161_ES_AC_RE2

Job Reference

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Position

Atmospheric Composition Evaluation Tool Engineer

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Diumenge, 31 Març, 2019
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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, and is a hosting member of the PRACE European distributed supercomputing infrastructure. 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 500 staff from 44 countries.

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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 modelling, climate prediction and climate services in Europe. The department is currently composed of about 70 people, including scientists and technical and support staff, and is structured in four distinct but interacting research groups: Atmospheric Composition (AC), Climate Prediction, Earth System Services (ESS), and Computational Earth Sciences (CES).

The Atmospheric Composition group within the Earth Sciences Department 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 led by Carlos Pérez García-Pando develops the Multiscale Online Non-hydrostatic Atmosphere Chemistry model (MONARCH) which 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. The group contributes to a variety of forecasting activities. The dust component of MONARCH 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, the 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. The models and forecasts are enhanced by an intensive use of up-to-date observations, both for model evaluation and to feed the aerosol ensemble-based data assimilation system. Since October 2016, the group hosts an AXA Chair on Sand and Dust Storms. This unique 15-year dust research programme is not only intended to support the two WMO SDS Regional Centers, but also to widen the scope and relevance of mineral dust research at BSC.

The AC group interacts with the CES group on the optimization of model codes, pre- and post-processing tools, and operational model settings, with the CP group on the links between atmospheric aerosols and climate, and with the ESS group to enhance the use of air quality products and services.

Within this context, we are looking for a Software Engineer who supports development aspects of the model evaluation strategy within the Atmospheric Composition group.

The successful candidate will collaborate with scientists from the AC and CES groups and will benefit from the training program and BSC staff benefits: international multidisciplinary scientific environment, advanced research training, and advanced computational facilities. We encourage applications from highly motivated physicists, engineers, mathematicians (and related disciplines) with outstanding qualifications.

Successful candidates will benefit from expert training and BSC-CNS staff benefits: international multidisciplinary scientific environment and advanced applied research training. We encourage applications from highly motivated candidates with demonstrated experience in climate science and interest in applied research projects within the context of climate services.

**Key Duties**

- Develop and optimize the in-house Evaluation Tool to perform benchmark analysis and operational evaluations in a robust, flexible and computationally-efficient way
- Support other colleagues to include their own solutions into the set of tools developed and maintained by the Earth Sciences Department. The codes will be appropriately documented and updated using GIT tools
- Interact with scientists in the group and the department to favor synergies
- Analyze model and observational datasets, prepare charts and report the results
- Maintain services such as web portals
- Find ways to efficiently present the results: visualization graphs, exploratory web interfaces, etc

**Requirements**

- Education
  - MSc in atmospheric sciences, physics, engineering or related discipline
Essential Knowledge and Professional Experience
- 2-5 years of experience in a similar position
- Previous experience in air quality, aerosol physics and chemistry a scientific area related to the research position will be required
- Ability to work in a professional environment and within a multidisciplinary research team
- Computing skills in high level computer languages (especially FORTRAN 77/90 and C) and experience with UNIX LINUX environments and scripting languages
- Programming languages (C, C++, Fortran, Python, R, ssh, bash)
- Experience in data formats (NetCDF, GRIB, HDF5) and tools (CDO, NCO) used in Earth sciences
- Previous experience in model development and application in parallel computing environments will be required

Additional Knowledge and Professional Experience
- Demonstrable experience in participating in international projects.
- Capacity to interact and build strong relations with a diverse members/stakeholder/staff base.

Competences
- Fluency in spoken and written English, while fluency in other European languages will be also valued
- Critical and creative thinking skills
- Ability to take initiative, prioritize and work under set deadlines and pressure
- Ability to work independently and in a team
- Excellent written and verbal communication skills
- Capacity to interact and build strong relations with a diverse members/stakeholder/staff base

Conditions
- The position will be located at BSC within the Earth Sciences Department
- We offer a full-time contract, a good working environment, a highly stimulating environment with state-of-the-art infrastructure, flexible hours, extensive training plan, tickets restaurant, private health insurance, fully support to the relocation procedures
- Duration: Temporary - 2 years renewable
- 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: asap

Applications Procedure
All applications must include:

- A motivation letter with a statement of interest, including two contacts for further references - Applications without this document will not be considered
- A full CV including contact details
Deadline

The vacancy will remain open until suitable candidate has been hired. Applications will be regularly reviewed and potential candidates will be contacted.

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

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