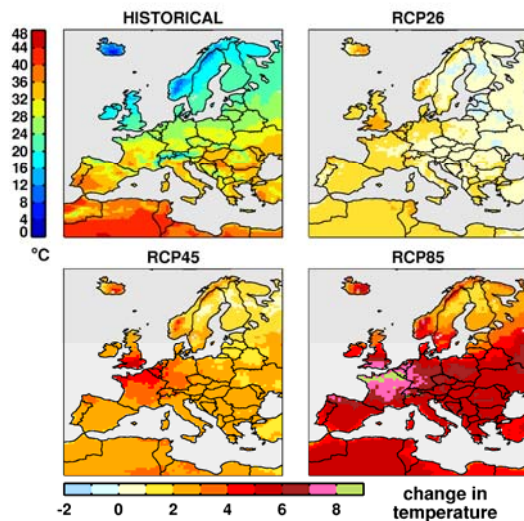


## Regional downscaling

Although climate change is a global issue an important use of EC-Earth is for regional downscaling. This provides information to address the regional impacts of climate change, and determine appropriate adaptation and mitigation measures on a more regional basis.

Below is an example of three EC-Earth global projections using different Representative Concentration Pathways (RCPs), dynamically downscaled to 50 km resolution over Europe. The figure shows changes in the surface air temperature of the warmest 5% of summer days for the period 2070-2100 compared to a control period (1971-2000) for each of the three RCP runs. The top left panel shows the mean absolute value of the warmest 5% of summer days in the downscaled EC-Earth simulation for the period 1971-2000.



## The EC-Earth Consortium

EC-Earth brings together 27 research institutes from 10 European countries to collaborate on the development of an Earth System Model. The goal is to build a fully coupled Atmosphere-Ocean-Land-Biosphere model, that can be utilised in seasonal to decadal prediction and climate change projections. It builds on model technology from the European Centre for Medium Range Weather Forecasting (ECMWF) and aims to implement the emerging concept of seamless prediction.

### The Consortium

- KNMI, The Netherlands\*
- SMHI, Sweden\*
- DMI, Denmark\*
- AEMET, Spain\*
- Met Éireann, Ireland\*
- CNR-ISAC, Italy\*
- Instituto de Meteorologia, Portugal\*
- BSC, Spain
- Centro de Geofisica, University of Lisbon, Portugal
- ENEA, Italy
- Geomar, Germany
- Geophysical Institute, University of Bergen, Norway
- IC3, Spain
- ICHEC, Ireland
- ICTP, Italy
- IMAU, The Netherlands
- IRV, Sweden
- Lund University, Sweden
- Meteorologiska Institutionen, Stockholm, Sweden
- Niels Bohr Institute, University of Copenhagen, Denmark
- NTNU, Norway
- SARA, The Netherlands
- Unité ASTR, Belgium
- Universiteit Utrecht, The Netherlands
- Universiteit Wageningen, The Netherlands
- University College Dublin, Ireland
- Vrije Universiteit Amsterdam, the Netherlands

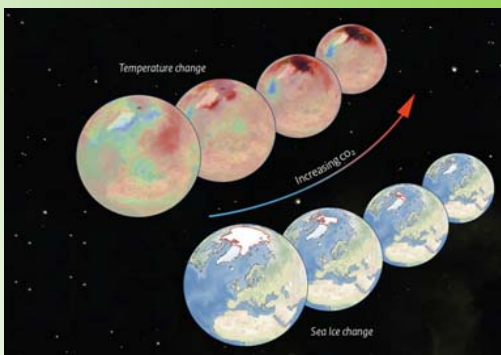
\*Core partners that contribute financially to support EC-Earth



## A European Earth System Model



## Motivation



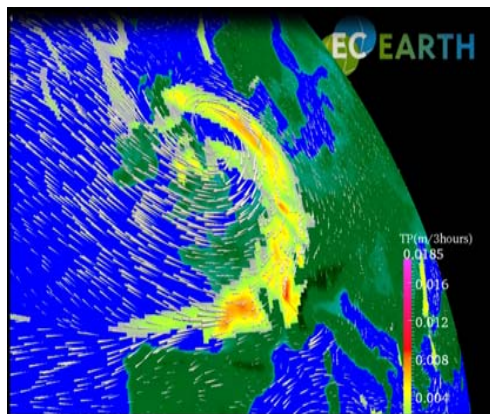
Earth System Models (ESMs), such as EC-Earth, are currently the only way of providing society with information on the future climate. EC-Earth generates reliable in-house predictions and projections of global climate change, which are a prerequisite to support the development of national adaptation and mitigation strategies.

EC-Earth is developed as part of a Europe-wide consortium thus promoting international cooperation and access to wide knowledge and data base. It further enables fruitful interactions between academic institutions and the European climate impact community.

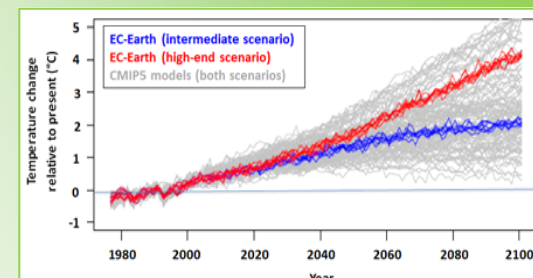
EC-Earth makes successful contributions to international climate change projections such as CMIP5. Ongoing development by the consortium will ensure that increasingly more reliable projections can be offered to decision and policy makers at regional, national and international levels.

## The System

- EC-Earth is based on the World's leading weather prediction model (ECMWF's IFS), which is extensively verified on short time scales.
- EC-Earth is closely aligned with ECWMF's seasonal forecasting system.
- EC-Earth benefits greatly from continuous updates through collaboration with ECMWF.
- EC-Earth can be used for predictions across time scales, ranging from weather to climate.
- EC-Earth can be used to study climate feedbacks, which govern the global and regional response.



## Advantages



- Share large climate data sets for analysis and downscaling in a timely and flexible manner.
- High visibility and ample opportunities for external funding (e.g. FP7 and Horizon2020).
- Availability of an in-house state-of-the-art Earth system model.
- Provide an effective link between new scientific knowledge developed in academia and the climate impacts community.
- Modular system: new modules (e.g. dynamic vegetation, carbon cycle, atmospheric chemistry) are being added.

## Find out more

For the latest EC-Earth information visit the Wiki pages at;

<http://eearth.knmi.nl>