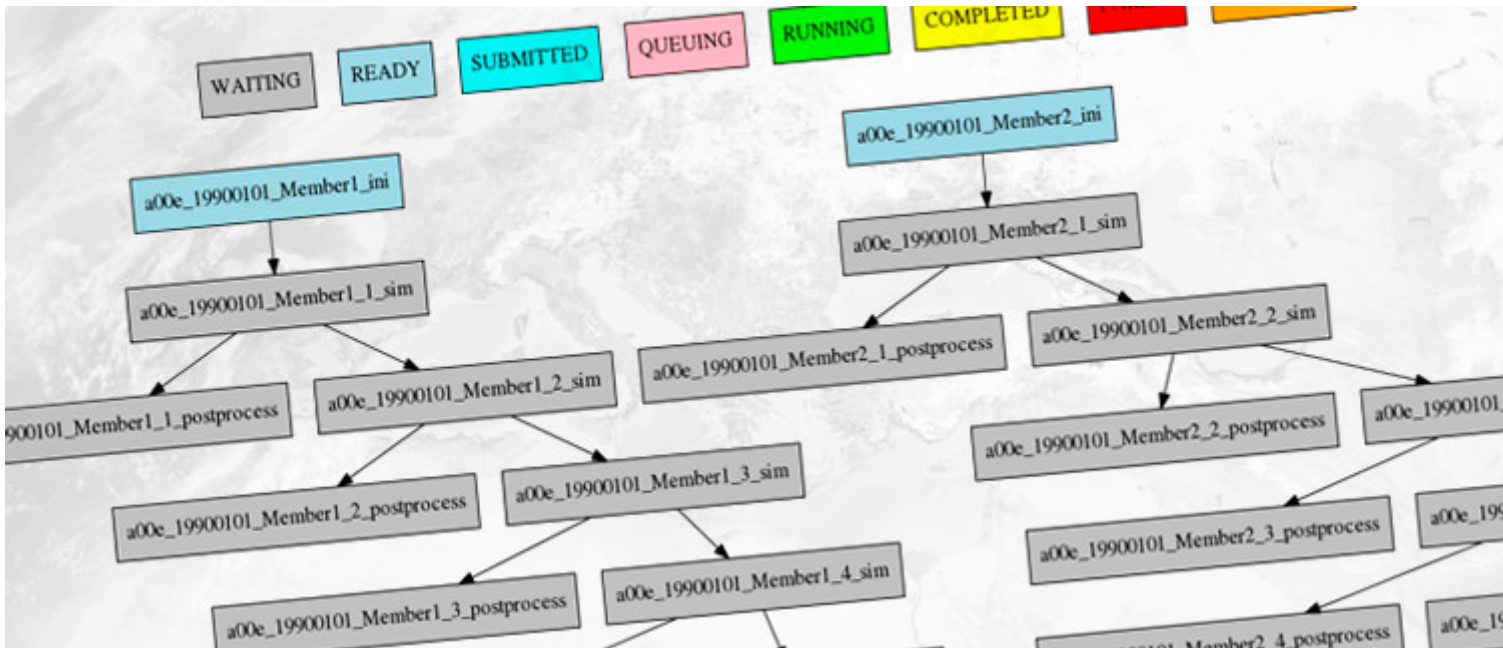


## Models and Workflows Team



The motivation for the models and workflows area lies in the research and development of methodologies and tools that are useful to take advantage of the variety of computing resources available at the BSC and in other HPC institutions.

## Summary

The computational experts of the Earth sciences models & workflows devote to aspects ranging from Earth System modelling to the development of workflow management tools to effectively run scientific tests, always adopting state of the art software engineering techniques.

Earth system models are sophisticated tools designed to simulate the Earth climate system and the complex interactions between its components. BSC- Earth department is currently working with MONARCH, [EC-Earth](#), [NEMO](#) and [IFS](#).

A typical climate forecast simulation experiment executes tens or even hundreds of jobs, a task that can obviously not be done manually. Usually the jobs have multiple dependencies between them. Therefore in the Computational Earth Sciences group we are working with the models described above by using diverse High Performance Computing (HPC) machines, and tools such as Autosubmit to create, manage and monitor experiments.

The computational resources to carry out those experiments consists of a sizeable allocation in MareNostrum, as well as competitive allocations on the European Centre for Medium-Range Weather

Forecasts ([ECMWF](#)) and other super-computers of the Spanish Supercomputing Network (RES) and the Partnership for Advanced Computing in Europe (PRACE).

## Objectives

- To Interact with model developers and HPC support teams to develop and deploy a software stack to run generic Earth system models on a wide range of HPC facilities.
- To foster the portability and user-friendliness of the Earth system models developed and used, including the pre-processing and post-processing of weather, atmospheric chemistry and climate data.
- To provide and guide the department groups to use a collaborative framework and good coding practices (code version control, testing suites, style guides) to improve the work efficiency, the integration of newcomers and the sharing of the tools.
- To develop and ensure a continuous training to Computational Earth Sciences members and Earth Sciences users to use resources in the most efficient way.

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