

## [ONLINE] PATC: Earth Sciences Simulation Environments

### Objectives

The objective of this PATC course is to cover the basics of a high performance computing (HPC) environment oriented towards earth science applications, specifically chemical weather modelling and climate modelling.

More precisely, the course will cover:

- Introduction to earth science fundamentals and modelling;
- Basic usage of an HPC environment: shell, compilers, libraries, file systems, queuing system and parallel computing;
- Build and configure targeted earth science applications with the NMMB/MONARCH chemical transport model and with the EC-EARTH climate model;
- Execute and monitor numerical experiments using a workflow manager;
- Analyse and visualise model outputs with a wide set of tools.

**Learning outcomes:** Participants will learn and gain experience in accessing an HPC facility, installing earth science numerical models and related utilities and libraries, running numerical simulations, monitoring the execution of supercomputing jobs, analysing and visualising model results.

### Requirements

**Prerequisites:**

At least University degree in progress on Earth Sciences, Computer Sciences or related area

Basic knowledge of UNIX

Knowledge of C, FORTRAN, MPI or openMP is recommended

Knowledge of Earth Sciences data formats is recommended (grib, netcdf, hdf,...)

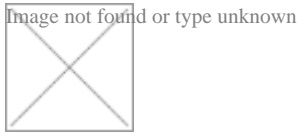
Knowledge of R and python

Please download and carefully read the following [recommendations](#) regarding the logistics that participants enrolling into the online PATC at BSC are expected to follow.

### Learning Outcomes

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## [Academic Staff](#)



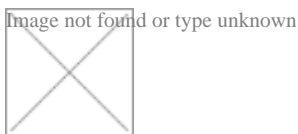
### **Conveners**

Dene Bowdalo, Recognised Researcher, Atmospheric Composition Group, Earth Sciences, BSC  
Iria Ayan, Junior Research Engineer, Computational Earth Sciences Group, Earth Sciences, BSC

### **Course Lecturers**

Oriol Jorba, Leading Researcher, BSC-ES, Atmospheric Composition Group  
Eleftheria Exarchou, Recognised Researcher, BSC-ES, Climate Variability and Change Group  
Mario Acosta, Recognised Researcher, BSC-ES, Computational Earth Sciences Group  
Miguel Castrillo, Senior Research Engineer, BSC-ES, Computational Earth Sciences Group  
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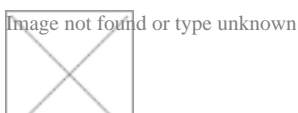
## [Materials](#)



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- For further details, please contact BSC?CNS patc [at] bsc [dot] es

## [Further information](#)



**All PATC Courses at BSC do not charge fees.  
PLEASE BRING YOUR OWN LAPTOP.**

You can send us an e mail to [education@bsc.es](mailto:education@bsc.es) for further details about MSc, PhD, Post Doc studies, exchanges and collaboration in education and training with BSC.

For further details about Postgraduate Studies in UPC - Barcelona School of Informatics (FiB), visit the [website](#).

**Sponsors:** BSC funds the PATC @ BSC training events.

Barcelona Supercomputing Center - Centro Nacional de Supercomputación

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