RIVIERADE

Kick-off meeting

Trieste 16-18 Feb 2026

CMCC

(Silvio Gualdi)

This project has received funding from Horizon Europe RIA under Grant Number 101181983

CMCC research infrastructure

Transversal and multidisciplinary competencies that **combine first-class climate modeling with climate change impact modeling and environmental economics**.

Three multidisciplinary research institutes

Four strategic programs on frontier topics

A computing infrastructure dedicated exclusively to the study of climate change

Two specialized centers on digital innovation, and high-level education and training

Research institutes

Institute for Earth System Predictions

Leveraging climate modeling capabilities and turning scientific knowledge into improved predictive tools.

Institute for Climate Resilience

Creating data-driven digital representations of Earth system components to provide insights, risk assessments, and policy support tools for sustainable, climate-resilient development.

European Institute on Economics and the Environment

Evaluating sustainable and socially enhancing climate strategies at the intersection between environment, technology and the economy.

IESP in a nutshell

WP3

IESP Research Divisions

Climate Variability and Prediction - CLIVAP

Earth System Modelling and Data Assimilation - ESYDA

WP4

Regional Ocean Forecasting Systems - ROFS

Global Coastal Ocean - GOCO

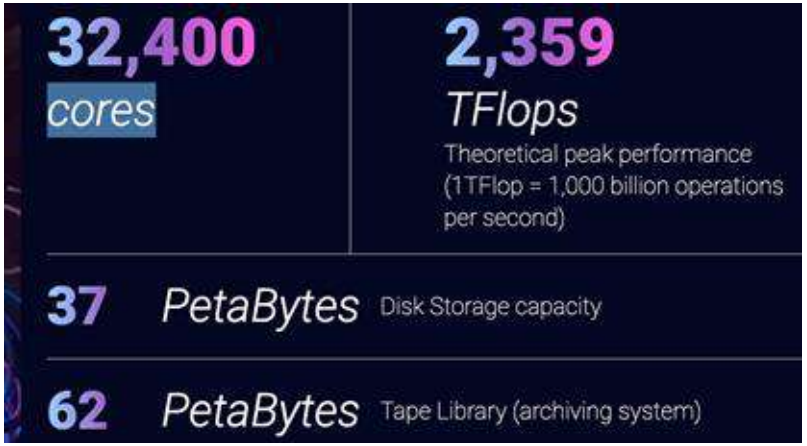
WP6

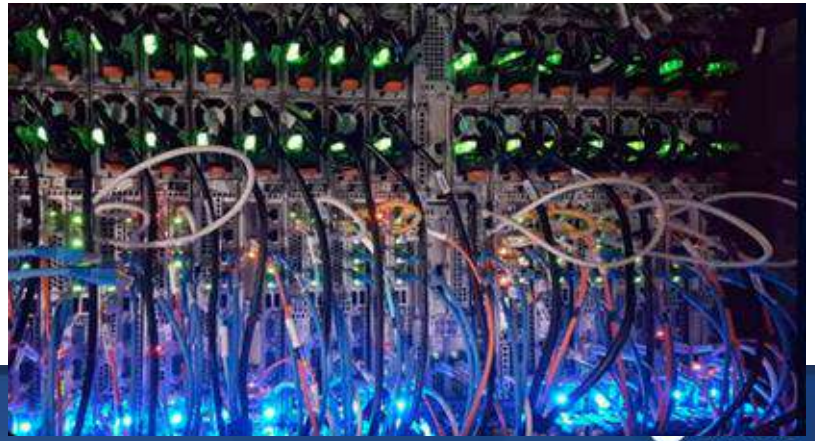
HPC resources

THE High-Performance Computing Centre (HPCC)

Since 2008, the CMCC High-Performance Computing Centre (HPCC) is the most powerful computational facility in Italy and among the most advanced in Europe, fully dedicated to Climate Change research.

In 2022 the CMCC HPC Centre changed its location at the new CMCC headquarters in Lecce. This also includes the upgrading of the computing and storage facilities.





Partner Team

WP3

Panos Athanasiadis,
Senior Scientist.

In CMCC leads the research unit on decadal predictions.

Role in RIVIERADE: WP3 Lead.

Dario Nicolì,
Junior Scientist.

In CMCC leads the production of decadal predictions.

Role in RIVIERADE: WP3 scientist.

Silvio Gualdi,
Principal Scientist.

Head of the Earth System Modelling and Data Assimilation division.

Role in RIVIERADE: CMCC PI, WP4 scientist.

Marco Chericoni,
Post-doc.

Researcher in the Earth System Modelling group

Role in RIVIERADE: WP4 scientist.

WP4

WP6

Giorgia Verri,
Scientist.

In CMCC leads the Research Unit on coastal earth system modeling

Role in RIVIERADE: WP6 scientist.

Renata Taitsch,
Post-doc

Researcher on Coastal downscaling

Role in RIVIERADE: WP6 scientist.

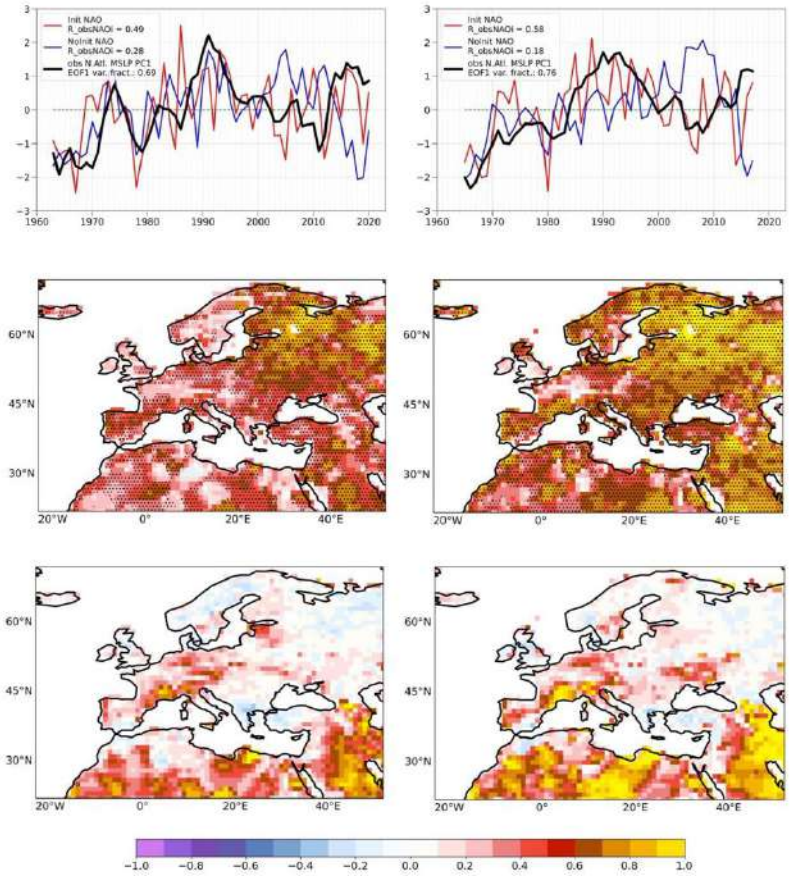
Julia Kaiser,
Associated Scientist

Researcher on estuarine downscaling

Role in RIVIERADE: WP6 scientist.

Contributions to WP3

- **Assess the added-value of initialization and that of dynamical downscaling** in simulating marine extremes and low-frequency variations in the Mediterranean Sea and the Black Sea through the use of an ensemble of decadal re-forecasts.
- A **regional configuration of NEMO at 1/16° resolution** and will be run with lateral and surface boundary conditions provided by the global decadal predictions (ocean-only dynamical downscaling).
- Running an **ensemble of simulations for a number of start-dates** to assess the realism of the extremes and the predictive skill of low-frequency variations in the Med & Black Seas.
- Respective **real-time forecasts will also be produced** in the second half of the project.

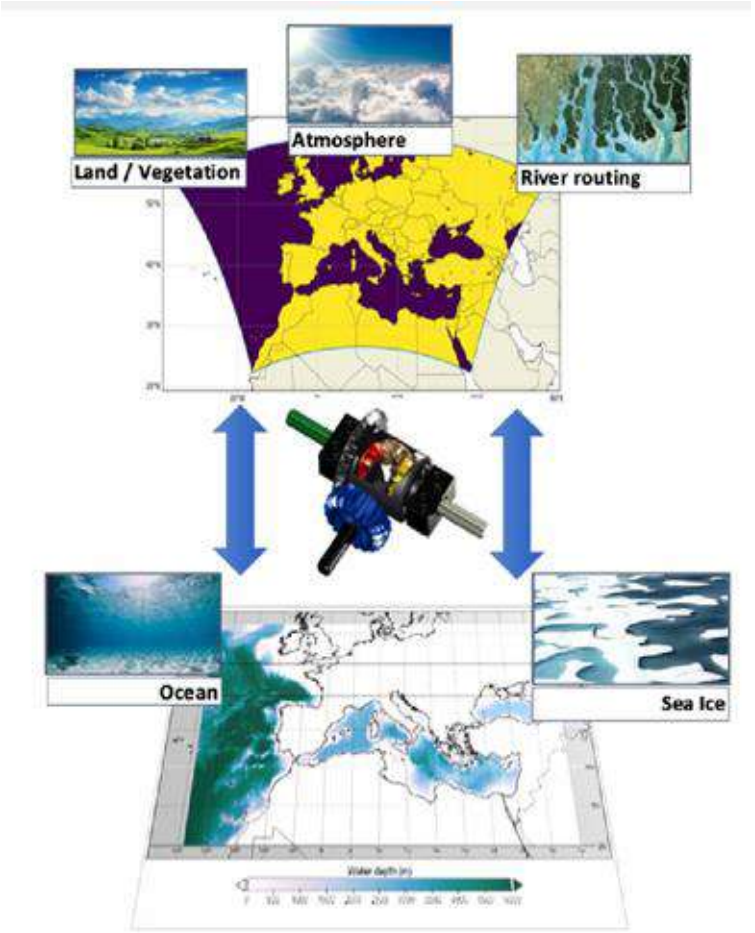


Nicolì et al. 2025

Contributions to WP4

CMCC will:

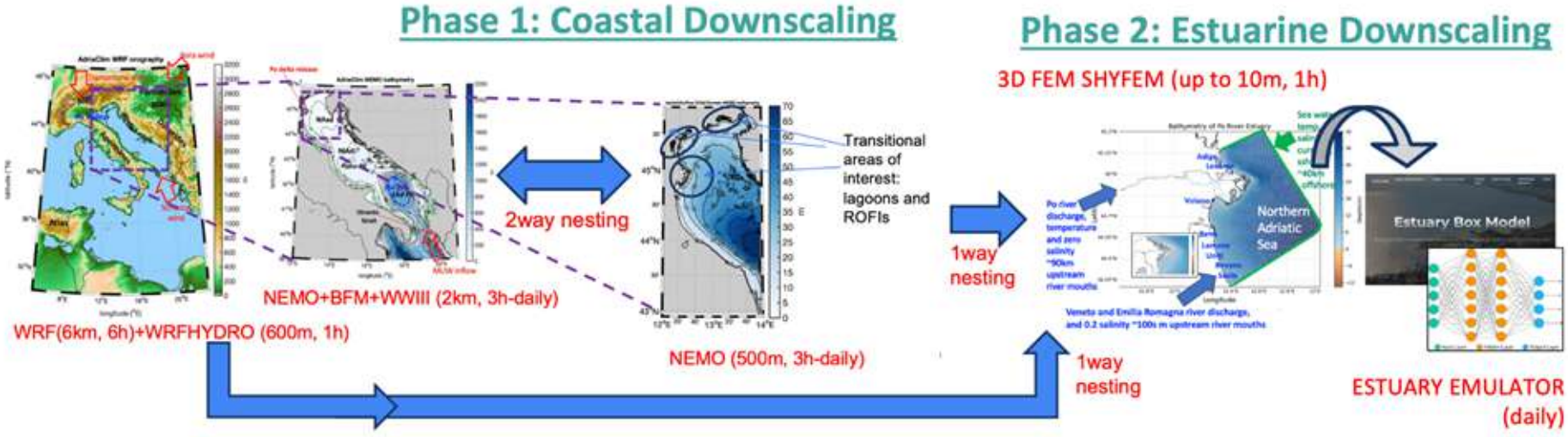
- Develop a regional Earth System model able to provide a coherent and physically consistent closure of the water cycle for the Mediterranean basin,.
- Contribution to the production of the coordinated multi-model, multi-decadal climate change projections and related climate impacts in the Mediterranean region, focussing especially on the understanding of the hydrological cycle and its response to climate change.



Contributions to WP6

Methodology

Coastal and estuarine climate downscaling to account for 2way feedback at air-se and land-sea interfaces and to properly solve multi physics, multi scale and cross scale processes



Products

Downscaled climate projections under SSP2 and SSP5 over 1985-2100

- *Norther Adriatic dynamics, along delta SWI length and salinity: trends and statistics of extremes*

Guidelines and indicators for stakeholders

RIVIERADE

Partners