590_23_ES_AQS_R0

Job Reference

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Position

Master Student: Modelling outdoor-indoor air pollution ratio (R0)

Data de tancament

Dimecres, 31 Gener, 2024
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About BSC

The Barcelona Supercomputing Center - Centro Nacional de Supercomputación (BSC-CNS) is the leading supercomputing center in Spain. It houses MareNostrum, one of the most powerful supercomputers in Europe, was a founding and hosting member of the former European HPC infrastructure PRACE (Partnership for Advanced Computing in Europe), and is now hosting entity for EuroHPC JU, the Joint Undertaking that leads large-scale investments and HPC provision in Europe. The mission of BSC is to research, develop and manage information technologies in order to facilitate scientific progress. BSC 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 900 staff from 55 countries.

Look at the BSC experience:
BSC-CNS YouTube Channel
Let's stay connected with BSC Folks!

We are particularly interested for this role in the strengths and lived experiences of women and underrepresented groups to help us avoid perpetuating biases and oversights in science and IT research.

Context And Mission

The Department of Earth Sciences of the Barcelona Supercomputing Centre-Centro Nacional de Supercomputación (BSC-CNS), BSC-ES henceforth (bsc.es/earth-sciences) is one of the most active groups in air quality and atmospheric composition modeling, climate prediction and climate services in Europe. The Department comprises about 160 people, including scientists and technical staff. It is structured into five distinct but interacting research groups: Atmospheric Composition, Climate Prediction, Earth System Services (ESS), Global Health Resilience, and Computational Earth Sciences.
The candidate will work in the ESS group. The ESS group develops climate and air quality services, facilitating knowledge and technology transfer of state-of-the-art research at local, national, and international levels. The main purpose is to demonstrate the ongoing value of climate prediction services, atmospheric composition, and weather forecasting to society and key sectors of the economy, such as renewable energy, urban development, infrastructure, transport, insurance, health, and agriculture.

The group hosts air quality and climate researchers, research engineers, physicists, social scientists, economists, epidemiologists, and communication experts who work to bring the latest developments in earth sciences to society. ESS has an interdisciplinary approach with several lines of expertise working together and collaborating with the other research groups within the Earth Sciences Department.

Cutting-edge operational forecast services on climate, air quality, and airborne dust are created by ESS via collaboration with public administration, from our involvement as leaders in multinational partnerships, as well as through private contracts with companies willing to exploit the opportunities that arise from disposing of information on future climate and air quality. Close collaboration with stakeholders pioneering the application of this knowledge in their operative decisions is essential to foster adaptation to climate change and move towards a more resilient and sustainable society.

The ESS is looking for a master student to make use of a postprocessed dataset containing the air pollution simulations of CALIOPE-urban – a high-resolution air quality model with a 20m x 20m and hourly resolution for the city of Barcelona – and other data describing urban characteristics to investigate and interpret the spatiotemporal characteristics of the indoor air quality of Barcelona. The analysis and interpretation will focus on the identification of hot spots (areas with particular bad indoor air quality in the city), the description of possible differences between neighborhoods, and the characterization of temporal trends. BSC-CNS will provide all necessary tools for developing the candidate’s potential, deepening their skills and knowledge in a stimulating, international and interdisciplinary environment to boost their career perspectives as successful independent researchers. We encourage applications from highly motivated physicists, engineers, and mathematicians (and related disciplines) with outstanding qualifications.

**Key Duties**

- To postprocess the model outputs of CALIOPE-urban, a high-resolution air quality model with a 20m x 20m and hourly resolution for the city of Barcelona.
- Implement a dataset of Barcelona containing the morphology of the city, building characteristics, and climatology of the city. Interpret and analyze data correlation with indoor air quality based on literature.
- Work together with atmospheric composition scientist and IT developers.
- Communicate scientific results within the Department, at international conferences, and write quality papers in scientific publications.

**Requirements**

- **Education**
  - Studying Meteorology and related disciplines.

- **Essential Knowledge and Professional Experience**
  - Experience dealing with big datasets and machine learning techniques, 0-1 year
  - Ability to work in a professional environment and within a multidisciplinary research team.
  - Demonstrated verbal communication and technical presentation skills (English is a must).
Additional Knowledge and Professional Experience
- Previous experience in model development and application in parallel computing environments will be valued. 0-2 years

Competences
- Fluency in English.
- Programming skills (R or python)

Conditions
- The position will be located at BSC within the Earth Sciences Department
- We offer a part-time contract (20h/week), a good working environment, a highly stimulating environment with state-of-the-art infrastructure, flexible working hours, extensive training plan.
- Duration: Internship
- Holidays: 23 paid vacation days plus 24th and 31st of December per our collective agreement
- Salary: we offer a competitive salary commensurate with the qualifications and experience of the candidate and according to the cost of living in Barcelona
- Starting date: February

Applications procedure and process

All applications must be made through BSC website and contain:
- A full CV in English including contact details
- A Cover Letter with a statement of interest in English, including two contacts for further references - Applications without this document will not be considered

In accordance with the OTM-R principles, a gender-balanced recruitment panel is formed for every vacancy at the beginning of the process. After reviewing the content of the applications, the panel will start the interviews, with at least one technical and one administrative interview. A profile questionnaire as well as a technical exercise may be required during the process.

The panel will make a final decision and all candidates who had contacts with them will receive a feedback with details on the acceptance or rejection of their profile.

At BSC we are seeking continuous improvement in our recruitment processes, for any suggestions or feedback/complaints about our Recruitment Processes, please contact recruitment [at] bsc [dot] es.

For more information follow this link

Deadline

The vacancy will remain open until a suitable candidate has been hired. Applications will be regularly reviewed and potential candidates will be contacted.
OTM-R principles for selection processes

BSC-CNS is committed to the principles of the Code of Conduct for the Recruitment of Researchers of the European Commission and the Open, Transparent and Merit-based Recruitment principles (OTM-R). This is applied for any potential candidate in all our processes, for example by creating gender-balanced recruitment panels and recognizing career breaks etc.

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, color, religion, sex, sexual orientation, gender identity, national origin, age, disability or any other basis protected by applicable state or local law.

For more information follow this link
Barcelona Supercomputing Center - Centro Nacional de Supercomputación

Source URL (retrieved on 24 des 2023 - 11:54): https://www.bsc.es/ca/join-us/job-opportunities/59023esaqs0