

**CMCC**  
Centro Euro-Mediterraneo  
per i Cambiamenti Climatici

# CMCC Research

LCS-Rnet meeting  
Trieste, 1-2 April 2009

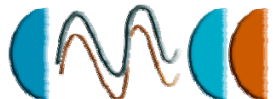
Giulia Galluccio

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# Introduction to CMCC

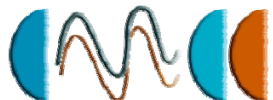
- **CMCC is the Italian research centre on climate science and policy.** Financially supported by the Italian Ministry for the Environment Land and Sea, the Ministry for Education, University and Research and the Ministry for Economy, CMCC was established in 2005 as a non-profit limited company
- **CMCC was born from the experience of six Italian research institutions** (Istituto Nazionale di Geofisica e Vulcanologia, *Fondazione Eni Enrico Mattei*, Università degli Studi del Salento, Centro Italiano Ricerche Aerospaziali, Consorzio Venezia Ricerche, Università degli Studi del Sannio) internationally well known at scientific and academic levels in the field of climate change.
- **CMCC mission is to act as a unique vertically integrated research centre**, at a national scale, able to produce complete scientific studies in the climate change sector and to support the emission reduction policies, with a global approach but a **particular focus on the Mediterranean region.**
- CMCC activities focus on the **development and applications of models** of climate dynamics, impacts of climate change and adaptation and mitigation policies.



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# Main Features

- CMCC holds an innovative **Supercomputing infrastructure** which consists of two clusters, together reaching a peak of computing power of 30 TFlops.
- A high capacity and high performance storage infrastructure supports the clusters.
- Among the Centres for Weather Forecasting and Climate applications all **over the world** the CMCC computational infrastructure is **ranked 5th** and it is the third biggest centre in Europe
- **CMCC hosts the Italian Focal Point** for the Intergovernmental Panel on Climate Change (**IPCC**)

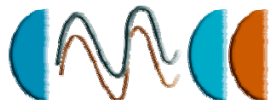


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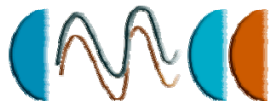
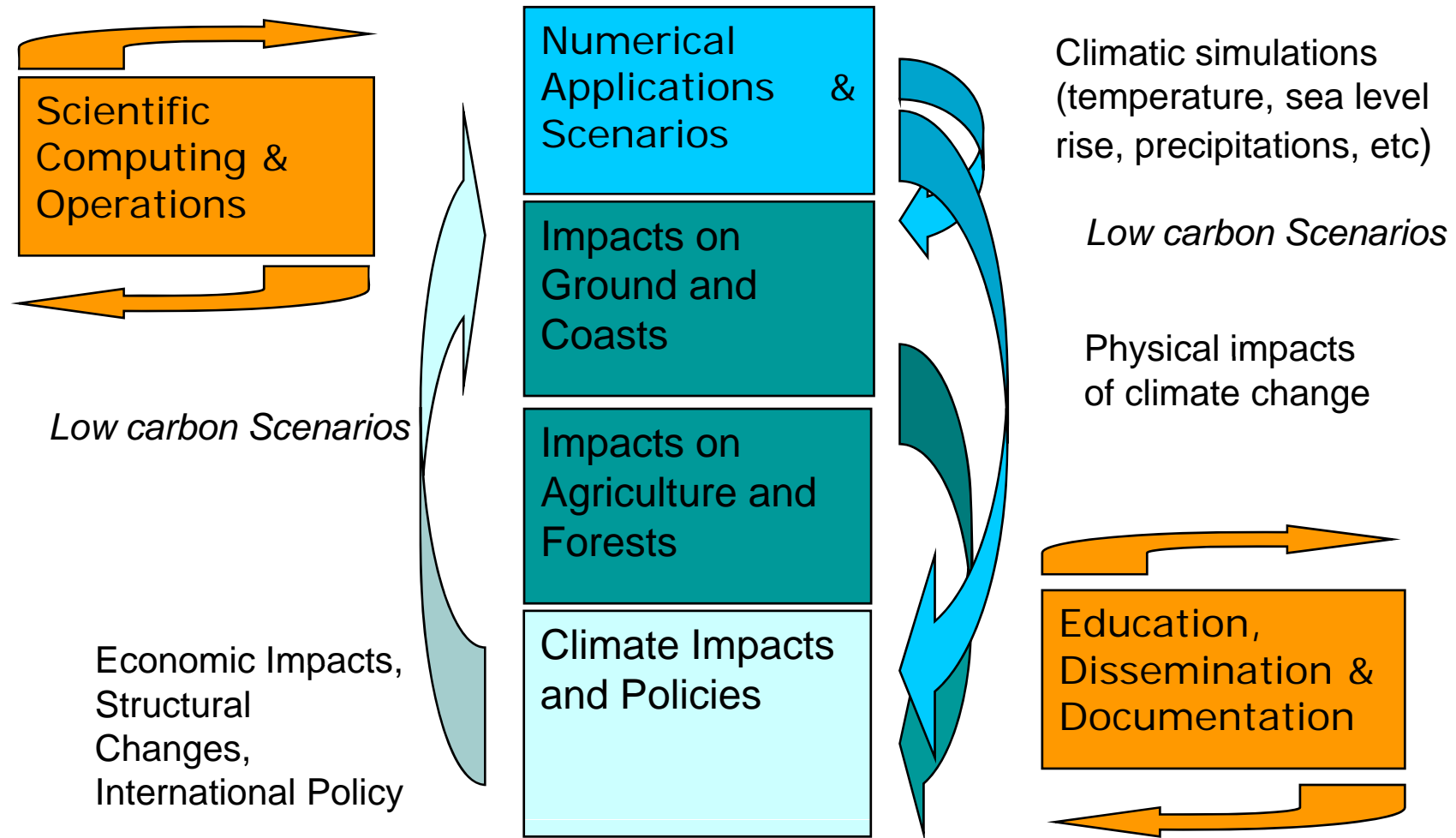
# CMCC related LCS research

CMCC research focuses on:

- Development of numerical simulations of global and regional models of climate change
- Economic analysis of its impacts on terrestrial and marine ecosystems and on economic activities.
- Valuation of the global impact of climate change integrating the land use changes, deforestation and afforestation
- Valuation of climate policies, jointly with their implications on energy investments, research and development and the diffusion of climate-friendly technologies.



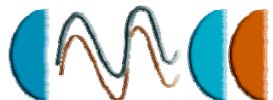
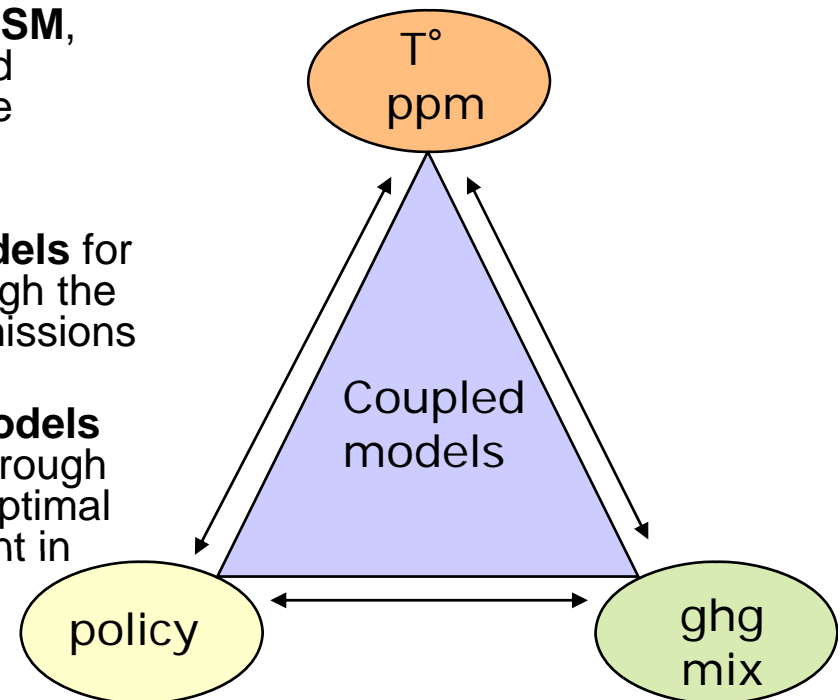
# 6 research Divisions: an integrated research key to LCS



# CMCC research topic key to LCS

The international policy framework and the leading position adopted by the EU in fighting climate change require an exceptional research effort on development of integrated assessment modes able to directly interact with policy makers

- **CMCC research aims at developing a fully integrated analytical framework** for climate control policies coupling in-house built economic models (**WITCH, ICES**) with environmental ones (**CC-ESM**, i.e. the CMCC Carbon earth System Model, and **LUC@CMCC**, i.e. the CMCC Land-Use Change Model)
- Two approaches will be integrated:
  - the development of **climate variability models** for the definition of low carbon scenarios, through the identification of a consistent mix of GHG emissions and external forcing
  - the development of long term **economic models** for the definition of low carbon scenarios, through the identification of mitigation policies and optimal policies of energy and technology investment in different geographical areas

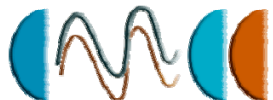


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# Training activities key to LCS

Doctorate School in Global Change Science and Policy (ChangeS), based at the University of Venice and in collaboration with CMCC, University of Salento and University of Sassari:

- 4 Ph.D. programs are currently active:
  - Ph.D. in Science and Management of Climate Change - Climate change impact and management in Venice
  - Ph.D. in Science and Management of Climate Change - Dynamic Climatology in Bologna
  - Ph.D. in Environmental and Energy Systems in Lecce
  - Ph.D. in Agriculture and Forestry Systems in Sassari
  
- Program of Winter and Summer schools

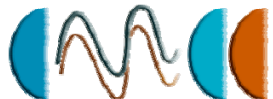


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# Networking efforts

CMCC develops also networking activities with international outstanding research entities, sharing a common vision of developing measurement and modelling tools in order to support and carry out frontier climate change and earth science research activities.

- **NCAR** - National Center for Atmospheric Research acting on behalf of the University Corporation for Atmospheric Research, Boulder, Colorado, USA
- **PEI** - Princeton Environmental Institute, Princeton University, USA on Ordering Stabilisation Wedges
- **CGMD** - Climate and Global Modelling Division of the Indian Institute of Tropical Meteorology, Pashan, India on climate change and earth science
- **University of Adelaide**, Australia
- **Tel Aviv University**, Israel
- **8 Associate Partners** at national and international level (WHO, ICTP, CNR, IAMB, University of Tuscia, University of Sassari, SPACI, CRMPA)

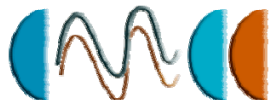




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# Forthcoming Events

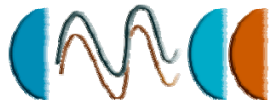
- Venice, 02-03 April 2009 - Workshop on “**The Economics of Adaptation to Climate Change**”, organized by ICCG, CMCC in cooperation with OECD, Paris
- Venice, 15-16 June 2009 - Coalitions for Climate Cooperation. A Game-Theoretic Analysis of Post 2012 Climate Policy, organized by ICCG, CMCC and ETH Zürich
- Venice, 17-19 June 2009 - **2009 International Energy Workshop (IEW)**, organised by ICCG, CMCC and FEEM
- Venice, 13-19 July 2009 - **Scoping Meeting 5th AR-IPCC**, organized by CMCC in cooperation with IPCC and MATTM
- Venice, 19-20 October 2009 - Workshop on “**Fairness and the Commons Socio-economic Strategies and Resource Dynamics**”, organized by ICCG, CMCC and PEI



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# CMCC main expectations from the LCS-RNet

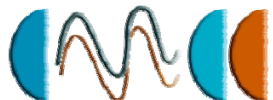
- **Involvement of international** research institutes from **key players** in the design of future climate and energy agreements
- **Exchange of knowledge** and main scientific findings on research issues key to LCS
- Adopt a **common** definition of LCS, establishing **reachable targets**
- Design a common strategy to increase **awareness** on LCS among key stakeholders and the public at large. At a later stage get other **key stakeholders** outside the scientific community involved in the network.
- Foster an **integrated approach** of environmental and economic climate change modeling research

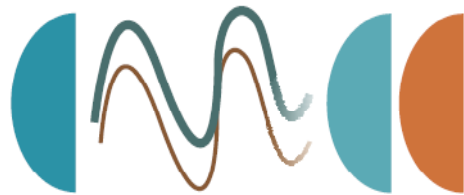


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# CMCC view on LCS definition and targets

- A LCS is **aware of the 'carbon-footprint'** generated by its socio-economic development path
- A LCS must act within a **commonly agreed GHGs stabilization targets**, involving developing regions
- Main efforts to achieve that target must address **current trends and changes in the socio-economic systems**, improvements in energy efficiency and **technological innovation** (including CO<sub>2</sub> absorption and storage), as well as an **integrated assessment** of climate scenario and climate and energy policies on the regional and world societies and economies.





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