



IS-ENES

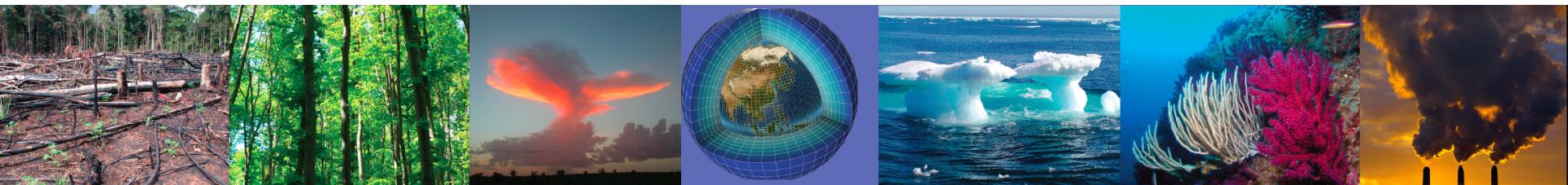
InfraStructure for the European Network for Earth System modelling

European research infrastructure for climate modelling

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CNRS, IPSL, Saclay, France

Coordinator of FP7 IS-ENES2

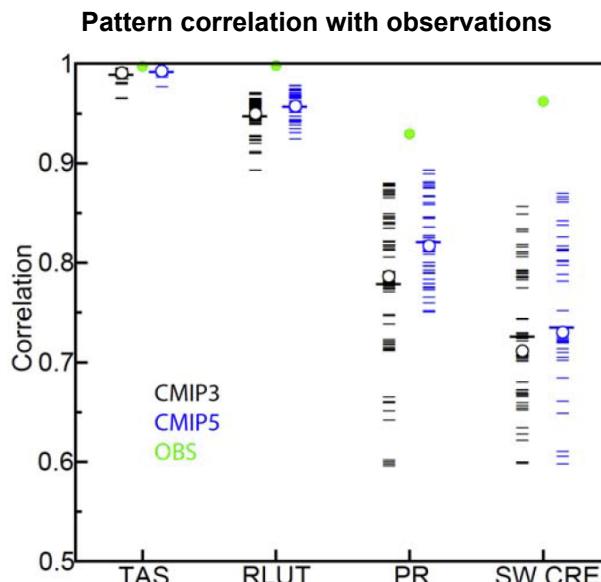


CMIP5 international coordinated experiments

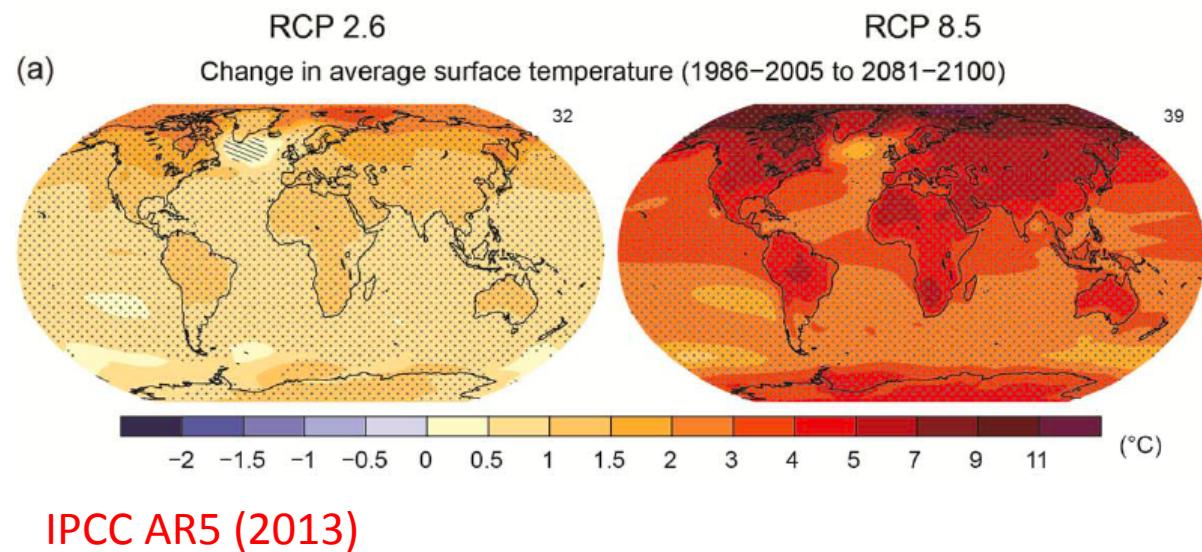
« Reference simulations »



Evaluate

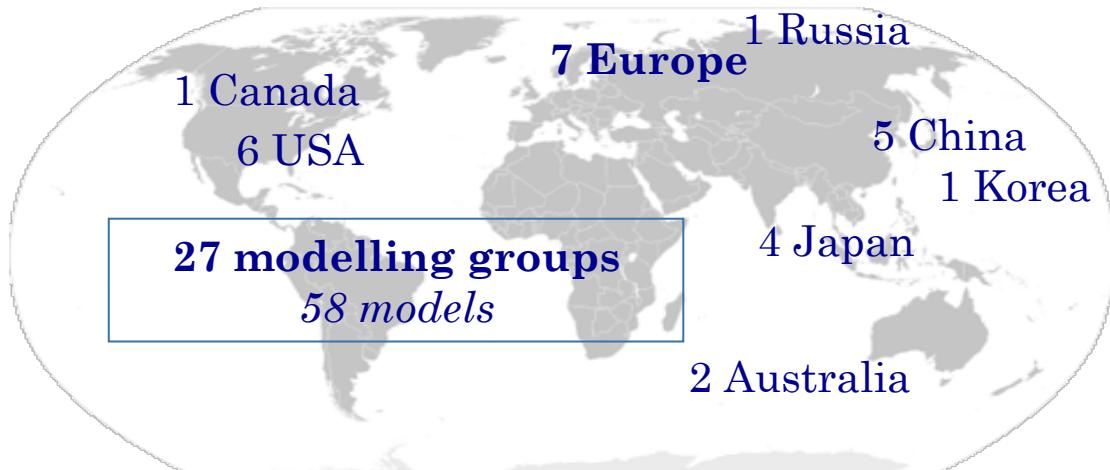


Understand



CMIP5
3400 simul. yrs up to > 12000 yrs
50 expts up to > 160 expts
2000 Tbytes (CMIP3: 36)

27 modelling groups
58 models



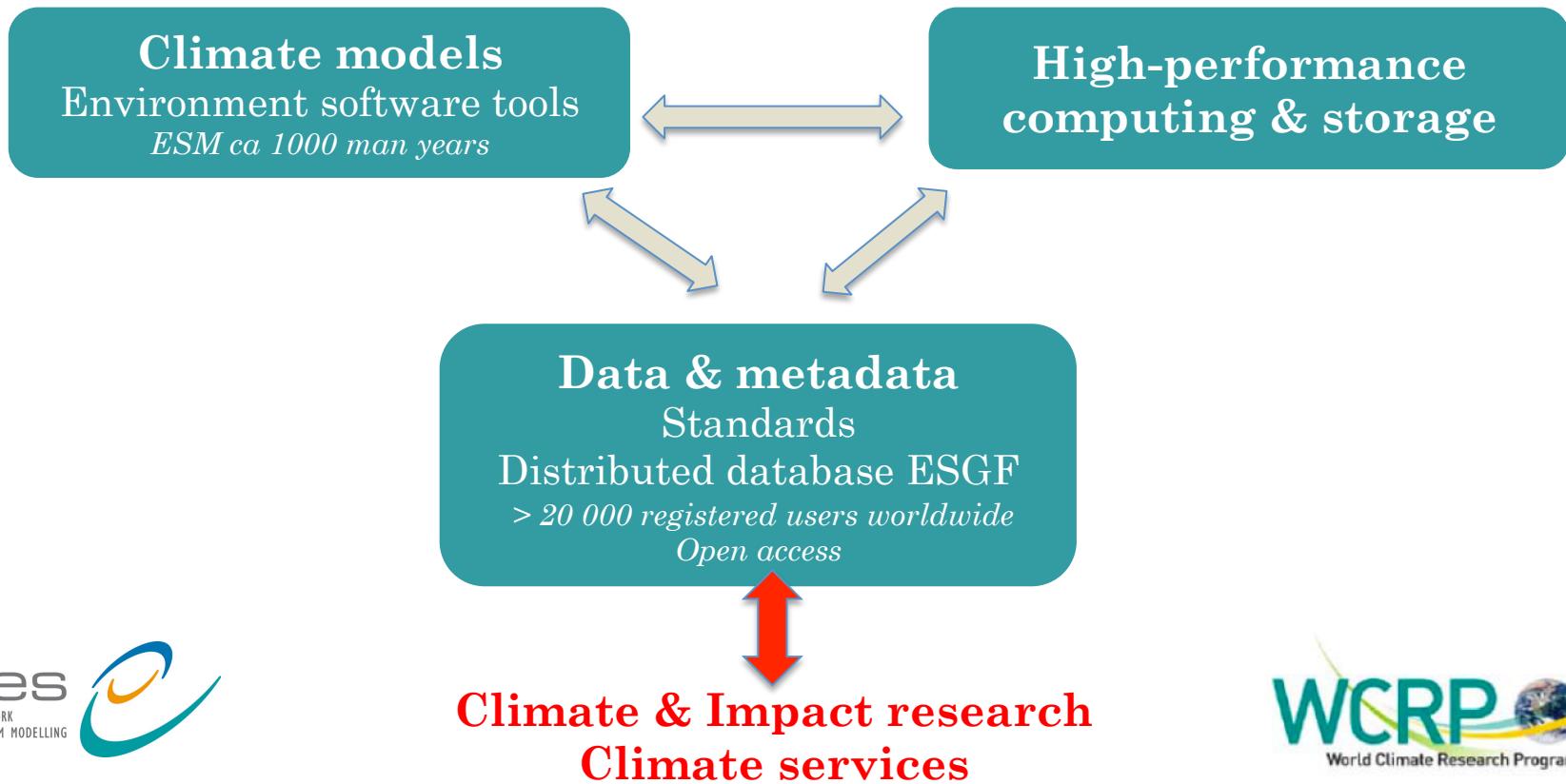
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<http://is.enes.org/>



IS-ENES Phases 1 & 2 (2009-2017)



Support international coordinated experiments: CMIP & CORDEX
Used in IPCC Assessments Reports

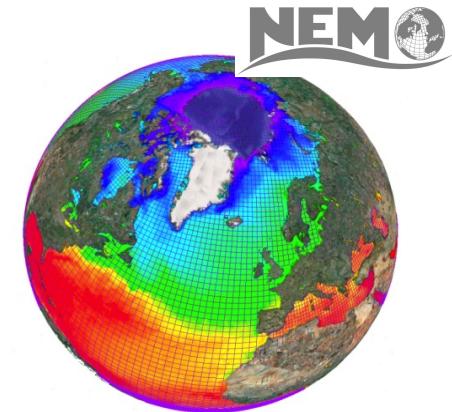
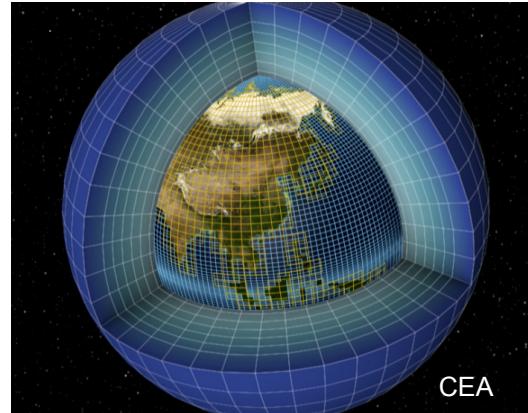
Infrastructure for the European Network for Earth System modelling



IS-ENES Phases 1 & 2 (2009-2017)



Climate models
Environment software tools
ESM ca 1000 man years



Foster common developments, sharing of expertise, accelerate developments

Service on models and model environment
OASIS coupler, CDO data processing, NEMO Ocean model

Support on ESMs: Model documentation for the 7 CMIP5 European models
Help users of CMIP5 models and access to climate models

ENES Portal <http://enes.org/>

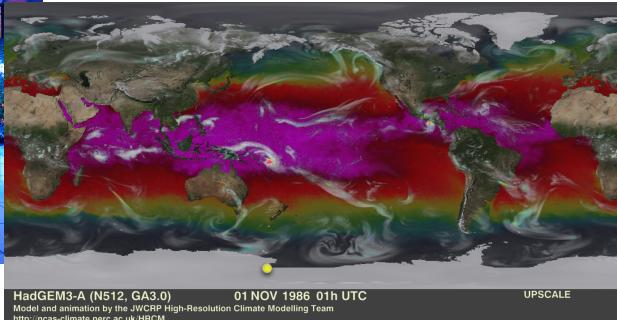
Infrastructure for the European Network for Earth System modelling



IS-ENES Phases 1 & 2 (2009-2017)



PRACE Curie machine.
CNRS Phototheque/C. Fressillon



PRACE UPSCALE project
P.L. Vidale et al.

High-performance computing & storage

Ensure an efficient access and execution of ESMs on HPC facilities

Network on HPC & Common strategy

Interface with PRACE

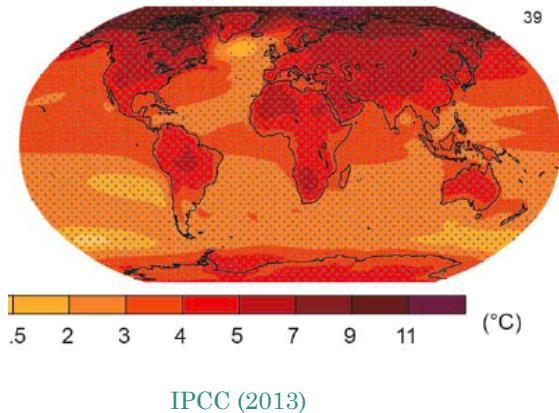
Model performance & High-end experiments

Coupled benchmarks & Technology tracking

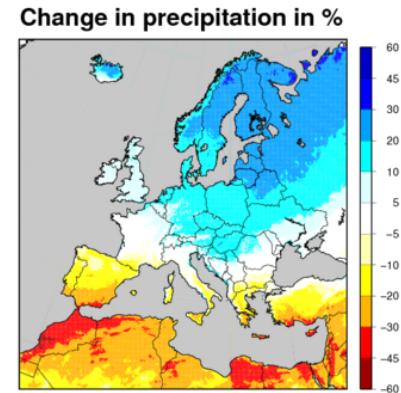
Infrastructure for the European Network for Earth System modelling



IS-ENES Phases 1 & 2 (2009-2017)



Data & metadata
Standards
Distributed database ESGF
> 20 000 registered users worldwide
Open access



Ease access to model results for climate research and impacts studies

Open access to CMIP5 & CORDEX data

Help for users and providers

Portal for impact community <http://climate4impact.eu/>

Data and metadata standards and ESGF infrastructure

ENES Portal <http://enes.org/>

Large range of users

From climate research to climate impact studies & climate services

Examples

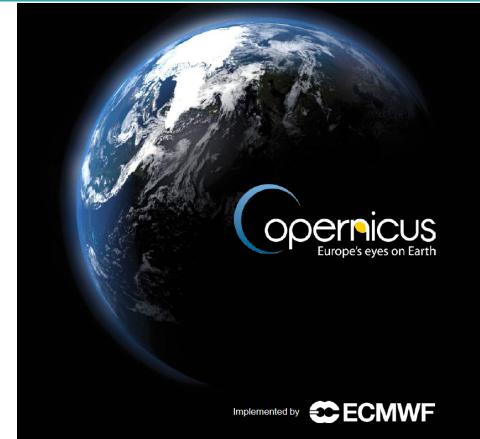
ESGF > 20 000 registered users

Climate Impact researchers

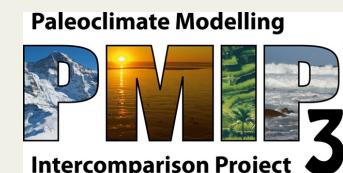
Platform to:
Explore data
Perform computation
Access documentation & guidance



Climate Service providers
Copernicus Climate Change Service
Develop an ESGF node
for global and regional projections



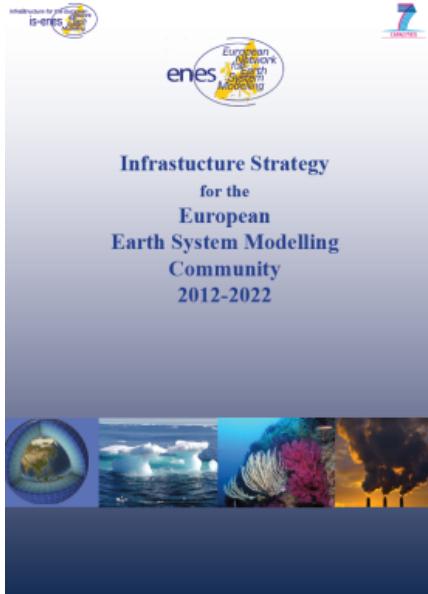
Paleoclimatologists
e.g. Paleoecologists



Infrastructure for the European Network for Earth System modelling



IS-ENES Phases 1 & 2 (2009-2017)



Foster the integration of the European ESM community

<http://enes.org/>

Foster interactions, synergies & common strategies

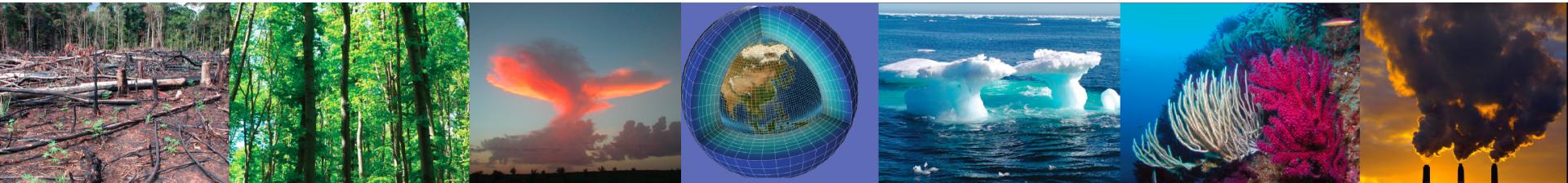
ENES Infrastructure strategy 2012-2022

Mid-term update 2017

Series of training schools on ESMs

Community Portal

- Infrastructure for climate modelling: growing need
Models / HPC / Data
CMIP / Preparing future generations of models
- IS-ENES:
Supporting CMIP
Added-value for Europe & Contribution for international
- Future plans:
 - Short-term : continue to support CMIP6
 - Towards and IS-ENES 3 application in 2018**CMIP6 / Evaluation infrastructure /**
Prepare a long-term research infrastructure



IS-ENES : Infrastructure for ENES

FP7 project « Integrating Activities »

<http://is.enes.org/>

1st phase: March 2009- Feb 2013 (7.6 M€), 18 partners

2nd phase: Apr 2013- March 2017 (8 M€), 23 partners

Better understand and predict climate variability & changes

Foster:

- The integration of the European ESM community
- The development of ESMs and their environment
- High-end simulations
- The application of ESM simulations for climate change impacts



Institut
*Pierre
Simon
Laplace*



Max-Planck-Institut
für Meteorologie



The University
of Manchester



Dmi
Vejr, Klima og hav

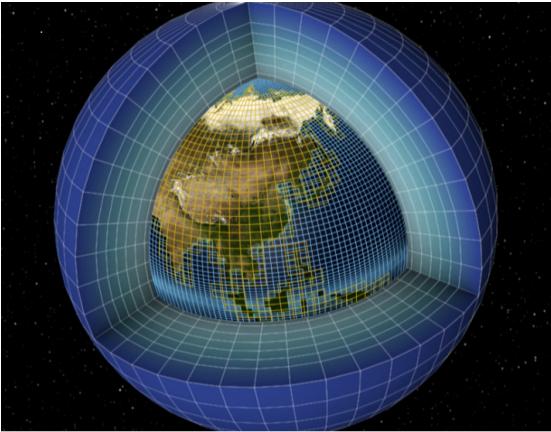


Royal Netherlands
Meteorological Institute
Ministry of Transport, Public Works
and Water Management

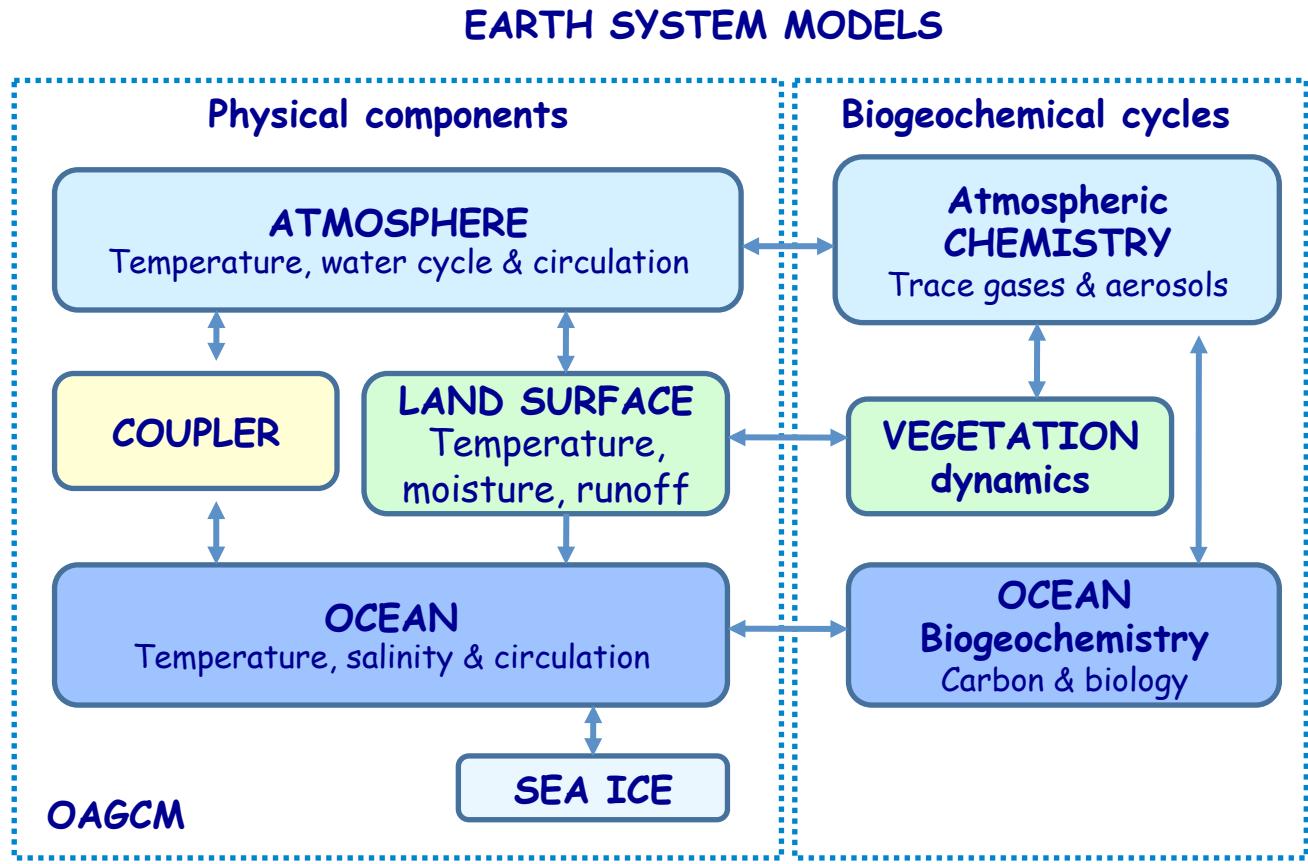


Earth System modelling in Europe

*Understand and predict
climate variability and change*



NCC	NorESM1-M NorESM1-ME
MPI-M	MPI-ESM-LR MPI-ESM-MR MPI-ESM-P
MOHC (with INPE)	HadCM3 Hadcm3Q HadGEM2-A HadGEM2-CC HadGEM2-ES
EC-EARTH	EC-EARTH
IPSL	IPSL-CM5A-LR IPSL-CM5A-MR IPSL-CM5B-LR
CNRM- CERFACS	CNRM-CM5 CNRS-CM5-2
CMCC	CMCC-CESM CMCC-CM CMCC-CMS



CMIP5 : Seven European models