



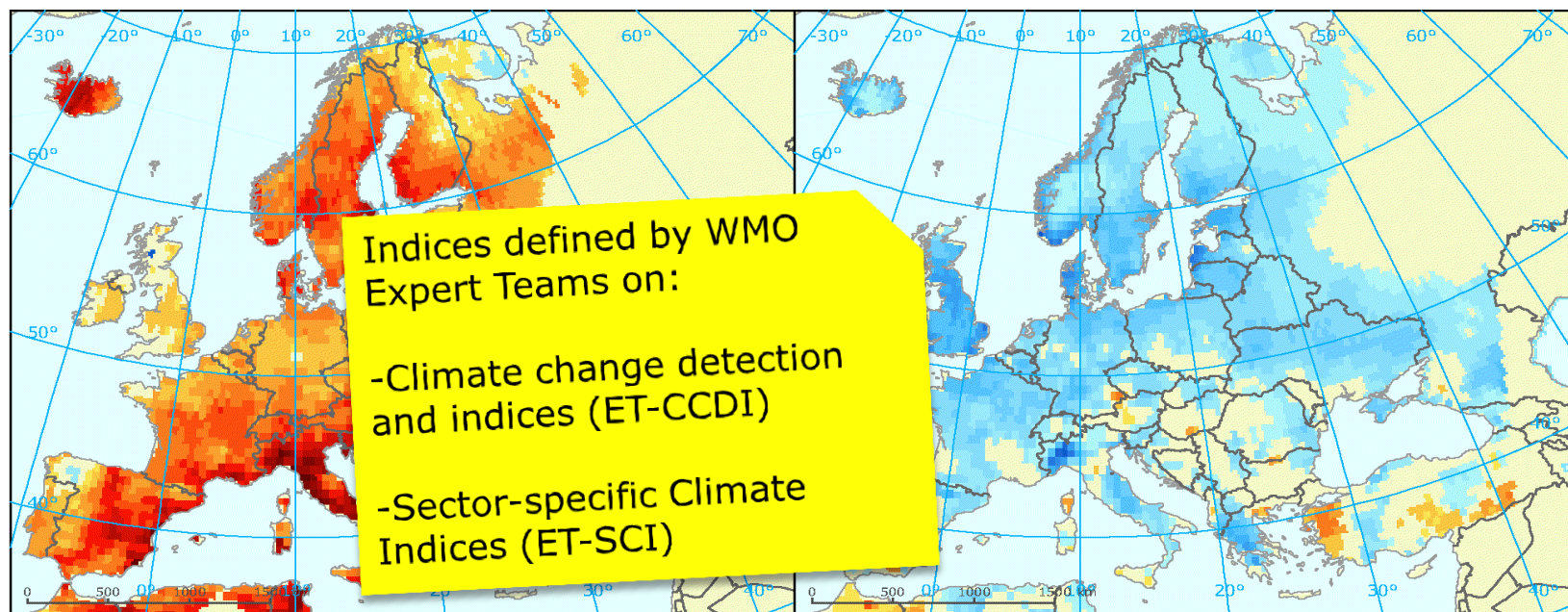
Royal Netherlands
Meteorological Institute
*Ministry of Infrastructure and the
Environment*

Climate Information for Transport Applications

Gé Verver (KNMI, The Netherlands)

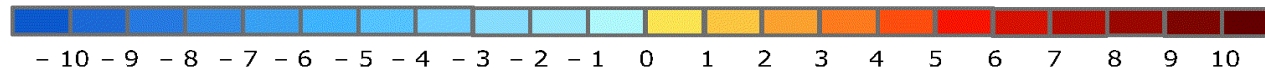
- *European Climate Assessment & Dataset*
- *KNMI Climate Explorer*
- *Copernicus*

Changing duration of warm spells (left) and frost days (right)



Observed changes in duration of warm spells in summer (left) and frequency of frost days in winter (right), in the period 1976–2006

Days per decade



From: EEA/JRC/WHO impact indicator report, 2008;
Source: ECA&D project, <http://www.ecad.eu>



Home

Home

Welcome to the website of the European Climate Assessment & Dataset (ECA&D) project. Presented is information on changes in weather and climate extremes, as well as the daily dataset needed to monitor and analyse these extremes. ECA&D is initiated by the European Climate Support Network [ECSN](#) and supported by the Network of European Meteorological Services [EUMETNET](#).

What's new?



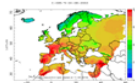
The database is updated until: Jul 31, 2011.
August 2011 - Added option to the extreme events page to show events per country.
August 2011 - The blending method has been changed. Now only stations within 12.5 km distance with less than 25 m height difference are used.
July 2011 - Increased station density in Germany.
June 2011 - Periods for homogeneity and trends have been changed.
May 2011 - The [bulk download page for indices data](#) has been changed.
[All news items](#)

Participants and data

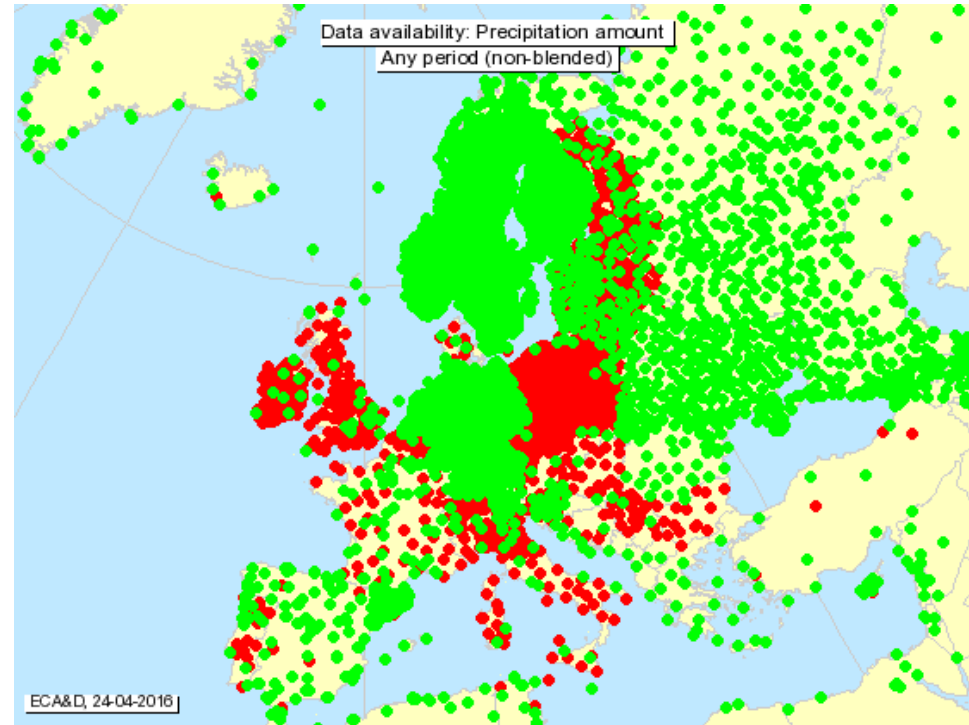


Today, ECA&D is receiving data from [56 participants](#) for [62 countries](#) and the ECA&D dataset contains 25269 series of observations for [12 elements](#) at [4641 meteorological stations](#) throughout Europe and the Mediterranean (see [Daily data > Data dictionary](#)). 46% of these series is public, which means downloadable from this website for non-commercial research. Participation to ECA&D is open to anyone maintaining daily station data. If you want to join please contact us.

E-OBS gridded dataset



[E-OBS version 4.0](#) has been released. E-OBS is a daily gridded observational dataset for precipitation, temperature and sea level pressure in Europe based on ECA&D information. The full dataset covers the period 1950-2010. It has originally been developed as part of the [ENSEMBLES](#) project (EU-FP6) and is now maintained and elaborated as part of the [EURO4M](#) project (EU-FP7).

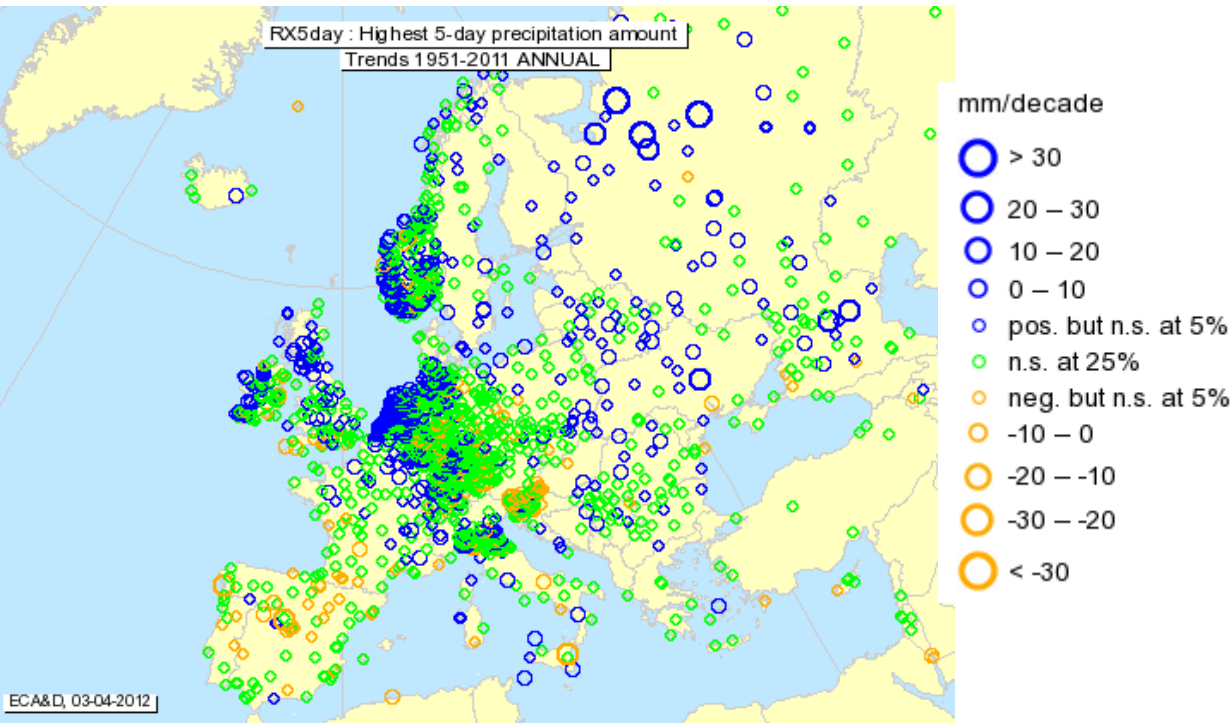


-  67 Participants
-  62 Countries
-  10481 Stations
-  42752 Daily station series
-  70 Derived indices

Daily values for:
Temperature (min/max/avg)
Precipitation, Pressure,
Snow depth, Humidity,
Sunshine, Cloud Cover,
Wind (speed/gust/direction)

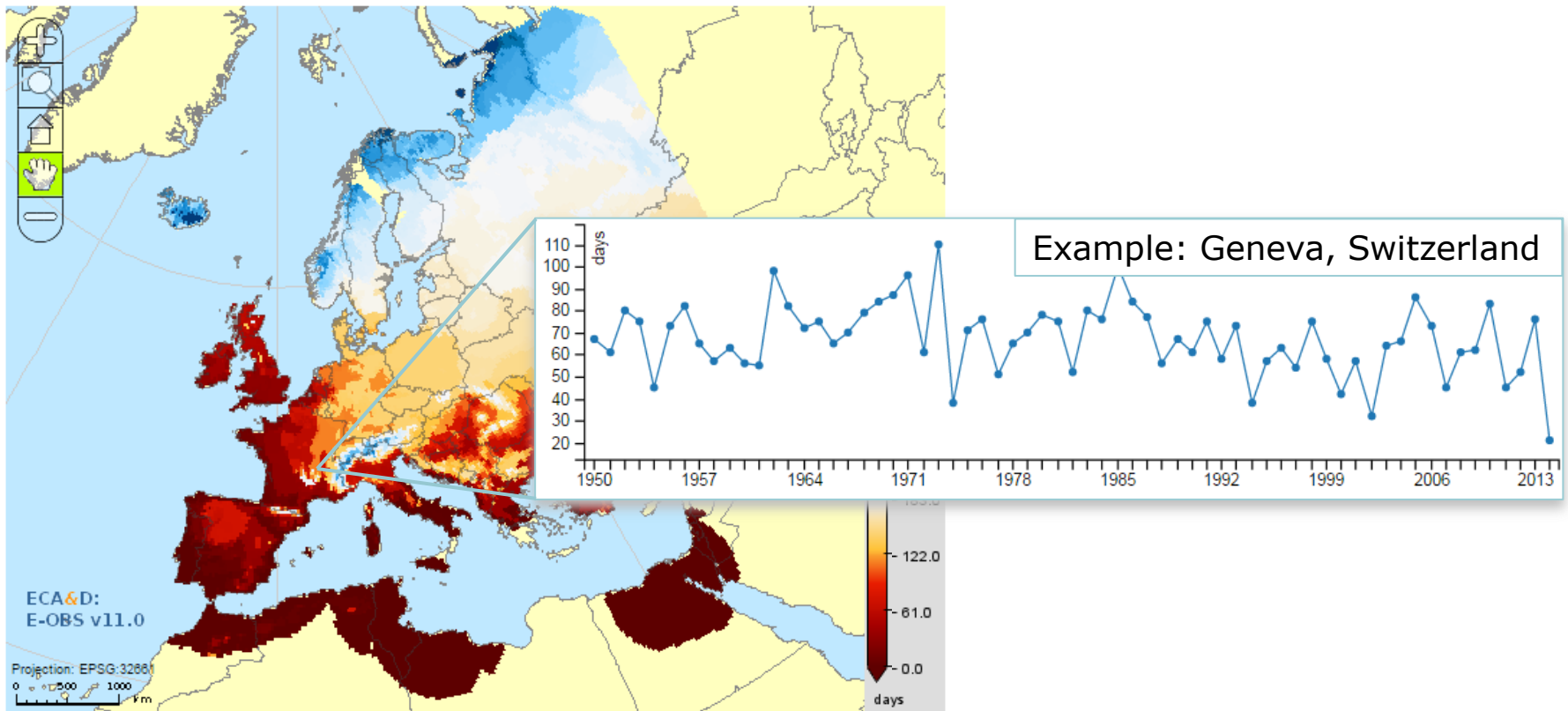
Indices of extremes
in 8 categories:

- Cold
- Drought
- Heat
- Pressure
- Rain
- Snow
- Sun
- Temperature



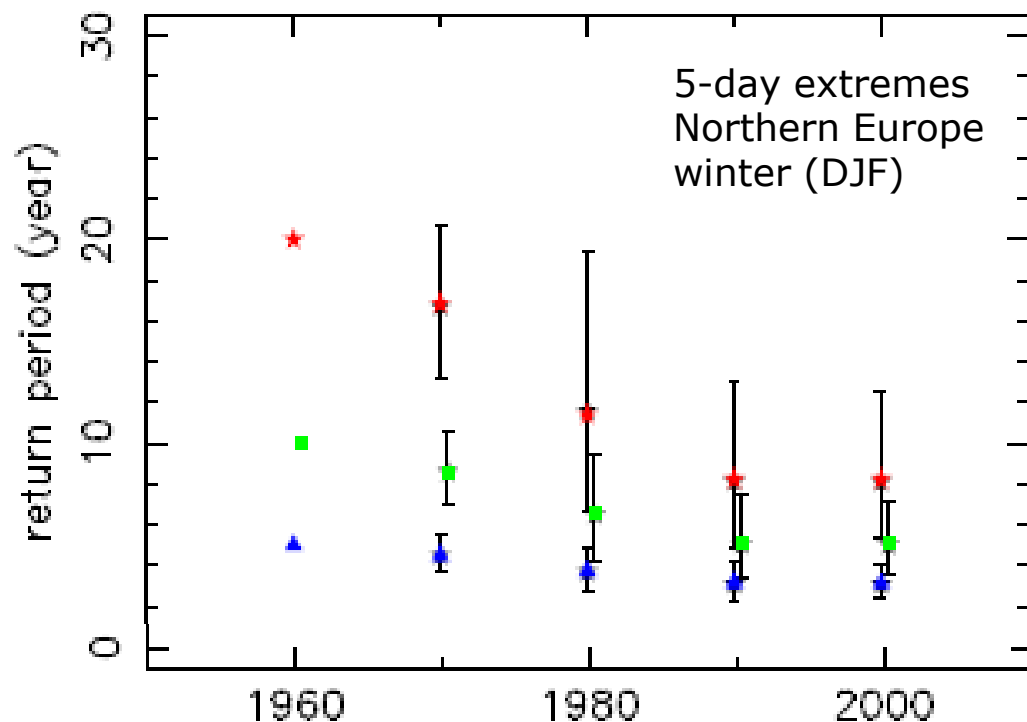
Web interface for browsing time series plots, trend maps, climatology/anomaly maps, and return value maps for selected stations, time periods, etc.

Number of frost days ($T_{min} < 0^{\circ}C$)

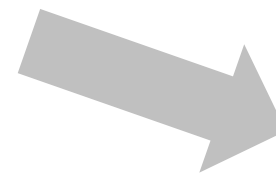


In-situ observations of precipitation extremes

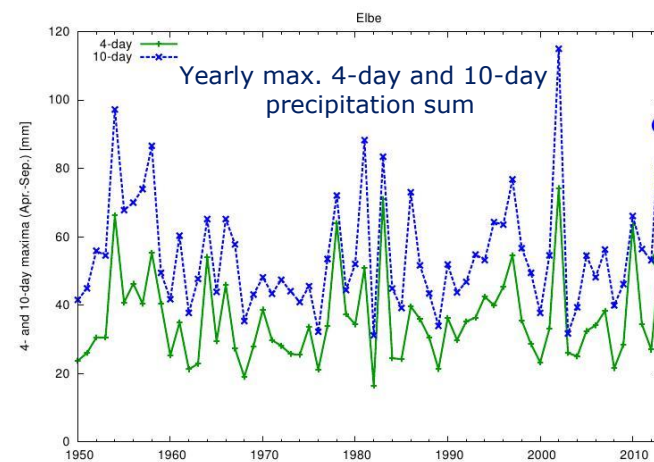
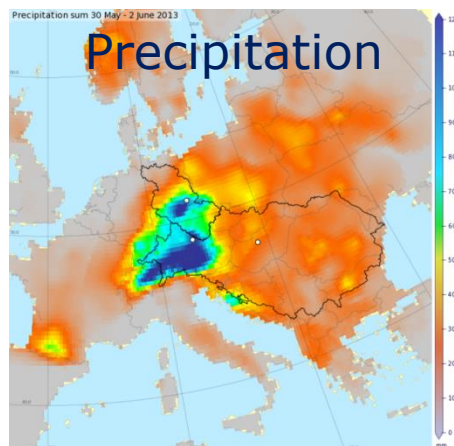
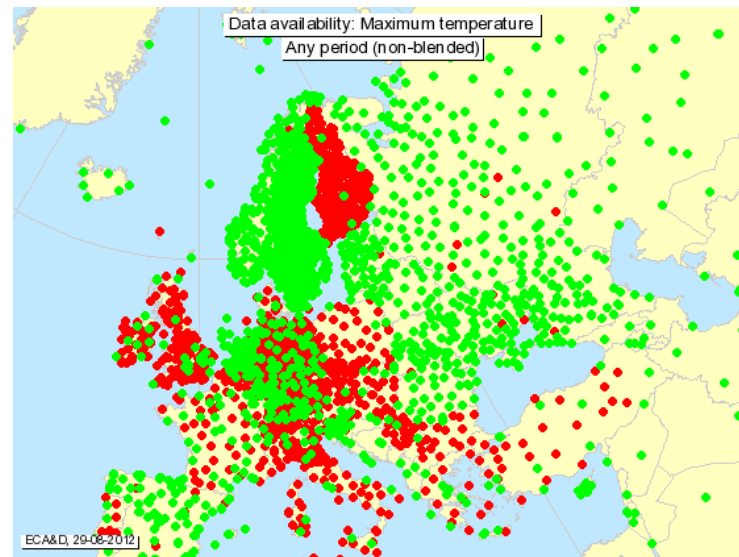
Van den Besselaar et al., Int.J.Climatol., 2013



Reduction is in qualitative agreement with model projections for the 21st Century e.g. Kharin et al. J.Climate, 2007

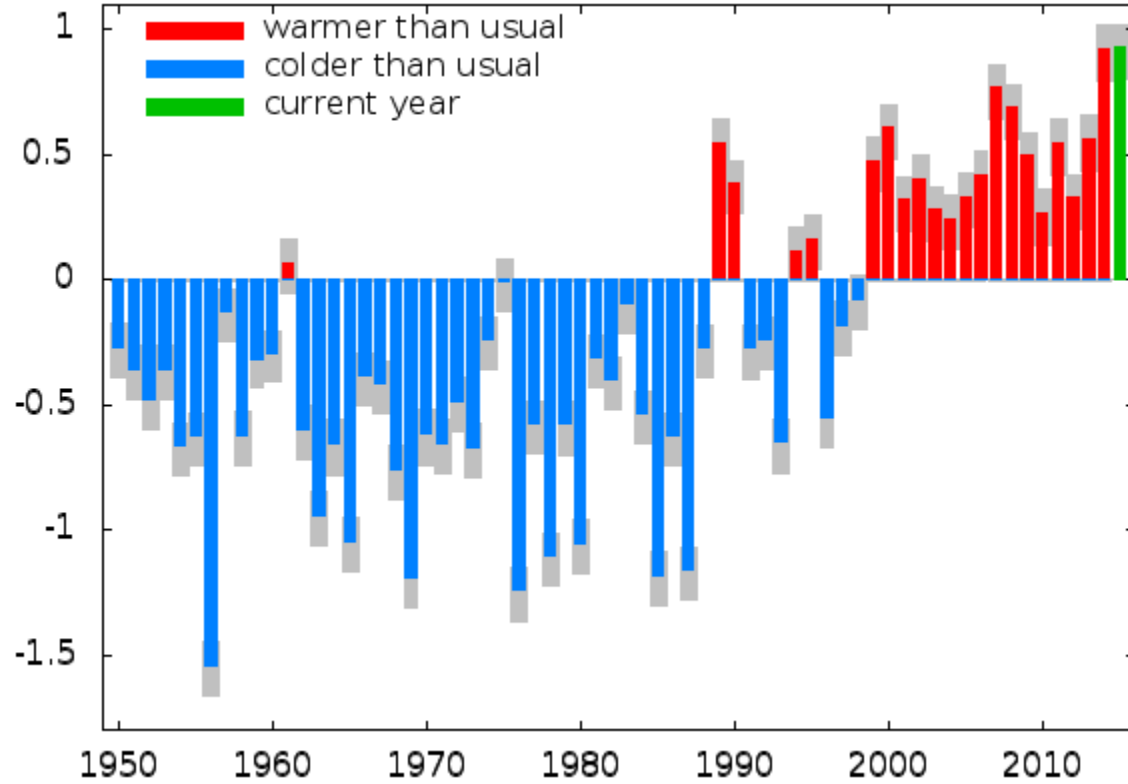
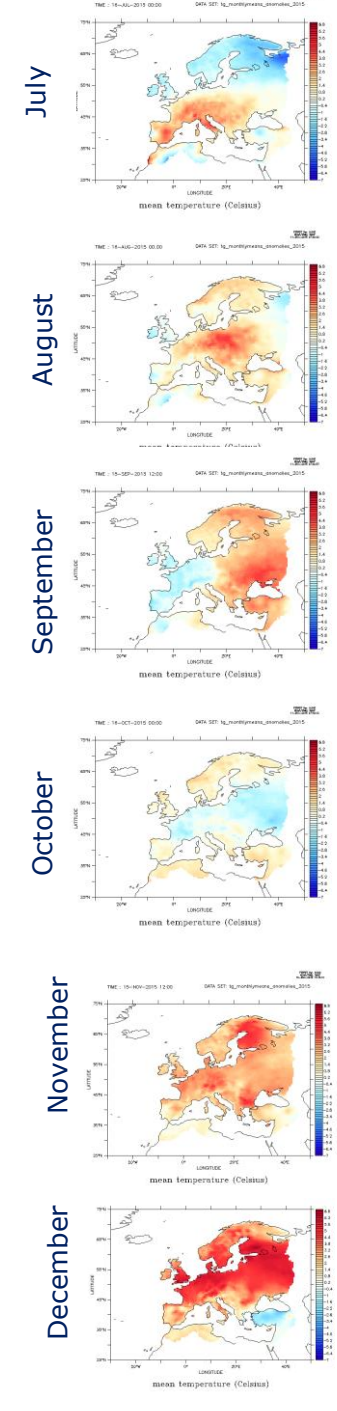
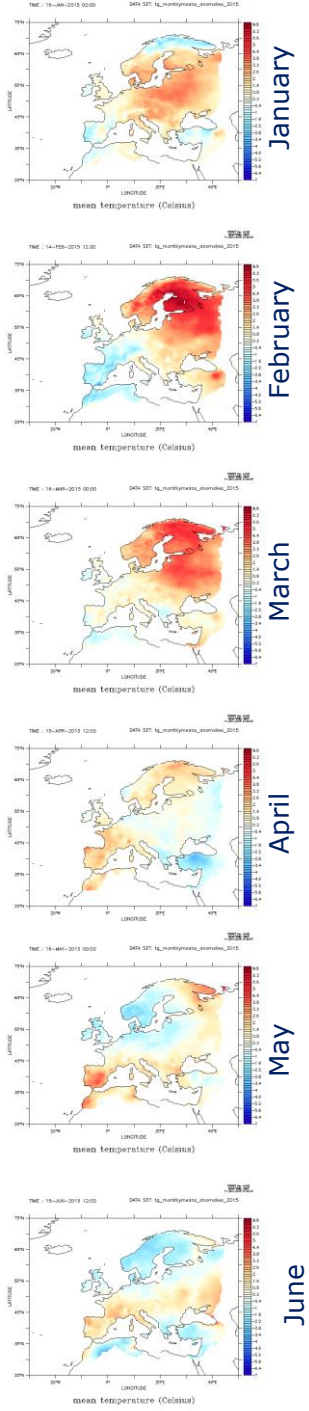


KNMI Regional Climate Centre (RCC) for European Climate Data



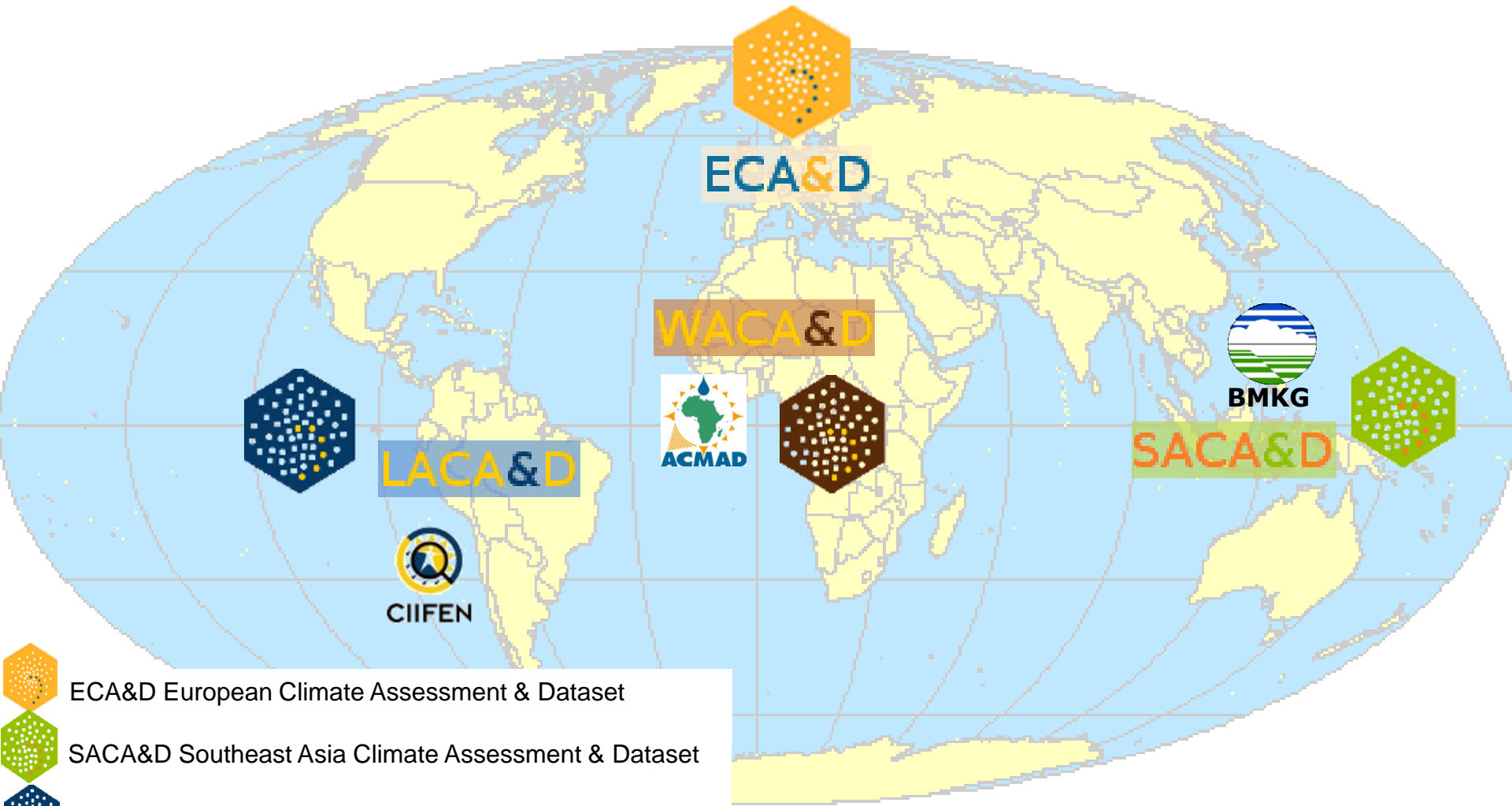
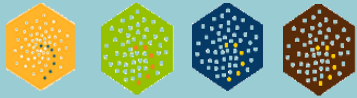
European temperature anomaly





(wrt 1981-2010 climatology)



Based on ECA&D/EOBS, vd Schrier et al., 2014

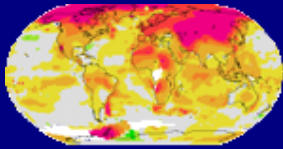
International Climate Assessment & Dataset



-  ECA&D European Climate Assessment & Dataset
-  SACA&D Southeast Asia Climate Assessment & Dataset
-  LACA&D Latin American Climate Assessment & Dataset
-  WACA&D West African Climate Assessment & Dataset



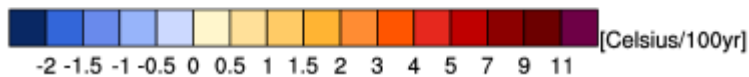
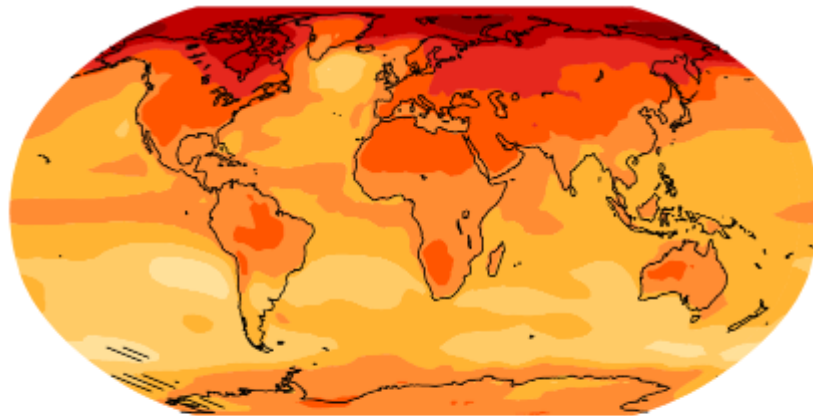
KNMI Climate Explorer – assessment tools & data



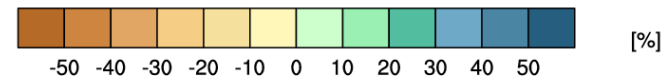
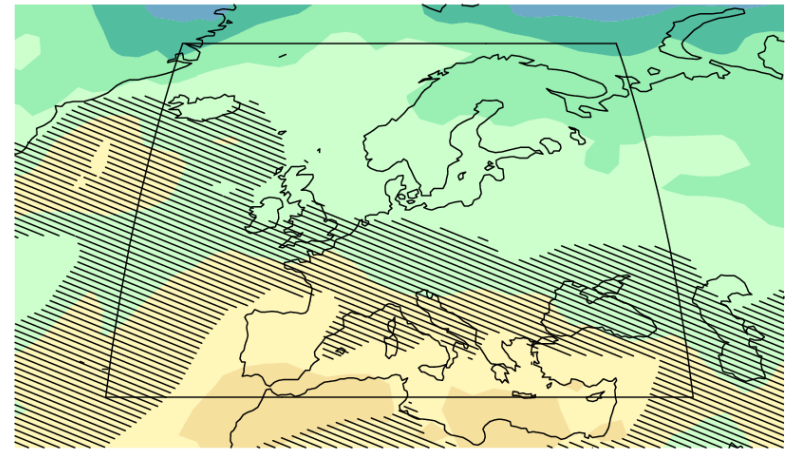
climexp.knmi.nl

KNMI Climate Explorer

Public access • Statistical analysis and visualization tools • Historical data and projections



mean rcp45 relative precipitation 2081-2100 minus 1986-2005 Jan-Dec AR5 CMIP5 subset

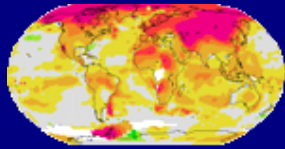


Example 1: 1979-2014 trend in Yearly average temperature (CMIP5)



Example 2: Change yearly precipitation

KNMI Climate Explorer – assessment tools & data

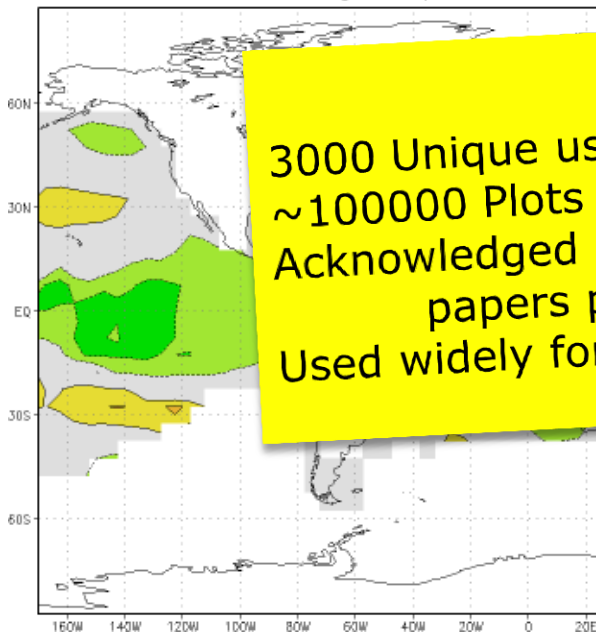


climexp.knmi.nl

KNMI Climate Explorer

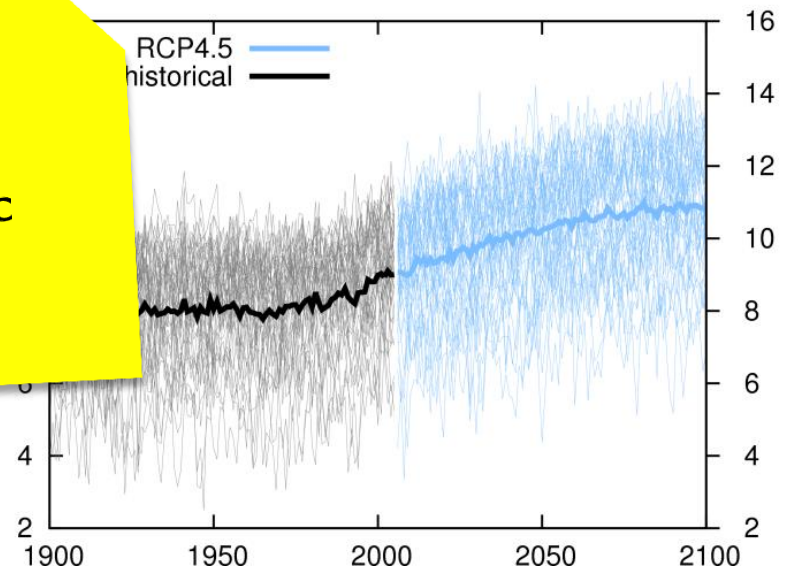
Public access • Statistical analysis and visualization tools • Historical data and projections

corr Feb–Mar averaged CULTUURTUIN precipitation
with Dec–Jan averaged Kaplan SSTa



3000 Unique users per month
~100000 Plots per month
Acknowledged in ~100 scientific
papers per year
Used widely for teaching

Temperature 50N, 10E Jan-Dec AR5 CMIP5 subset



Example 3: correlation precipitation in
Paramaribo (Suriname) vs SST



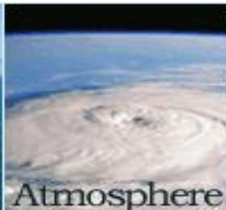
Example 4: Yearly average temperature



Land



Marine



Atmosphere



Emergency



Security



Climate

Copernicus is an EU Programme aimed at developing European information services based on satellite Earth Observation and in-situ data analyses.



The initiative is headed by the EC, in partnership with ESA and EEA

Budget 2014-2020: 4.3 billion €, of which 3.1 for ESA, -> 200 M€/yr (non-ESA)

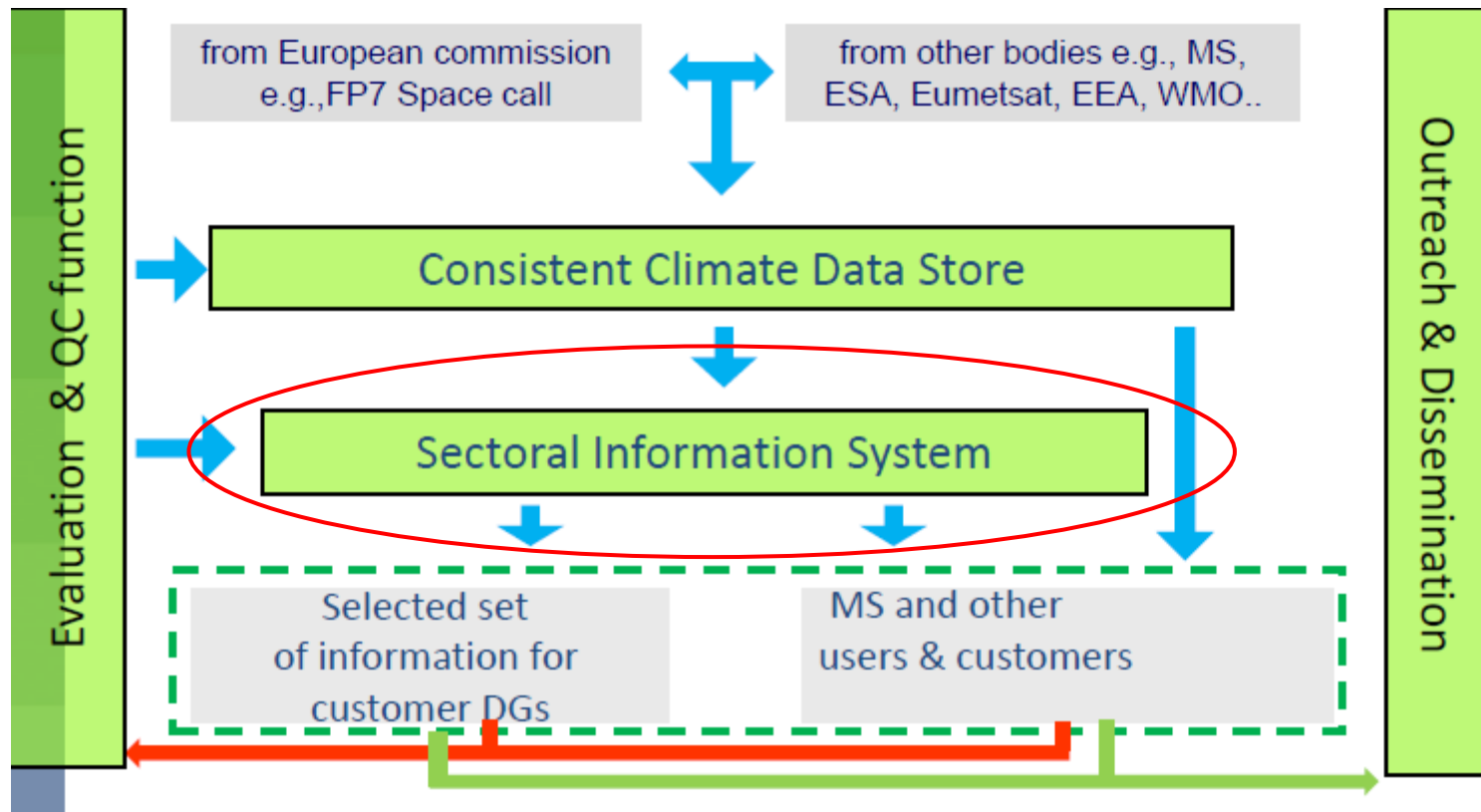


Services

- **Land Monitoring Service:** Information on land cover, land use, incl. changes
- **Marine Environment Monitoring Service:** Information about the physical state and dynamics of the ocean and marine ecosystems
- **Atmosphere Monitoring Service:** Monitor the composition of the Earth's atmosphere
- **Climate Change Service:** Monitoring and predicting climate change to support adaptation and mitigation
- **Emergency Management Service:** Alerts related to flood and forest fire risks and to assess the impact of natural and man-made disasters
- **Security Service:** Information for EU external actions, maritime surveillance and border surveillance.



Copernicus Climate Change Service Architecture



Sectoral Information Systems:



**WATER
MANAGEMENT**



**AGRICULTURE
& FORESTRY**



TOURISM



INSURANCE



TRANSPORT



ENERGY



HEALTH



INFRASTRUCTURE



**DISASTER RISK
REDUCTION**



**COASTAL AREAS
REDUCTION**

Thank you for your attention!

