

## **ESiWACE: Centre of Excellence in Simulation of Weather and Climate in Europe**

### **Description**

ESiWACE will substantially improve efficiency and productivity of numerical weather and climate simulation on high-performance computing platforms by supporting the end-to-end workflow of global Earth system modelling in HPC environment. This will be obtained by improving and supporting the: (1) scalability of models, tools and data management on state-of-the-art supercomputer systems, (2) Usability of models and tools throughout the European HPC eco-system, and (3) the exploitability of the huge amount of resulting data.

We will develop solutions for cross-cutting HPC challenges particular to the weather and climate domain. This will range from the development of specific software products to the deployment of user facing services for both, computing and storage. ESiWACE leverages two established European networks, namely (1) the European Network for Earth System modelling, representing the European climate modelling community and (2) the world leading European Centre for Medium-Range Weather Forecasts. The governance structure that defines the services to be provided will be driven by the European weather and climate science community. Weather and climate computing have always been one of the key drivers for HPC development, with domain specific scientific and technical requirements that stretch the capability and capacity of existing software and hardware to the limits. By developing solutions for Europe and at European scale, ESiWACE will directly impact on the competitiveness of the European HPC industry by engendering new products, providing opportunities for exploitation beyond the project itself, and by enhancing the skills base of staff in both industry and academia.

ESiWACE will be at once thematic, as it focuses on the HPC application domain of climate and weather modeling, transversal, as it covers several aspects of computational science, and challenge-driven, as climate and weather predictability represents a major societal issue.

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**Source URL (retrieved on 13 ago 2024 - 00:26):** <https://www.bsc.es/ca/research-and-development/projects/esiwace-centre-excellence-simulation-weather-and-climate-europe>