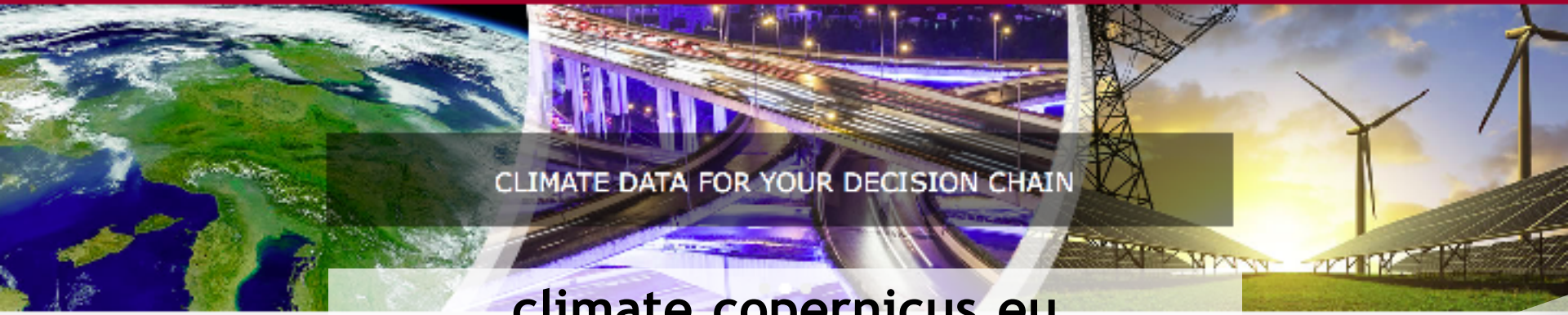


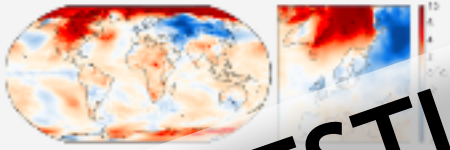
climate.copernicus.eu

IN FOCUS

#OpenDataHack @ECMWF – explore creative uses of open data

13 Dec 2016

MONTHLY MAPS



Average surface temperatures for November 2016

November 2016

NEWS

13 Dec 2016
#OpenDataHack @ECMWF – explore creative uses of open data

06 Dec 2016
Report Reassesses Variations in Global Warming

28 Nov 2016
Copernicus at Wissenswerte

QUESTIONS?

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