

Scientist – CO2 Human Emissions Project (Assimilation and Integration)

1. Position information

Vacancy No.: VN17-10	Department: Research / Copernicus
Grade: A2	Section: Earth System Assimilation/Copernicus Atmospheric Monitoring Service Development
Job Ref. No.: STF-PS/17-10	Reports to: Methodology Team Leader/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 Assimilation Section of the Research Department. The Scientist will work with the Methodology 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 investigate the options to expand the NWP data assimilation capabilities to include parameter and flux estimation for anthropogenic emissions of atmospheric species including CO2. This will be explored in the context of the further development of atmospheric composition assimilation in the Copernicus Atmosphere Monitoring Service as well as land surface reanalysis in the Copernicus Climate Change Service.

4. Main duties and key responsibilities

- Assessing the options of and develop capabilities for constraining surface natural/anthropogenic emissions of atmospheric species (e.g. CO2 and co-emitters) in ECMWF's Integrated Forecasting System (IFS) and in the next generation data assimilation and analysis system
- Assessing the impact of various data assimilation developments on the observational constraint of CO2 concentrations, fluxes and model parameters in the context of the IFS analysis system
- Evaluating the use of surface observations, from in-situ and remote sensing networks, on monitoring and constraining natural and anthropogenic CO2 fluxes
- Providing feedback of the above developments and experimentation in support of the scoping of a future Copernicus CO2 anthropogenic emissions monitoring system in collaboration with CHE project partners
- Interacting with the ECMWF modelling and assimilation teams to identify and explore new data assimilation 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 data assimilation 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, geosciences or related areas of physics with a background in data assimilation.
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	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 data assimilation. Experience with developing and maintaining large scientific codes. Experience in parameter optimisation or other inversion techniques. 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)	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 the 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 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.