Climate Change

Climate Change Service

SIS status

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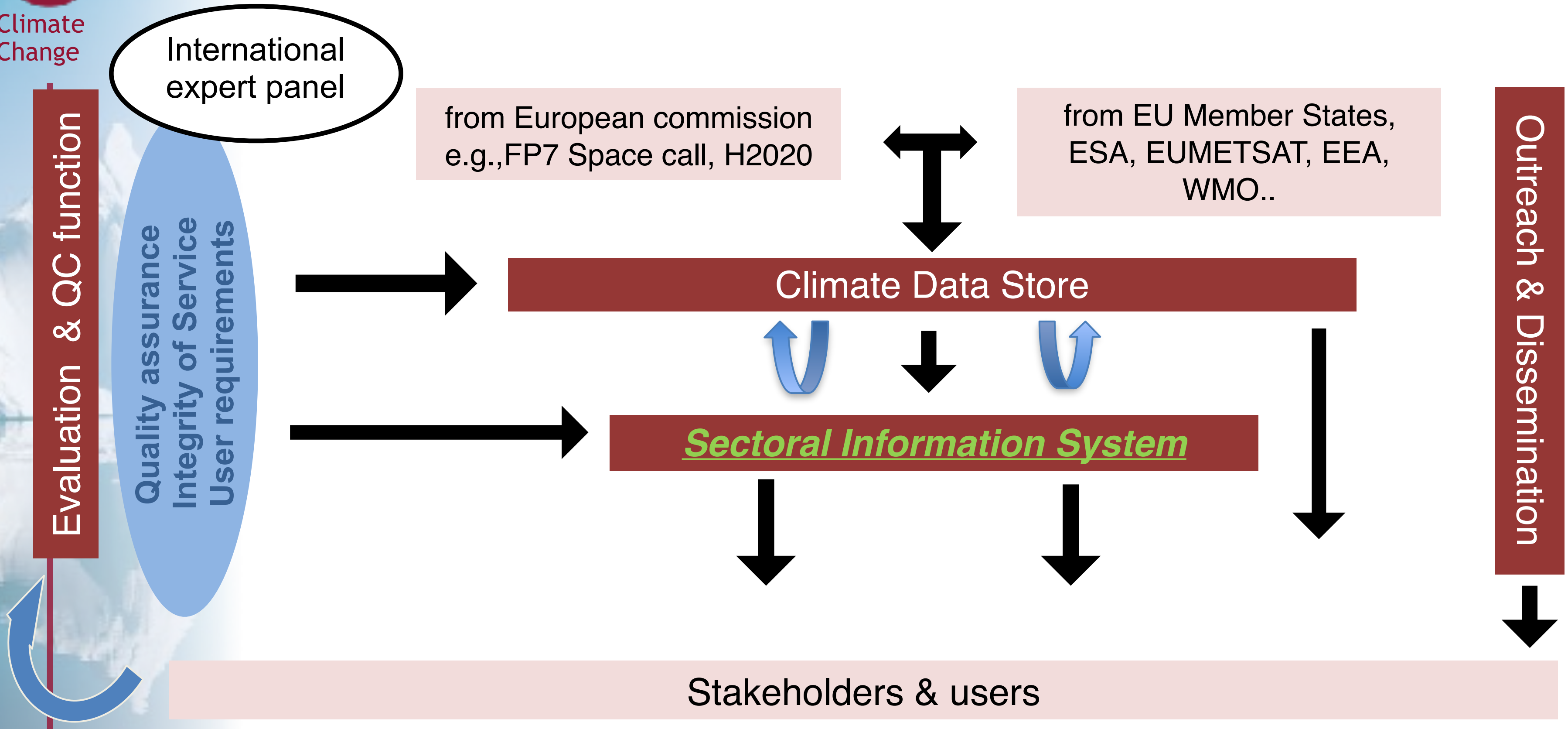
C3S in a nutshell



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

What are the SIS for?

1)to provide practical examples of how C3S in general and CDS in particular could deliver information of relevance to specific sectors.

2)To provide examples of good practice. This means that the SISs should be built to the highest possible standards so that services developers could be inspired by them and look at them as quality benchmarks.

3)To provide information on users needs, and whenever possible address those. In particular SIS contract should develop and make available sector-relevant indicators and tools that were either unavailable or inaccessible before.

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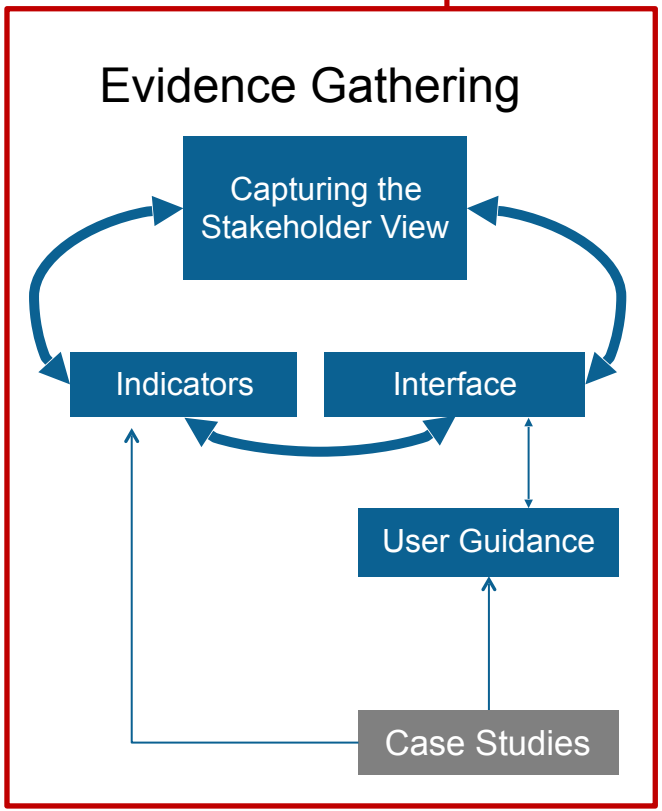
Focus Groups

Stakeholder Engagement



Deliverables

- SC Impact Indicators
- User friendly interface
- User guidance
- Technical reports
- Case Study fact sheets
- Model output

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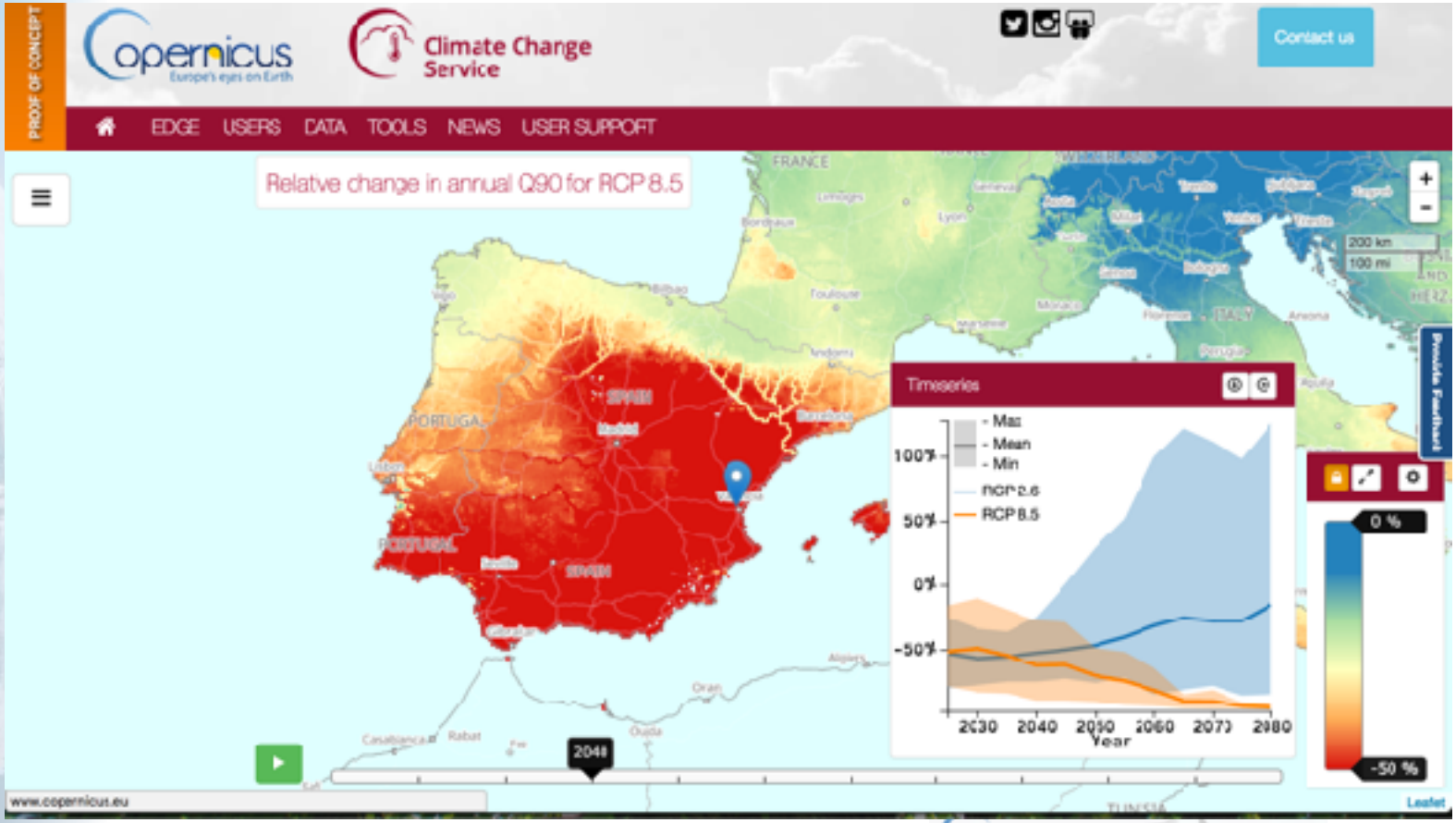
1. Water Manager has climate issue
2. Water Manager consults Purveyor
3. Purveyor understands issue and goes to C3S
4. Purveyor consults Data provider/ CDS
BIG DATA
5. Data provider search and extracts data to Purveyor
6. Purveyor tailors, downscales, merges, repurposes datasets
7. Purveyor extracts, explains, visualises relevant information to water manager
8. Water manager makes decision and business improves !
9. Purveyor reports on needed climate indicators to data provider
10. Data Provider produces new pan-EU climate indicators
11. New climate indicators are readily available in S3C and CDS
12. Purveyor can extend business with more clients !!

Hydrological outlook



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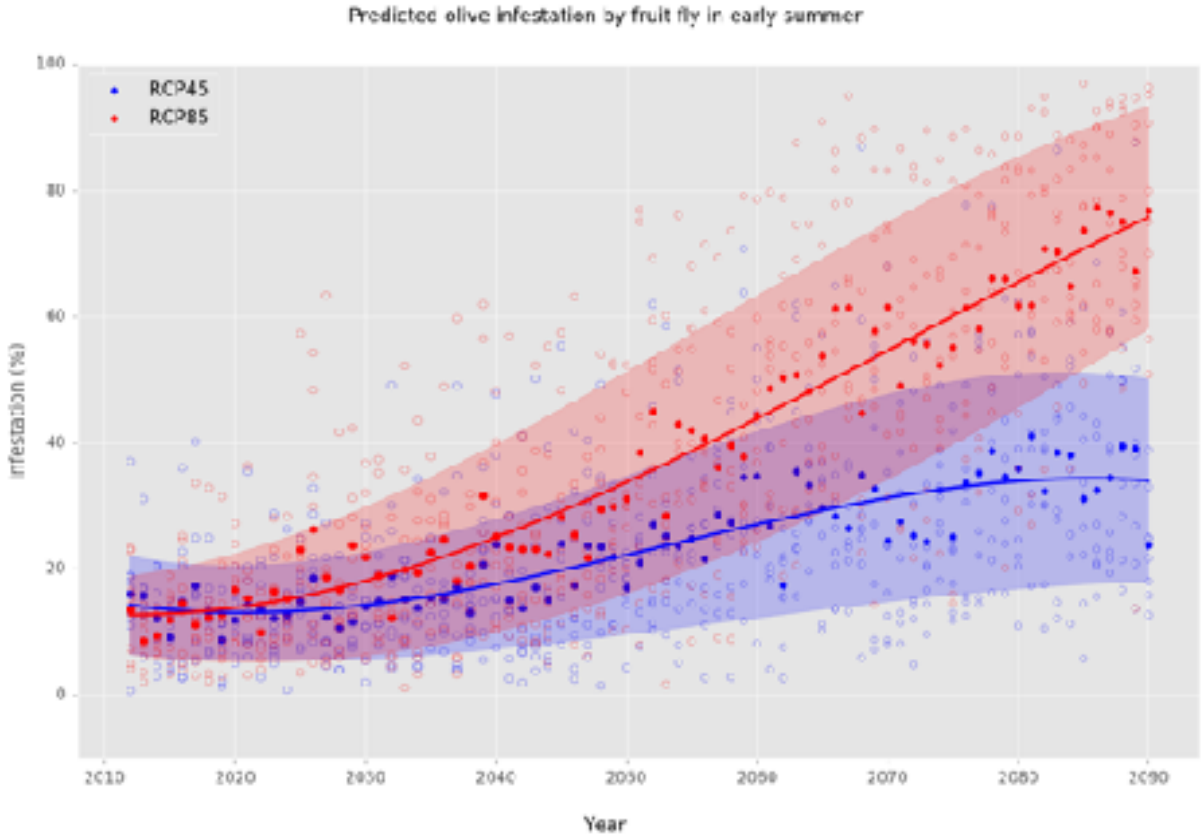
Olives



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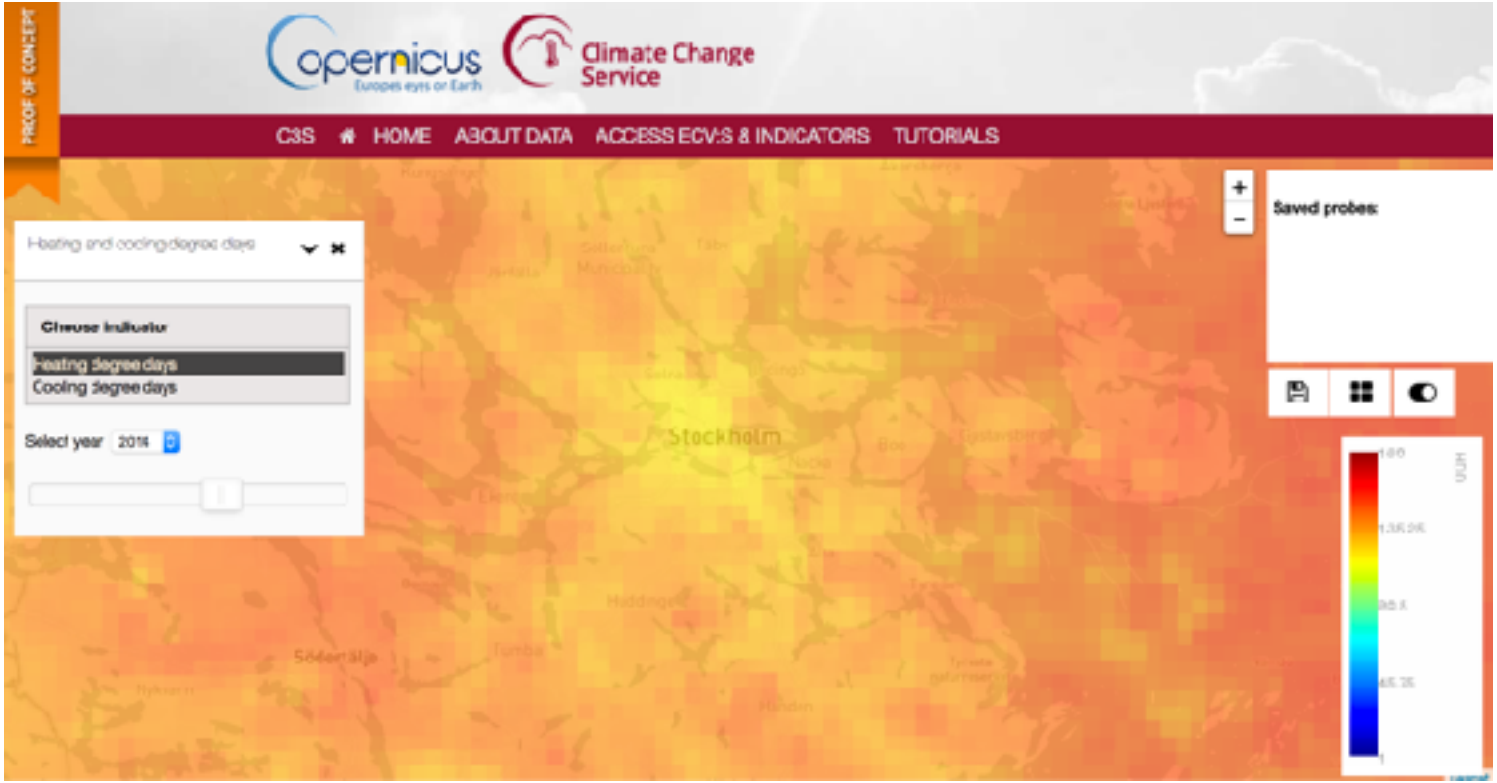
PROOF OF CONCEPT
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Europes eyes on Earth
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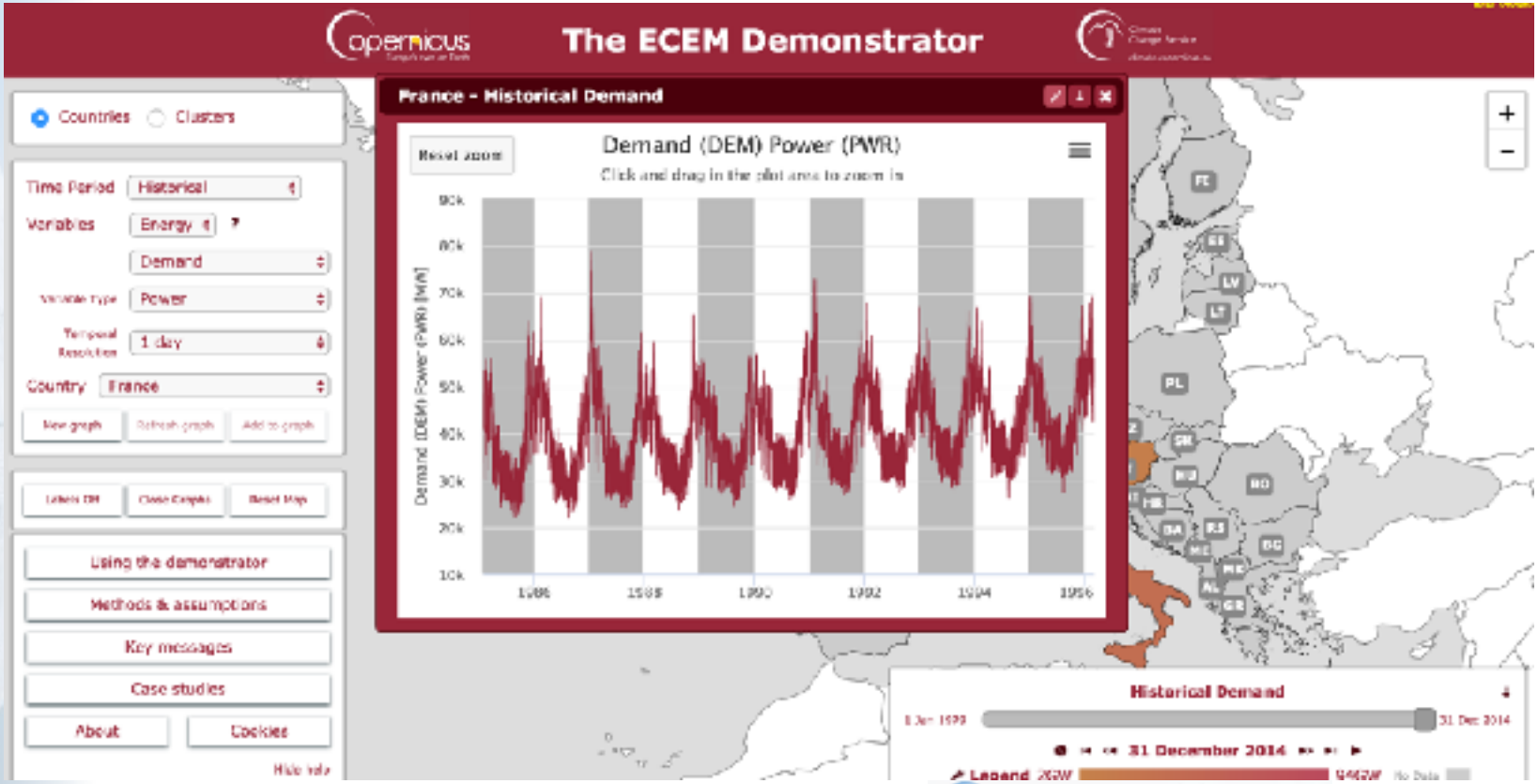
C3S
HOME
ABOUT DATA
ACCESS ECV:S & INDICATORS
TUTORIALS
Heating and cooling degree days
Choose indicator
Heating degree days
Cooling degree days
Select year
2014
Saved probes:
Stockholm

Climate Change

User relevant parameter for energy



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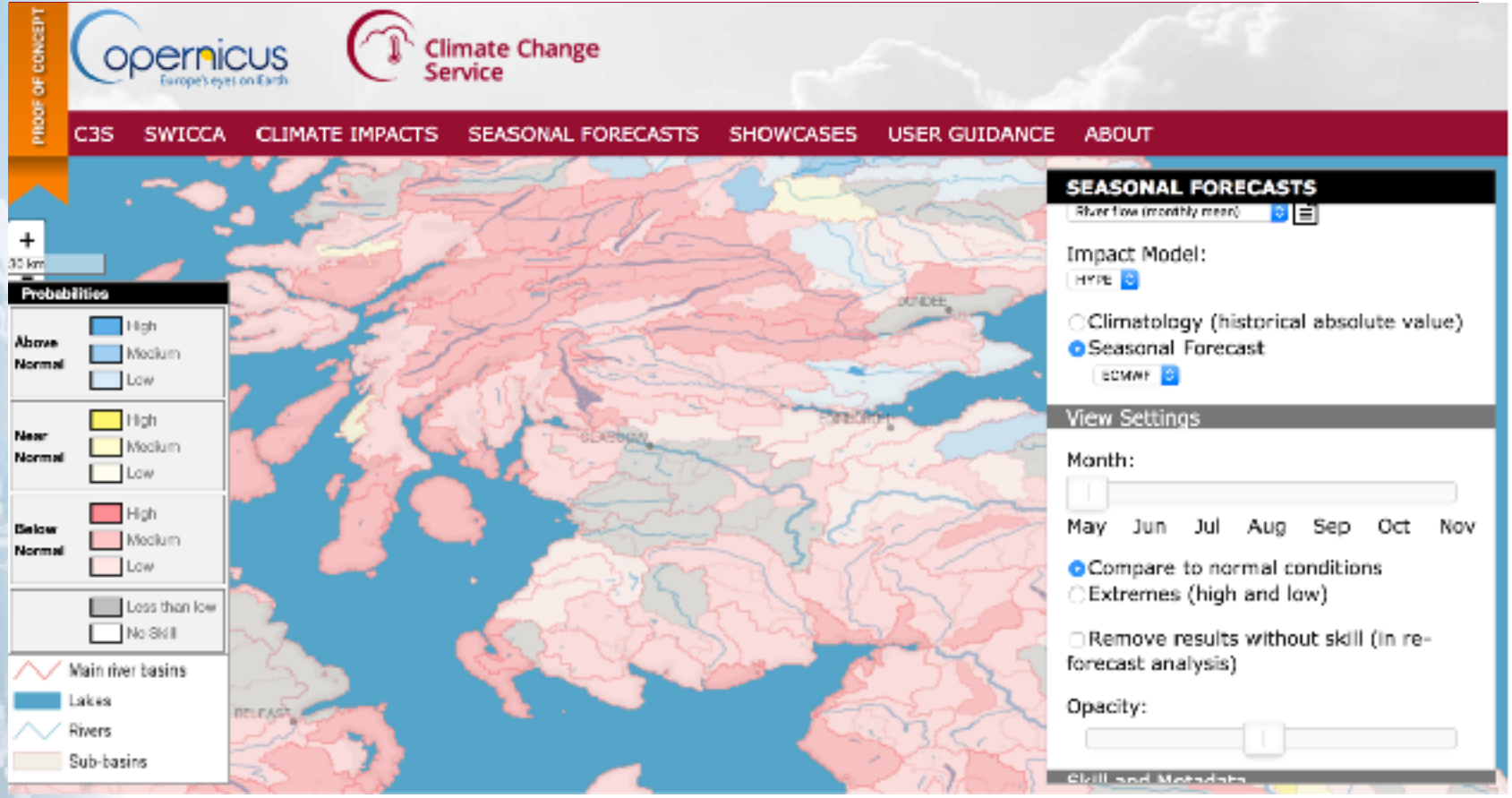

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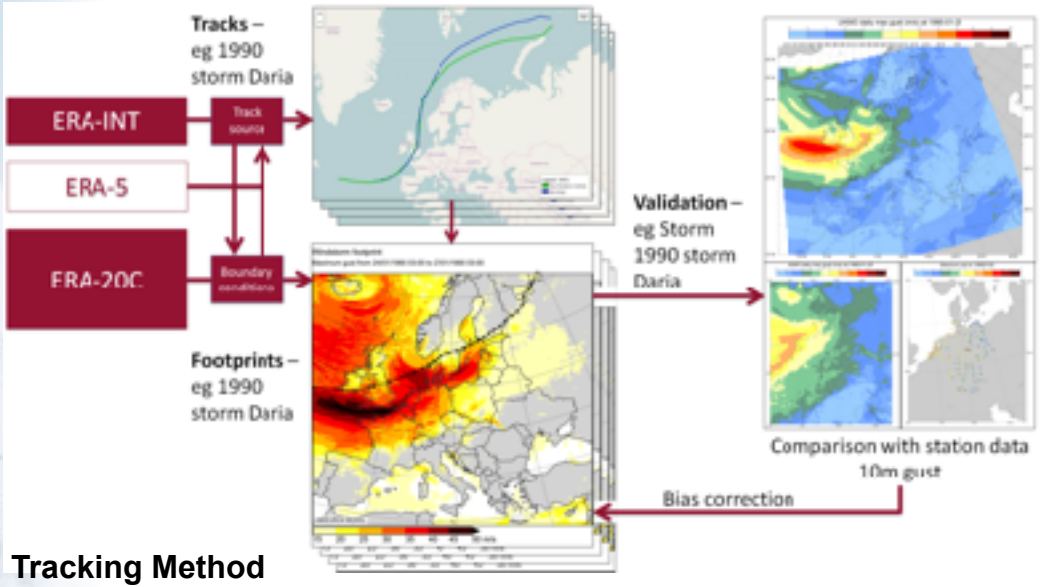

Tracking Method

Hodges (1994,1995) tracking algorithm

- Based on 850hPa relative vorticity at T42 resolution
- Vorticity centres used to calculate trajectory of individual extra-tropical cyclones (cyclones north of 30N)

Extra fields referenced back to vorticity fields at full resolution at each timestep

- Minimum MSLP within 6 degrees of vorticity centre
- Maximum wind within 6 degrees of vorticity centre
- Maximum land-wind within 3 degrees of vorticity centre (XWS ranking metric)

Footprint Downscaling Method

Event identification

- Extract data for +/- 36 hours from maximum wind value on track
- Select nearest 00:00 (12:00) as start time (ST)
- Where no track available, use user-specified start/peak date/time

Boundary conditions for UKMO Unified Model from ERA-INT / 20C between ST-6 and ST+30h
Remove 'spin-up' period (ST-6 to ST+0)
Repeat 3 or 4 times
Concatenate into 72-hour footprint
Output as appropriate (geo-referenced and NetCDF)

Products	Temporal coverage
Historic Storm Tracks	1900 to 1979 (ERA-20C) 1979 to 2015 (ERA-INT) 2010 to 2015 (ERA-5)
Historic Storm Footprints	1900 to 1939 (TBC) 1940 to 2010 (ERA-20C / ERA-INT) 2010 to 2015 (ERA-5 sample)
Synthetic Event Set	5000 significant storm events
Historic Indicators (Tier 1)	Number of Windstorms 1940 to 2015 Area Max Wind Speed 1940 to 2015 Average Storm Severity 1940 to 2015 Decadal variability 1940 to 2015
Historic Indicators (Tier 2)	Total Sectoral Insured Losses, 1990 to 2015 Total Windstorm Loss per Sector, 1990 to 2015

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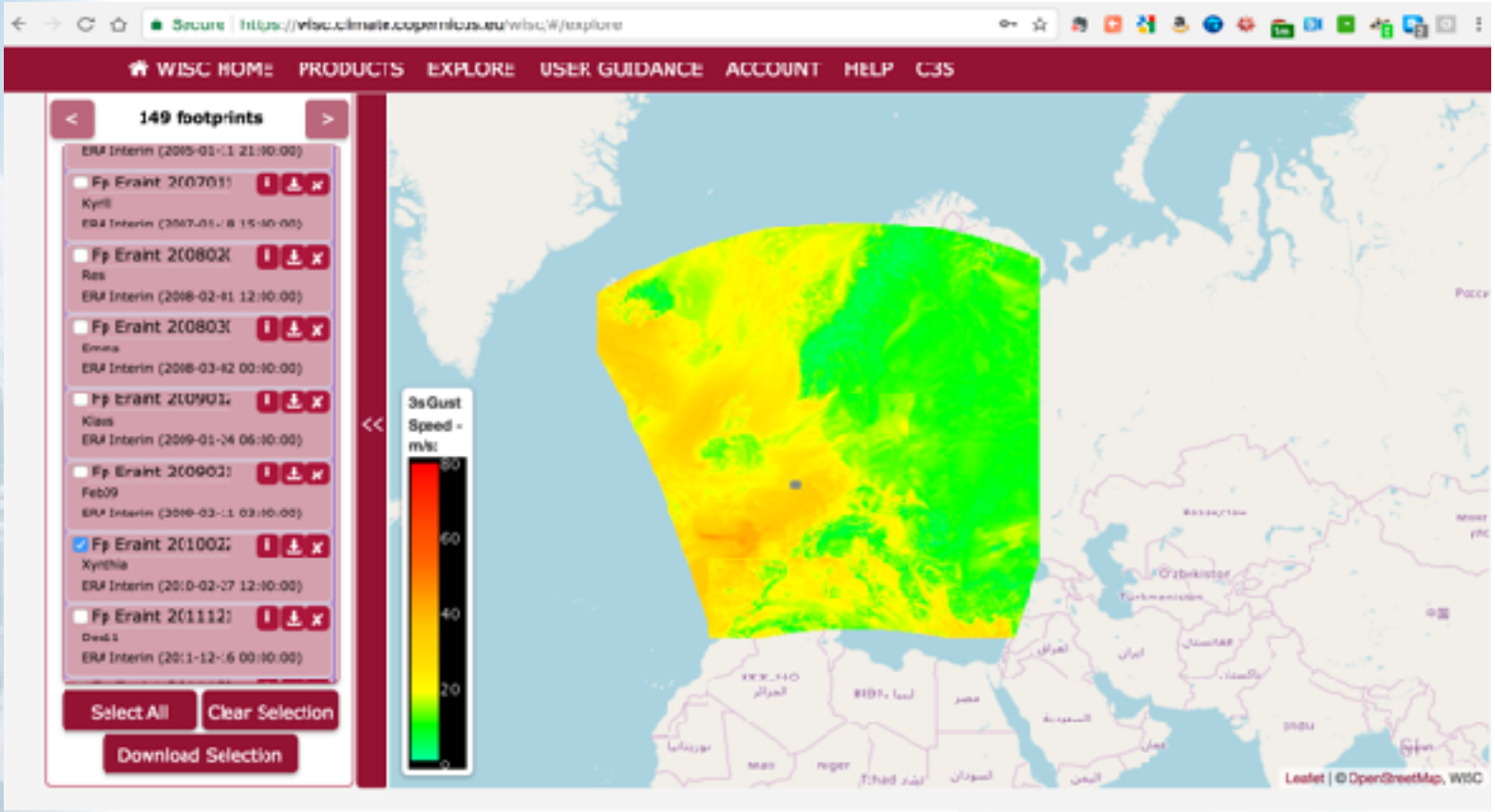

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Hazard - Event Set

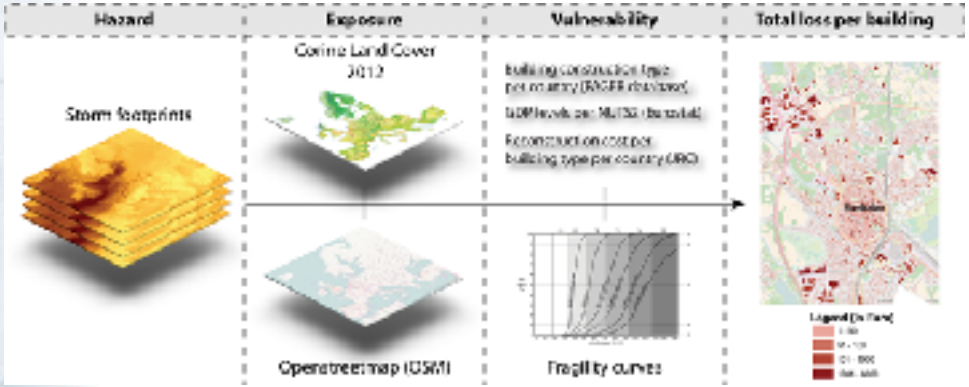
- Spatial resolution: 25km; Temporal resolution: 6 hours; 5 ensembles; 6600 significant storms
- UPSCALE (1985 to 2011), based on HadGEM3 GA3 and GL3 configurations of Met Office Unified Model

Exposure / Vulnerability

- CORINE – 45 land classes
- PAGER – 106 construction types – aggregated to 6 types
- Fragility curves applied for these 6 types
- Fragility curves to vulnerability curves via reconstruction costs
- GDP per NUTS3 region applied

Process for Loss Assessment

- Datasets clipped to NUTS3 regions before loss calculations applied (EU: 276 NUTS 2 & 1,342 NUTS3 regions)
- Loss per hazard (max gust speed) from fragility curves
- Loss ratio multiplied by reconstruction cost per building type
- Losses adjusted by GDP per region
- Validate losses vs actuals



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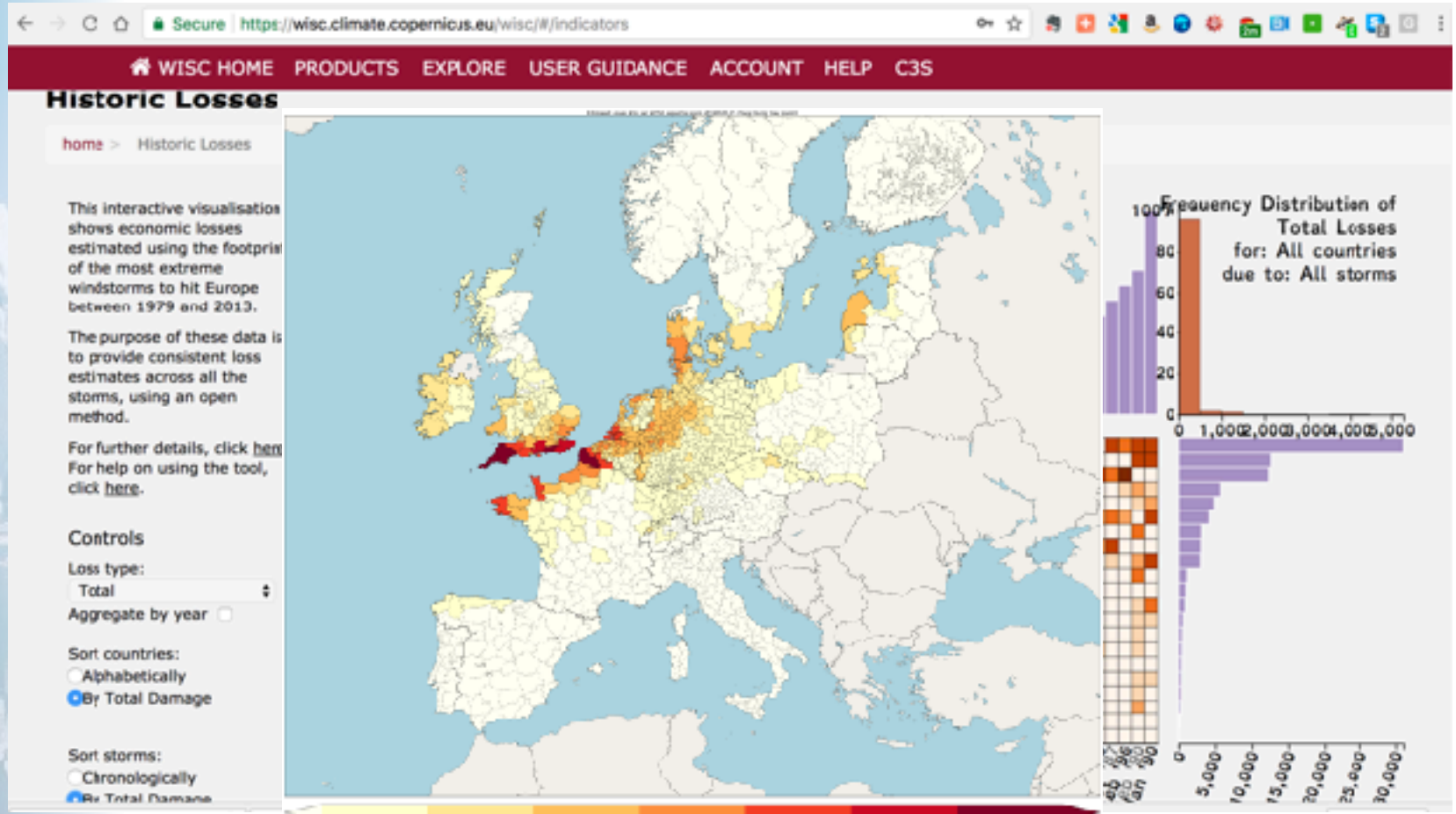

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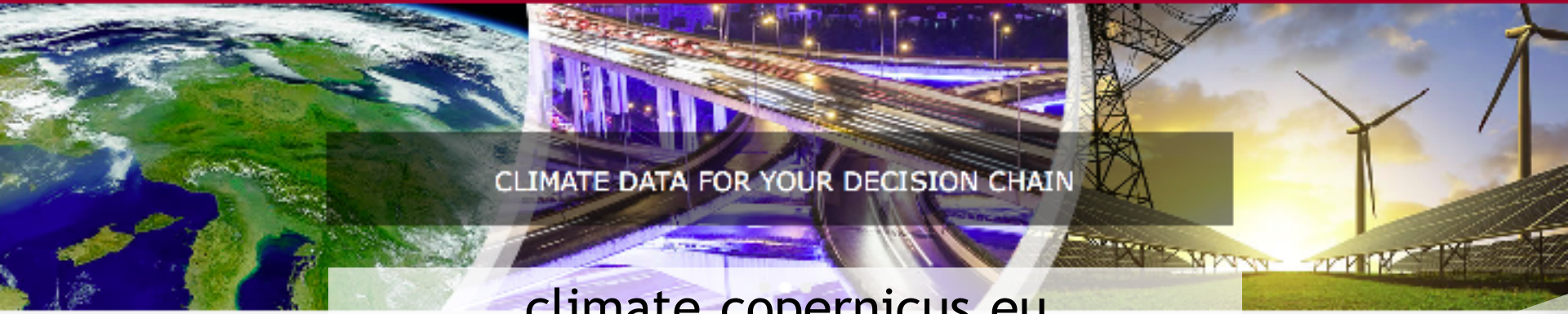

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IN FOCUS

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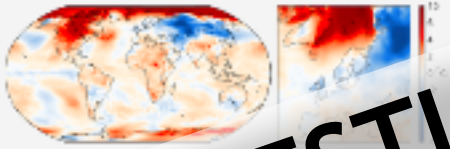
13 Dec 2016

MONTHLY MAPS



Average surface temperatures for November 2016

November 2016

NEWS

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