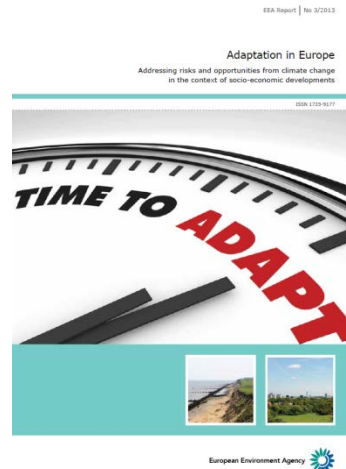


Climate information for European assessments

Blaz Kurnik Climate change impacts and adaptations (EEA)



EEA mission

The European Environment Agency is the EU body dedicated to providing sound, independent information on the environment

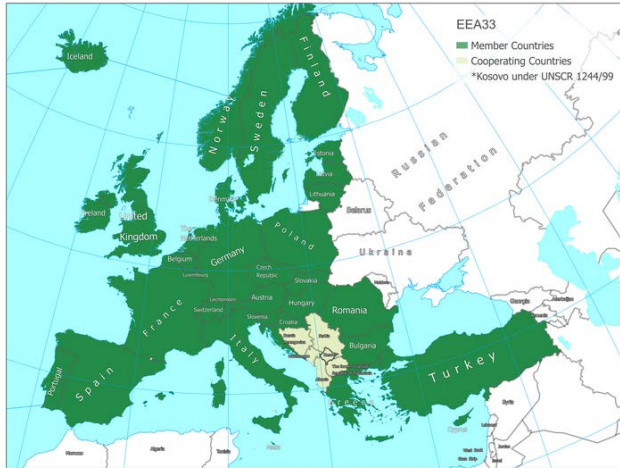
We are a main information source for those involved in developing, adopting, implementing and evaluating environmental policy, and also the general public



EEA clients are...

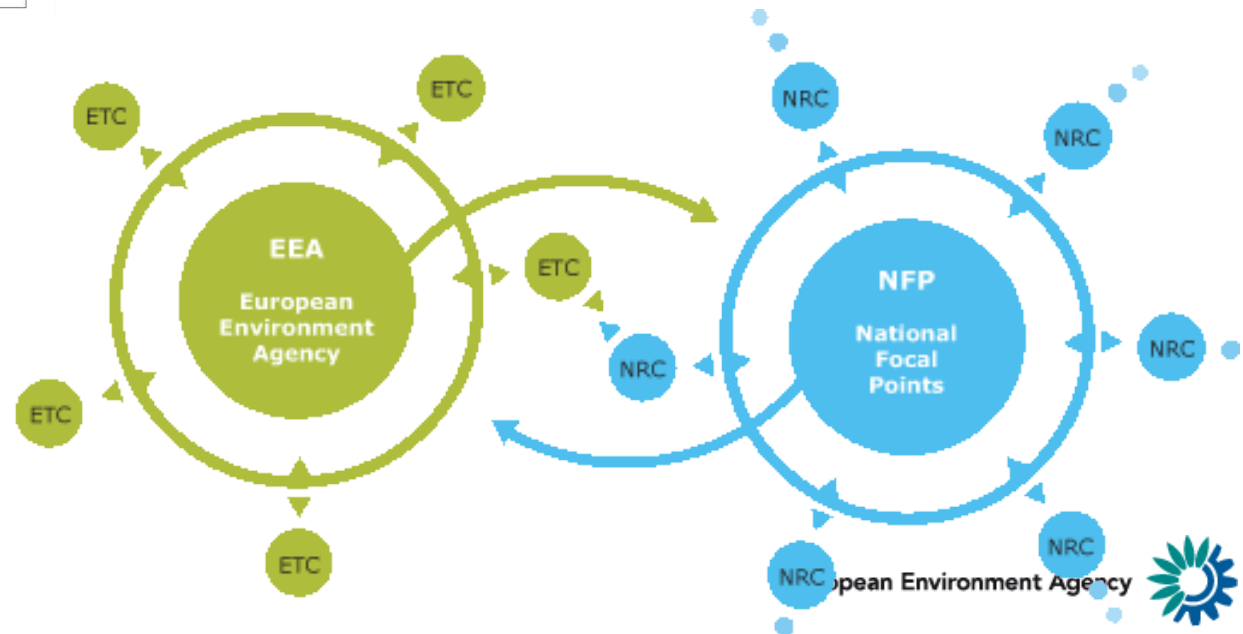
- European Commission, European Parliament, Council, EEA member countries (32 + 6 collaborating)
- Policy influencers: NGOs, business, media, advisory groups, scientists, debaters
- General public

EEA structure



About 300 national institutions

- National focal points
- European topic centres
- National reference centres

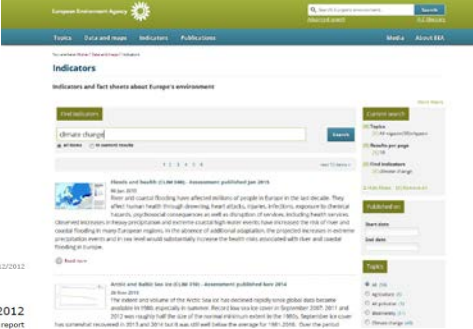


Main EEA products and tasks

- To maintain regular **flow** of environmental data and data **collection** through the EIONET
- To regularly update environmental **indicators**
- To publish environmental (including climate change) **assessments**
- To maintain environmental **information platforms** (BISE, WISE, Climate-ADAPT)
- To coordinate implementation of two components of **Copernicus land monitoring service** and **Copernicus In-situ** component

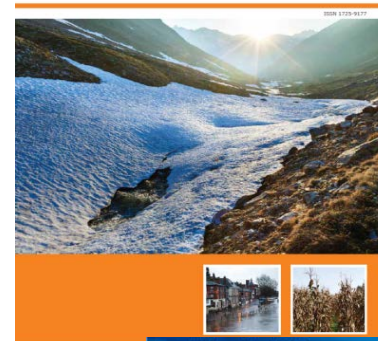
Climate change information

Climate change impacts indicators (updated every 1-4 years)




The screenshot shows the European Environment Agency website. The main heading is "Indicators" with a sub-heading "Indicators and fact sheets about Europe's environment". A search bar contains the text "Climate change". Below the search bar, there is a list of indicators, including "Health and health (CLM 040) - Assessment published Jan 2014" and "Air quality and health (CLM 040) - Assessment published Jan 2014". The page also features a navigation menu with "Home", "Data and maps", "Indicators", "Publications", "Media", and "About EEA".

Climate change, impacts and vulnerability in Europe 2012
An indicator-based report



Climate change impact reports (update every 4 years)



The screenshot shows the European Climate Adaptation Platform website. The main heading is "European Climate Adaptation Platform". The page features a search bar and a navigation menu with "Home", "Adaptation information", "EU Adaptation Policy", "Countries, regions, cities", "Tools", "Links", "Search the database", and "Newsletter". The main content area displays "Search results: 1520" and a list of results, including "Publications and reports (488)", "Information portals (121)", "Guidance (108)", "Tools (43)", "Maps, graphs and datasets (101)", "Indicators (44)", "Research and knowledge projects (402)", "Adaptation options (85)", "Case studies (86)", and "Organisations (9)".

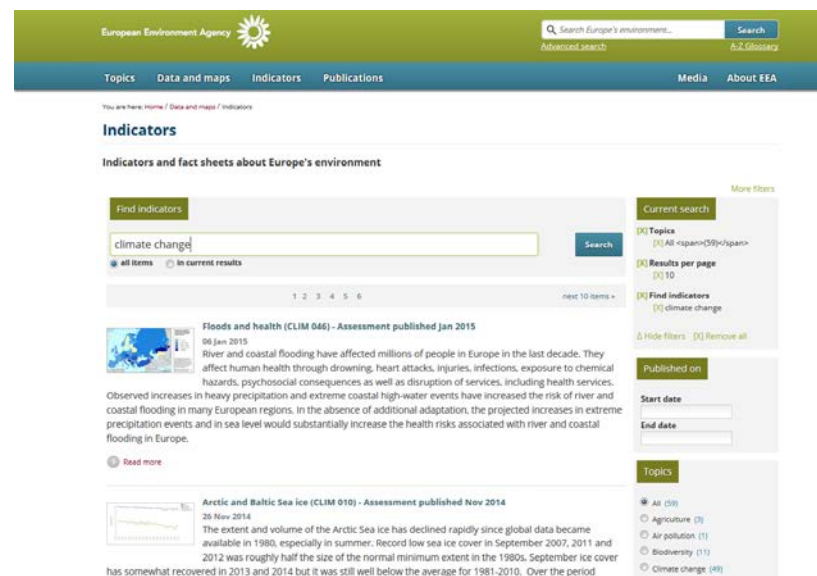
Climate-ADAPT (updated "daily")



EEA Climate change impact indicators

EEA climate change impact indicator:

- is a measure that can be used to illustrate and communicate complex environmental phenomena (e.g. climate change) simply
- comprises specification and assessment(s) including key messages
- uses quantitative data on observed changes and projections
- includes information on uncertainties
- has policy defined purposes
- uses well defined criteria
- is published on EEA web pages and in Climate-ADAPT
- supports development of adaptation policies



The screenshot displays the EEA website's 'Indicators' section. At the top, there is a search bar with the text 'Search Europe's environment...' and a 'Search' button. Below the search bar, there are navigation tabs for 'Topics', 'Data and maps', 'Indicators', and 'Publications'. The main content area is titled 'Indicators and fact sheets about Europe's environment'. A search box contains the text 'climate change', and a 'Search' button is next to it. Below the search box, there are filters for 'all items' and 'in current results'. The search results are displayed in a list format, with the first result being 'Floods and health (CLIM 046) - Assessment published Jan 2015'. The second result is 'Arctic and Baltic Sea ice (CLIM 010) - Assessment published Nov 2014'. On the right side of the page, there are several filter panels: 'Current search' with options for 'Topics', 'Results per page', and 'Find indicators'; 'Published on' with 'Start date' and 'End date' input fields; and 'Topics' with a list of categories including 'Agriculture', 'Air pollution', 'Biodiversity', and 'Climate change'.



Underpinning datasets

Type:

- Climate variables (daily min, max, mean air temperature, total precipitation amount, ...)
- Climate indices (drought index, cold spell index, soil moisture index, ...)

Sources:

- Research projects and programmes (EURO4M, ERA-CLIM2, UERRA,...)
- Met offices and Climate Services (ECMWF, UK MO, KNMI, ...)
- Global and European organisations (WHO, ECDC, CRED, JRC, ...)
- Academia, through scientific literature databases
- EIONET and ETC

Criteria:

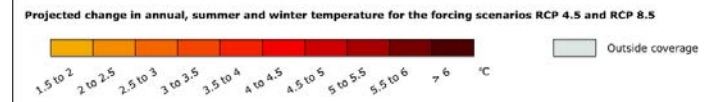
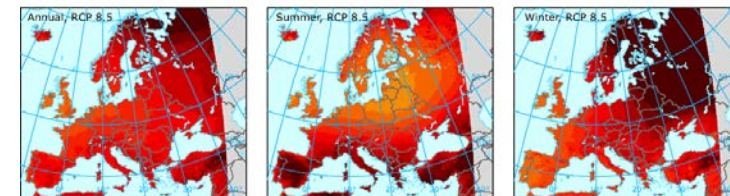
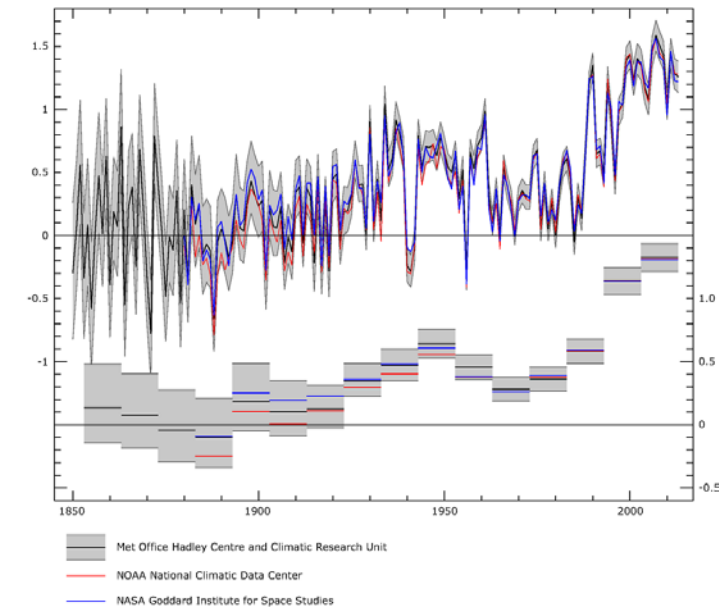
- Thematic and policy relevance
- Scientific soundness
- Geographical coverage
- Appropriate geographical characterization
- Long time series
- Reliable data supply
- Clear methodology

Example: Global and European temperature (CSI012)

Key messages

- The average temperature for the European land area for the last decade (2004–2013) is 1.3°C above the pre-industrial level, which makes it the warmest decade on record.
- Annual average land temperature over Europe is projected to continue increasing by more than global average temperature over the rest of this century, by around 2.4 °C and 4.1 °C under RCP4.5 and RCP8.5 respectively.
- Extremes of cold have become less frequent in Europe while warm extremes have become more frequent.

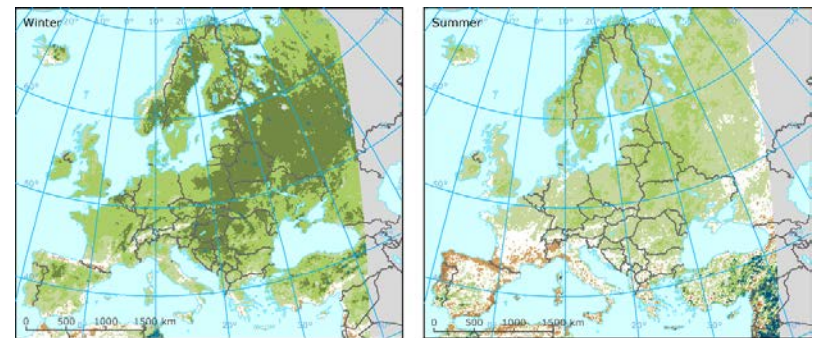
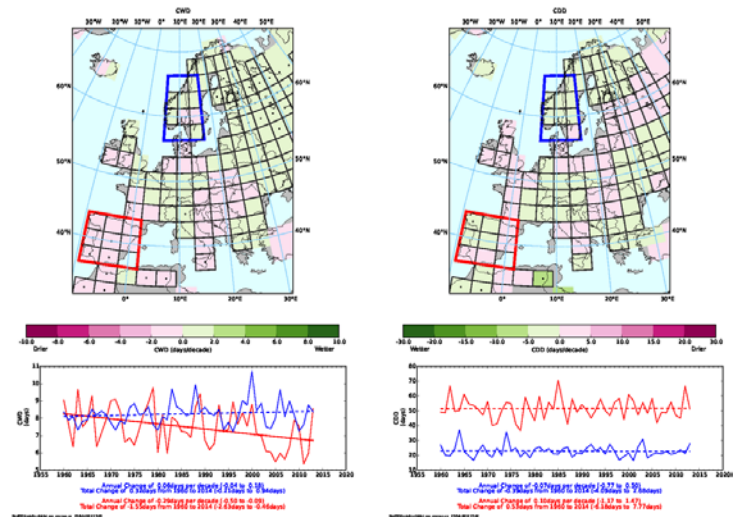
Europe average land temperature anomaly (°C) relative to pre-industrial



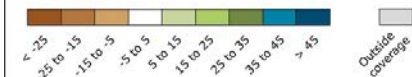
Example: Extreme precipitation CLIM004

Key messages

- The length of the wet period has significantly increased in north-eastern Europe and decreased in south-western Europe.
- Data availability is insufficient for assessing trends of extreme daily precipitation across Europe.
- Increasing summer dryness has been observed in central and southern Europe since the 1950s.
- Heavy precipitation events are likely to increase in most parts of Europe, especially in central and eastern Europe in winter.
- The length of dry spells is projected to increase significantly in southern and central Europe, in particular in summer, and to decrease in northern Europe.



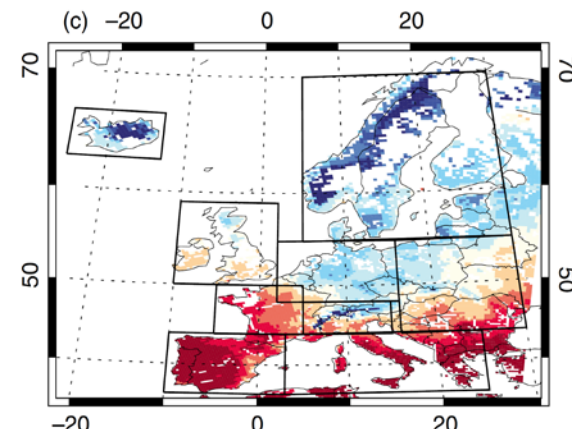
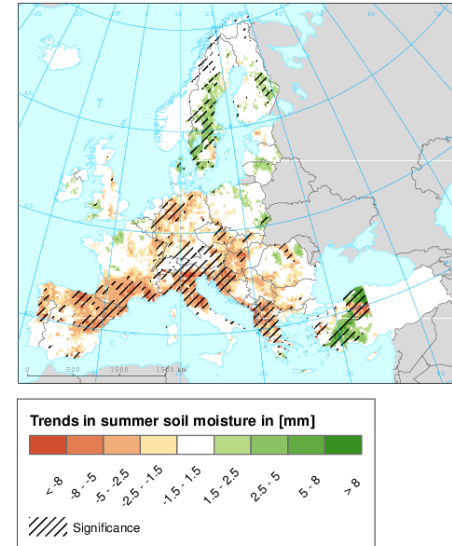
Heavy winter and summer precipitation change (%)



Example: Soil moisture CLIM029

Key messages

- Soil moisture capacity and soil moisture content will be affected by rising temperatures and by a decline in soil organic matter due to both changes in climate and land management.
- Soil moisture in summer has significantly decreased in parts of southern Europe and increased in the North.
- Projections (for 2071–2100) show a general reduction in summer soil moisture over most of Europe, significant reductions in the Mediterranean region, and increases in the north-eastern part of Europe.



Source: Henrich et al, 2011



Climate change impact report

Changes in the climate system

Climate variables

Cryosphere (glaciers, snow and ice)

Climate impacts on environmental systems

Marine environment and biodiversity

Coastal zones

Inland waters (quantity and quality, biodiversity)

Terrestrial ecosystems and biodiversity

Soil

Climate impacts on socio-economic systems and health

Agriculture

Forestry/forests

Energy

Transport, fisheries (no indicators)

Human health

Vulnerability indices

Contributors: European Topic Centres (ETCs), WHO, ECDC, JRC (about 90 experts), data from research projects and international databases

New report under preparations, to be published in 2016

EEA Report | No 12/2012

Climate change, impacts and vulnerability in Europe 2012

An indicator-based report

ISSN 1725-9177



Climate-ADAPT

Climate-ADAPT is a partnership between the EC and the EEA with information on:

- observed and projected climate change
- current and future vulnerability of regions and sectors,
- national, sub-national (cities) and trans-national adaptation strategies,
- adaptation case studies and potential adaptation options,
- tools that support adaptation planning,
- overview of relevant EU policy frameworks and processes.

The screenshot shows the homepage of the Climate-ADAPT European Climate Adaptation Platform. The header includes the logo of the European Union and the text "Climate-ADAPT European Climate Adaptation Platform". Below the header is a navigation menu with links for "Home", "Adaptation information", "EU Adaptation Policy", "Countries, regions, cities", "Tools", "Links", "Search the database", and "Newsletter".

The main content area features a large image of a modern building with a curved facade. To the right of the image is a section titled "About Climate Change Adaptation in Europe" with a brief description and a list of key areas: "Expected climate change in Europe", "Current and future vulnerability of regions and sectors", "National and transnational adaptation strategies", "Adaptation case studies and potential adaptation options", and "Tools that support adaptation planning".

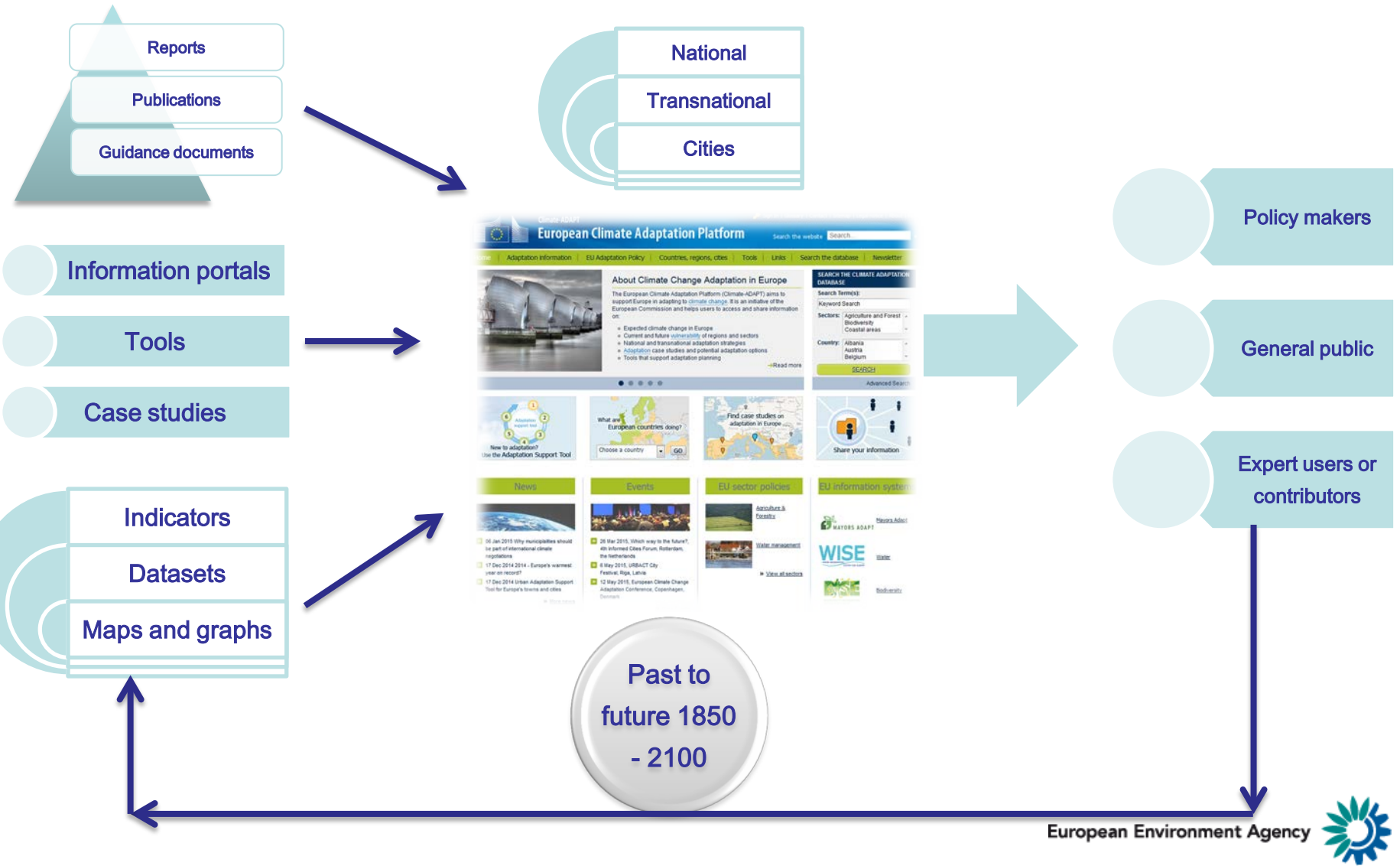
Below this section are several interactive tools and information boxes:

- "New to adaptation? Use the Adaptation Support Tool" with a circular diagram showing steps 1 through 6.
- "What are European countries doing?" with a dropdown menu to "Choose a country" and a "GO" button.
- "Find case studies on adaptation in Europe" with a map of Europe and a search function.
- "Share your information" with a circular diagram showing a person icon and a plus sign.

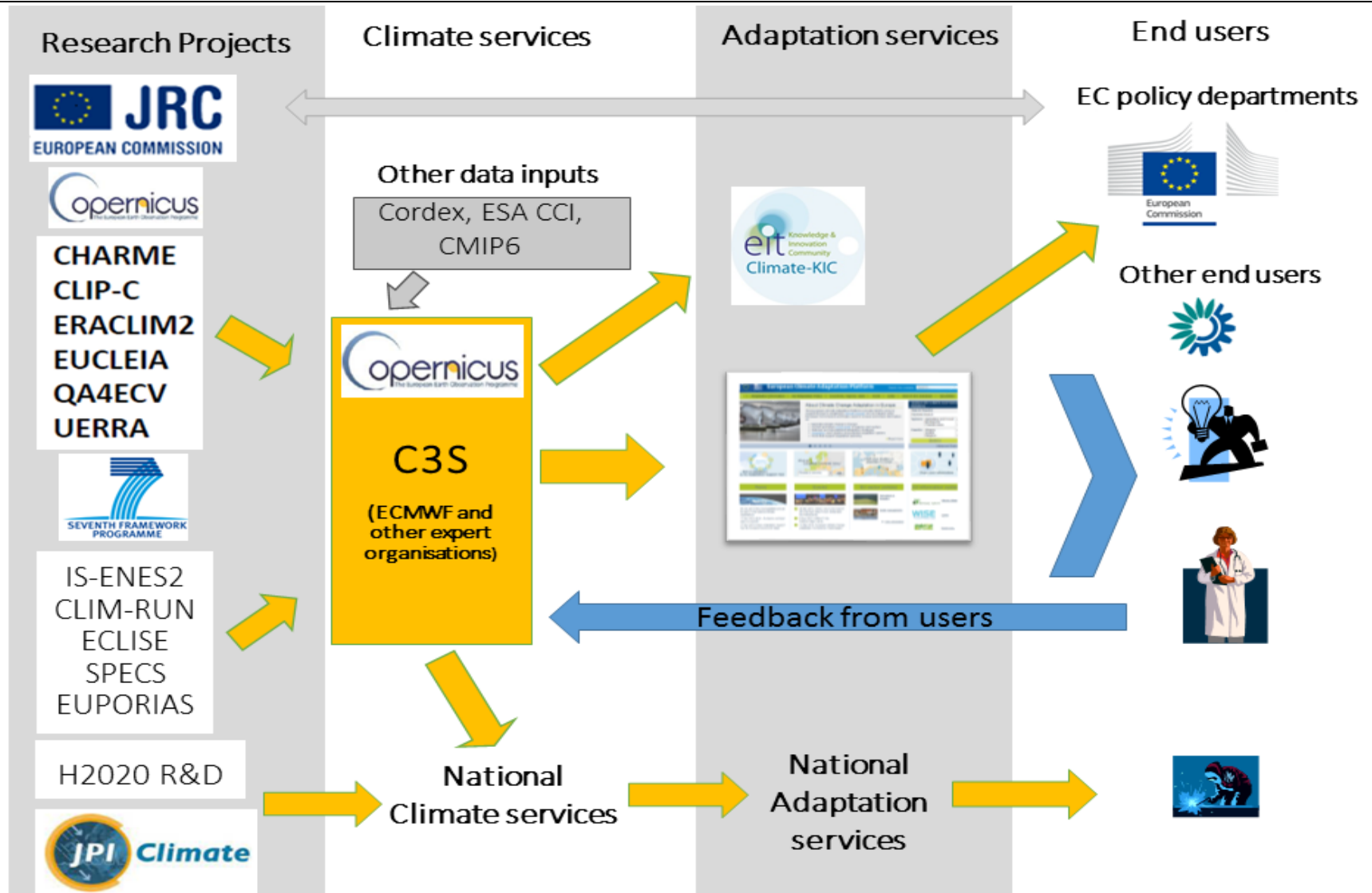
The bottom of the page is divided into four columns:

- News:** A list of recent news items with dates and brief descriptions, such as "06 Jan 2015 Why municipalities should be part of international climate negotiations".
- Events:** A list of upcoming events, such as "26 Mar 2015, Which way to the future?, 4th Informed Cities Forum, Rotterdam, the Netherlands".
- EU sector policies:** A list of policy areas including "Agriculture & Forestry" and "Water management".
- EU information system:** A list of information systems including "MAYORS ADAPT", "WISE Water", and "Biodiversity".

Climate-ADAPT: collecting and disseminating information on adaptation



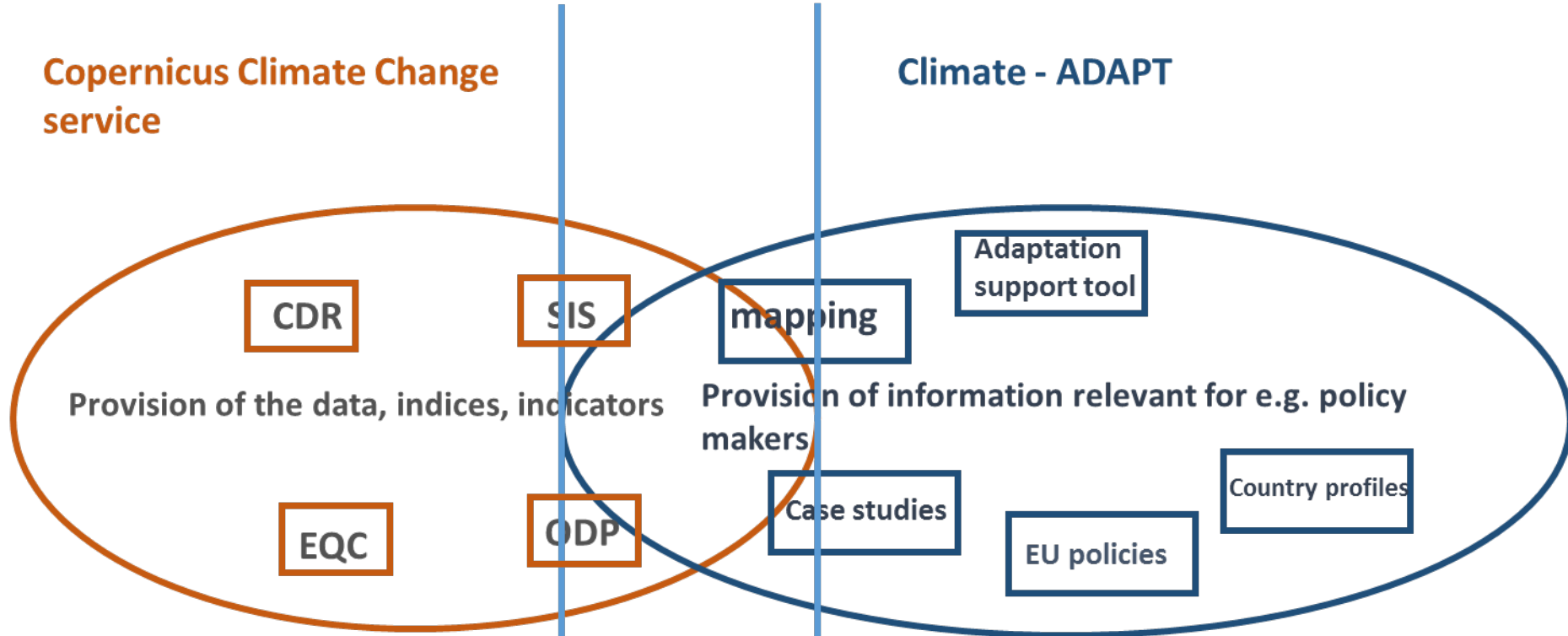
A global view: C3S and Climate-ADAPT



Different focuses of “interest”

Copernicus Climate Change service

Climate - ADAPT



Provision of the data, indices, indicators

Provision of information relevant for e.g. policy makers

Historical climate reanalysis, observations, seasonal forecasts, decadal and multi-decadal projections

Information on:
Impacts
Vulnerability

Adaptation support tools; EU, transnational, national, urban adaptation policies; adaptation case studies and potential adaptation options

Potential future links between C3S and EEA (Climate-ADAPT)

Indicators and assessments

- selected climate variables (from the CDS) or indicators from the SIS could be used as a data source for a subset of the EEA climate and impact indicators,
- C3S could be a key contributor to EEA assessment reports (annual joint updates of climate change report).

Climate-ADAPT

- Inclusion of the C3S pre-operational project reports as a new section (searchable through the database),
- presentation of C3S outputs to the section on (climate change) observations and scenarios or including a new section describing and showing C3S,
- map viewer (for climate change impacts, vulnerability and risks) could be extended or replaced by outputs from C3S including pre-operational projects).





Thank you for your attention

**<http://www.eea.europa.eu/themes/climate>
<http://climate-adapt.eea.europa.eu>**



Conclusions

- Assessments are based on the **indicators and data – links to CIB**
- Copernicus projects and the planned EU **climate service** and national services are **essential**;
- **Mainstreaming of climate change adaptation** in EU policies is taking place: the European Commission adopted an EU adaptation strategy in April 2013;
- many **EEA member countries** have developed **impacts, vulnerability and adaptation** assessments and several **countries** and **cities** have strategies in place (and some also action plans); also many **transnational** actions have taken place or are planned;
- the European Climate Adaptation Platform (**Climate-ADAPT**) and transnational, national and city level adaptation platforms will support climate change adaptation at various governance levels



- Which climate change observations and scenarios will be selected and at which geographical scales?
- Will complex indicators be included and what is the selection process?
- How to integrate socio-economic including demographic data/scenarios?
- How to achieve consistency in use of climate change scenarios in assessments across countries and cities?
- How will 'scientific users' (e.g. biophysical, economic and social modelling) and 'end users' be involved?
- Which main 'end-users' will be addressed and how?
- Countries, cities
- Sectors : Biodiversity (terrestrial), Marine environment, Coastal, Water management (floods, droughts, quality), Agriculture, Forestry, Infrastructure (energy, transport), Human health, Businesses
- What links are planned with climate adaptation web based information platforms (national and EU-wide, Climate-ADAPT)?

OUT

- Climate-ADAPT is a platform which support Europe in adapting to climate change and helps users to access and share **data** and **information** on climate change.
- An EEA indicator is a measure that can be used to illustrate and communicate complex environmental phenomena (e.g. climate change) simply (includes assessment, specification and **data** visualisation/figures).
- An EEA assessment (in a form of a report) provides **information** about European environment to support users and stakeholder (decision makers).