

[ESiWACE-2: Excellence in Simulation of Weather and Climate in Europe, Phase 2](#)

Description

The path towards exascale computing holds enormous challenges for the community of weather and climate modelling regarding portability, scalability and data management that can hardly be faced by individual institutes. ESiWACE2 will therefore link, organise and enhance Europe's excellence in weather and climate modelling to

- enable leading European weather and climate models to leverage the performance of pre-exascale systems with regard to both compute and data capacity as soon as possible and
- prepare the weather and climate community to be able to make use of exascale systems when they become available.

To achieve this goal, ESiWACE2 will:

- improve throughput and scalability of leading European weather and climate models and demonstrate the technical and scientific performance of the models in unprecedented resolution on pre-exascale EuroHPC systems,
- evaluate and establish new technologies such as domainspecific languages and machine learning for use in weather and climate modelling,
- enhance HPC capacity via services to the weather and climate community to optimize code performance and allow model porting,
- improve the data management tool chain from weather and climate simulations at scale, (e) foster co-design between model developers, HPC manufacturers and HPC centres, and
- strengthen interactions of the community with the European HPC Eco-system.

ESiWACE2 will deliver configurations of leading models that can make efficient use of the largest supercomputers in Europe and run at unprecedented resolution for high-quality weather and climate predictions. This will be a beacon for the community in Europe and around the world. ESiWACE2 will develop HPC benchmarks, increase flexibility to use heterogeneous hardware and co-design and provide targeted education and training for one of the most challenging applications to shape the future of HPC in Europe.

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