**JOB DESCRIPTION**

**Ref:**

**Job Title: Atmospheric Composition support engineer**

**About BSC:**

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 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’s like to work at the BSC take a look at this video: <https://www.youtube.com/watch?v=VRkEii7OzRE>

**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 technical and support staff, structured in four distinct but interacting research groups: Earth System Services, Atmospheric Composition (AC), Climate Prediction and Computational Earth Sciences.

The AC group aims at better understanding and predicting the spatiotemporal variations of atmospheric pollutants along with their effects upon air quality, weather and climate. The group develops the Multiscale Online Non-hydrostatic AtmospheRe CHemistry model (MONARCH) and 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](https://dust.aemet.es)), 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](https://sds-was.aemet.es/forecast-products/dust-forecasts) RC) for Northern Africa, the Middle East and Europe, and the International Cooperative for Aerosol Prediction ([ICAP](https://www.nrlmry.navy.mil/aerosol/icap_date.9999.php?date=2017020600&field=aod&spec=dust&regc=global&icap=0&modir=icap_01&quad=0)). Both WMO Regional Centers are co-hosted by BSC and the Spanish Meteorological Agency (AEMET). The group also develops and maintains the [CALIOPE](http://www.bsc.es/caliope/en?language=en) 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 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.

The applicant will join the CES group to collaborate on the development of AC models and tools.

**Key Duties**

1. The applicant will provide technical support for both computational and atmospheric composition engineers and researchers to run experiments using workflow managers and different shell or python scripts. The applicant will further develop and optimize the in-house workflow manager tool to execute complex ensemble-based model configurations in a robust, flexible and computationally-efficient way.
2. The applicant will provide technical support to solve the problems found by other researchers and engineers and do the necessary tests to validate and verify all the features of each model.
3. The applicant will 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.

**Requirements**

Education

* Having a BSc in Computer Science, Physics, Mathematics or related discipline.

Knowledge

* Excellent computing skills in high-level computer languages (especially FORTRAN and C/C++) and experience with UNIX/LINUX environments and scripting languages (e.g. bash, Python).
* Excellent programming skills to manage collaborative projects and experience with git and SVN.

Valued previous professional experience

* Previous experience in a scientific area related to the position, in particular air quality or meteorological modelling (e.g. WRF, CMAQ).
* Previous experience in HPC architecture and workflow managers.
* Previous experience in parallelization of numerical codes (e.g. MPI, OpenMP, CUDA).
* Previous experience in scientific software and tools (R, Python Numpy and Scipy, …)
* Computer programming experience related to solving scientific computing problems involving the handling of very large projects.

Competences

* Capacity to interact and build strong relations with both atmospheric and computer scientists
* Fluency in English
* Excellent written and verbal communication skills
* Ability to take initiative, prioritize and work under set deadlines and pressure
* Ability to work both independently and within a team

**Conditions**

The position will be located at BSC within the Earth department in collaboration with the specific program coordinator. The contract will be for two years.

**Applications Procedure**

All applications must be applied in LINK including:

1. A motivation letter

2. A full CV including contact details

3. Two reference LETTERS or CONTACTS

**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.

OTHER DETAILS INTERNAL USE:

Duration of the contract: 2 years

Funding Project: AXA Chair Carlos Pérez

Salary Range: 30k€