ECMWF

EUROPEAN CENTRE FOR MEDIUM-RANGE WEATHER FORECASTS

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Scientist – CO2 Human Emissions Project (Modelling and Mapping)

1. Position information

Vacancy No.: VN17-11	**Department:** Research / Copernicus
Grade: A2	**Section:** Earth System Modelling/Copernicus Atmospheric Monitoring Service Development
Job Ref. No.: STF-PS/17-11	**Reports to:** Coupled Processes Team-Leader / CAMS Head of Section
Publication Date: 2 August 2017	**Closing Date:** 13 September 2017

2. About ECMWF

ECMWF is both a research institute and a 24/7 operational service, producing and disseminating numerical weather predictions to its Member States. ECMWF carries out scientific and technical research directed to the improvement of its forecasts, collects and processes large amounts of observations, and manages a long-term archive of meteorological data. Satellite and in situ observations provide the information for up-to-date global analyses and climate reanalyses of the atmosphere, ocean and land surface. All this data is fully available to the national meteorological services in the Member States. The Centre also offers a catalogue of forecast data that can be purchased by businesses worldwide and other commercial customers. The supercomputer facility (and associated data archive) at ECMWF is one of the largest of its type in Europe and Member States can use 25% of its capacity for their own purposes.

For details, see **www.ecmwf.int/**.

ECMWF has been entrusted to operate the Copernicus Atmosphere Monitoring Service (CAMS) and the Copernicus Climate Change Service (C3S) on behalf of the European Commission until the end of 2020. Copernicus is the European Union (EU) flagship Earth-observation programme. The programme ensures operational monitoring of the atmosphere, oceans, and continental surfaces, and will provide reliable, validated information services for a range of environmental and security applications.

3. Summary of the role

The position is in the Earth System Modelling Section of the Research Department. The Scientist will work with the Coupled Processes team, and will be co-managed by the CAMS Development Section in the Copernicus Department. He or She will also closely collaborate with other teams in the Research Department. ECMWF coordinates the H2020 CO2 Human Emission project (CHE), which supports the European Commission with defining and producing first building blocks of a future Copernicus CO2 anthropogenic emissions monitoring system, gathering a large consortium with modelling and data assimilation expertise.

As part of the CHE project, the successful candidate will work on the representation of anthropogenic CO2 emissions in ECMWF's Integrated Forecasting System (IFS). He or she will implement and test enhanced CO2 and urban surface emissions, partly based on developments from CHE partners.

These developments will then be used to produce realistic simulations of CO2 fluxes and concentrations together with other atmospheric constituents in order to produce global nature runs that will be used by the CHE consortium. These nature runs will need to be accompanied by uncertainty estimates based on the IFS ensemble forecasting system.

4. Main duties and key responsibilities

- Introducing a map of global surface CO2 emissions based on urban cover mapping and inventories (e.g. EDGAR-JRC dataset) into ECMWF's Integrated Forecasting System (IFS)
- Introducing a CO2 emission model to simulate anthropogenic surface emissions related to residential heating and other human activities
- Performing global high-resolution nature runs to support the simulation of observations of a future Copernicus CO2 anthropogenic emissions monitoring system
- Developing methods to accurately estimate the needed perturbations of CO2 fluxes as input to ensemble simulations to estimate uncertainties in atmospheric CO2 concentrations
- Analysing the results of the integrated system including its uncertainty and support the evaluation in collaboration with CHE Project Partners
- Interacting with ECMWF's modelling and assimilation teams to uptake and explore new modelling methodologies
- Managing relevant project deliverables and contribute to publications and reporting
- Carrying out, on an ad-hoc basis, specific tasks to support the Copernicus (CAMS) service, relevant to the role

5. Personal attributes

- Excellent analytical and problem-solving skills with a proactive approach
- Dedication and enthusiasm to work in a team
- Good interpersonal and communication skills
- Ability to collaborate with both internal and external experts who will support the development of the IFS modelling system
- Ability to work efficiently and complete diverse tasks in a timely manner

6. Qualifications and experience required

Education	A university degree or equivalent professional experience in atmospheric science, biogeochemistry or related areas of physics with a background in atmospheric modelling. A PhD is desirable but not essential.
Experience	At least three years of professional experience in meteorology, geosciences, or a related subject, with a background in model development. Experience on CO2 emission by sectors used in fossil fuel emission inventories Experience with large EO dataset in various formats such as netCDF and GRIB Experience in statistical analysis with both observational and model data
Knowledge and skills (including language)	Very good programming and scripting skills Very good organisational and time-management skill Ability to coordinate work and interact with a large Consortium Candidates must be able to work effectively in English and interviews will be conducted in English. A good knowledge of one of the Centre's other working languages (French or German) would be an advantage.

7. Other information

The successful candidate will be recruited at the **A2** grade, according to the scales of the Co-ordinated Organisations and the annual salary will be **£56,487** net of tax.

This position is assigned to the employment category STF-PS as defined in the Staff Regulations.

Full details of salary scales and allowances are available on the ECMWF website at **www.ecmwf.int/en/about/jobs**, including the Centre's Staff Regulations regarding the terms and conditions of employment.

Starting date: 1 November 2017.

Length of contract: Two years initial contract, with possibility of extension of one further year subject to funding.

Location: The role will be based in the Reading area, in Berkshire, United Kingdom.

Interviews for this position are expected to take place in Reading, Berkshire week commencing 25 September 2017.

8. How to apply

Please apply by completing the online application form available at **www.ecmwf.int/en/about/jobs**.

ECMWF has an Equal Opportunities Policy and applications from all suitably qualified candidates are welcome.

Staff are usually recruited from among nationals of the following Member States and Co-operating States:

Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, the former Yugoslav Republic of Macedonia, Finland, France, Hungary, Germany, Greece, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Montenegro, the Netherlands, Norway, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Staff from other countries may be considered in exceptional cases.