Job Reference

585_23_ES_AC_R3

Position

Coordinators of Data, Assimilation, Forecasting and Applications team (R3)

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Diumenge, 31 Desembre, 2023

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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

Within the Earth Sciences Department of Barcelona Supercomputing Center, the Atmospheric Composition (AC) aims at better understanding and predicting the spatiotemporal variations of atmospheric pollutants along with their effects upon air quality, weather and climate.

The AC group develops the Multiscale Online Non-hydrostatic Atmosphere Re CHemistry model (MONARCH). MONARCH contains advanced chemistry and aerosol packages, and is coupled online with
the Non-hydrostatic Multiscale Model (NMMB), which allows for running either global or high-resolution (convection-allowing) regional simulations, and is coupled with an aerosol data assimilation system based on the Local Ensemble Transform Kalman Filter (LETKF).

The group contributes to a variety of forecasting activities. The dust component of the runs operationally at the first WMO Regional Specialized Meteorological Center for Atmospheric Sand and Dust Forecast (i.e., the Barcelona Dust Forecast Center, BDFC), and contributes to multi-model ensemble forecasts both at the WMO Sand and Dust Storm Warning Advisory and Assessment System Regional Center (WMO SDS-WAS RC) for Northern Africa, Middle East and Europe, and the International Cooperative for Aerosol Prediction (ICAP). Both WMO Regional Centers are co-hosted by BSC and the Spanish Meteorological Agency (AEMET). The group also develops and maintains the CALIOPE air quality system (‘‘CALIdad del aire Operacional Para España’’), which provides high-resolution air quality forecasts over Europe and Spain using the in-house emission model HERMES. The group has been actively involved in the Copernicus Programme of the European Union during the last 6 years and MONARCH has been recently incorporated as a new model of the Copernicus Regional Production Service (CAMS2_40; www.regional.atmosphere.copernicus.eu). Copernicus products are widely used by administrations and policy makers across Europe.

We are looking for two experienced researchers to coordinate the newly created team on Data, Assimilation, Forecasting and Applications (AC-DAFA) within the Atmospheric Composition group.

The candidates will co-coordinate the newly created team on the Data, Assimilation, Forecasting and Applications (AC-DAFA), which is responsible for the operational forecasts and reanalyses of the atmospheric composition and their applications to societal concerns. The main research activities of the team are dedicated to data assimilation and inverse problems in atmospheric composition. The AC-DAFA activities are fed by a strong and necessary interaction with other AC teams, as well as the Computational Earth Sciences group at BSC-ES.

**Key Duties**

- Definition of the strategy of the team together with the AC group leaders,
- Coordination of daily activities of the team
- Improvement of forecasts and reanalyses of dust through the assimilation of additional instruments
- Consolidation and improvement of the regional air quality products (forecasts and reanalyses)
- Assimilation of new satellite products for regional and global air quality and of total AOD for aerosols
- Inversion of dust emissions using satellite data
- Build an integrated forecast system capable of assimilating observations of different nature (optical depth at multiple wavelengths, vertical profiles, hyperspectral radiances)
- Advance the capabilities of sources inversion through Data assimilation and Artificial Intelligence for both gases and aerosols

**Requirements**

- Education
  - Having a PhD in Physics, Mathematics, Geosciences or related discipline
- Essential Knowledge and Professional Experience
○ In-depth knowledge of data assimilation for gases and/or aerosols
○ Experience with atmospheric composition (modeling, data assimilation or observations)
○ Excellent computing skills in high-level computer languages (such as FORTRAN or C), experience with UNIX/LINUX environments and with scripting languages (such as bash) are required

• Additional Knowledge and Professional Experience
  ○ Knowledge of atmospheric science data formats (GRIB, NetCDF) and previous experience with scientific software and tools (CDO, NCO, Python or R)
  ○ Experience with revision control systems (e.g., SVN or Git)

• Competences
  ○ Very good interpersonal skills
  ○ Fluency in English
  ○ Excellent written and verbal communication skills
  ○ Ability to take initiative, prioritize and work under set deadlines
  ○ Ability to work both independently and within a team

Conditions

• The position will be located at BSC within the Earth Sciences Department
• We offer a full-time contract (37.5h/week), a good working environment, a highly stimulating environment with state-of-the-art infrastructure, flexible working hours, extensive training plan, restaurant tickets, private health insurance, support to the relocation procedures
• Duration: Open-ended contract due to technical and scientific activities linked to the project and budget duration
• 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: 1/1/2024
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

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