MSc student

Earth sciences

About BSC-CNS and BSC-ES

The BSC-CNS (**Barcelona Supercomputing Center – Centro Nacional de Supercomputación**) is the national supercomputing facility in Spain and was officially constituted in April 2005. BSC-CNS manages MareNostrum, one of the most powerful supercomputers in Europe, located at the Torre Girona chapel. The mission of BSC-CNS is to investigate, develop and manage information technology in order to facilitate scientific progress. BSC-CNS combines HPC service provision and R&D into both computer and computational science (life, earth and engineering sciences) under one roof and currently has over 400 staff from 41 countries. To get an idea of what it is like to work at BSC please take a look at this video: https://www.youtube.com/watch?v=VRkEii7OzRE.

The mission of the **Earth Sciences Department** (BSC-ES) is to do research and transfer technology and knowledge to support a range of socio-economic sectors through the development and use of air quality, mineral dust, atmospheric, and climate models at both global and regional scales through the innovative capacity of its researchers and the efficient use of HPC and Big Data technologies (http://www.bsc.es/earth-sciences). The BSC-ES is divided into four groups according to the following goals:

- **Atmospheric Composition** (AC) develops a modelling capability to combine atmospheric dynamical and chemical processes relevant at a wide range of spatial scales, from urban to global, and investigates their impacts on weather, air quality, climate, health and ecosystems.
- **Climate Prediction** (CP) develops the EC-Earth Earth system model as an efficient climate prediction system to cover time scales ranging from a month to a few decades (subseasonal-to-decadal climate prediction) at global and regional spatial scales, expanding at the same time our understanding of the climate system.
- **Earth System Services** (ESS) researches the impact of weather, atmospheric chemistry and climate on socio-economic sectors through the development of user-oriented services that ensure the transfer of the technology developed in the Department and the adaptation to a rapidly changing environment, especially of those highly vulnerable.
- **Computational Earth Sciences** (CES) uses cutting-edge HPC and Big Data technologies to increase the efficiency, portability and user-friendliness of the Earth system models developed and used in the Department, including the pre-processing and post-processing of weather, atmospheric chemistry and climate data.

The BSC-ES is an important reference in the field at both the European and international level and also cooperates nationally with a large range of institutions. The Department is reputed for its highly qualified staff, technological infrastructure and for the efficient use of HPC and Big Data technologies, as well as for its excellent scientific production and extensive links with the social sector.

Context and Mission

The BSC-ES is looking for young scientists from any nationality who wish to do their MSc thesis in the cutting-edge areas of atmospheric composition, climate prediction, computational earth sciences and earth system services. Successful candidates will benefit from expert training and BSC-CNS staff

benefits: international multidisciplinary scientific environment, advanced research training, and advanced computational facilities. We encourage applications from highly motivated engineers, computer scientists, physicists, mathematicians, biologists and social scientists with <u>outstanding qualifications</u>.

Key Duties
- Perform independent research by discovering and pursuing a unique topic of scholarly research resulting in a <u>MSc dissertation</u> under the direction of a BSC-ES member.
- Ensure continued progress of his/her academic programme and research plan.
- Engage in scientific literature searches.
- Perform data analysis.
- Communicate scientific results within the Department and in academic symposia and conferences.
- Disseminate the resulting research in technical reports.
- Interact with scientists in the group to favour synergies.
- Apply for competitive grants.

Requirements
- Education:
    - Degree in Engineering, Computer Sciences, Physics, Applied Mathematics, Biology or Social Sciences or related disciplines.
    - Be enrolled in a MSc program in Computer, Earth, Social Sciences or related disciplines anywhere.
- Required competences:
    - Excellent written and verbal communication skills in English.
    - Ability to work in a professional environment and within a multidisciplinary research team.
- Valued eligibility criteria
    - Knowledge of programming languages for data analysis (Python, R, MATLAB) .
    - Skills in working in a Linux environment.
- Professional experience
    - Experience in similar fields will be valued but it is not necessary.

Conditions
The position will be located at BSC within the BSC-ES and supervised in collaboration with a representative from the MSc programme. The candidate will work in a highly collaborative and international environment.

Diversity and Equal Opportunity Employment
BSC-CNS is an equal opportunity employer committed to diversity and inclusion. We are pleased to consider all qualified applicants for employment without regard to race, colour, religion, gender, sexual orientation, national origin, age, disability or any other basis protected by applicable state or local law.

Applications Procedure
All applications have to include the following documents:
- A brief motivation letter.
- Contact person details for references.
- A full CV including contact details and academic qualifications.