Scientist to work on km-scale coupled ocean modelling

1. Position information

Vacancy No.: VN21-08	**Department:** Research
Grade: A2	**Section:** Earth System Modelling
Job Ref. No.: STF-PL/21-08	**Reports to:** Numerical Methods Team Leader
Publication Date: 2 March 2021	**Closing Date:** 15 April 2021
Location: Bonn, Germany	

2. About ECMWF

ECMWF is both a research institute and a 24/7 operational service, producing numerical weather predictions for its Member and Co-operating States as well as users around the world. ECMWF carries out scientific and technical research and analysis aiming to continuously improve global prediction. ECMWF processes in its high-performance computing facility large amounts of observations to provide up-to-date global analyses and climate reanalyses of the atmosphere, ocean and land surface.

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

Over the years, ECMWF's partnership with the European Union has grown, and in 2014 ECMWF became an entrusted entity to operate the Copernicus Atmosphere Monitoring Service (CAMS) and the Copernicus Climate Change Service (C3S) on behalf of the European Commission until mid-2021 and ECMWF is preparing plans for the next phase of the Copernicus Programme for the period 2021-2027.

ECMWF currently operates from its headquarters, located in Reading, UK, and its data centre located in Bologna, Italy. Over the course of 2021, ECMWF will be opening additional new premises in Bonn, Germany.

3. Summary of the role

ECMWF has an exciting opportunity for a Scientist to work on the H2020 NextGEMS project. The role of this position is to further develop the representation of the ocean in ECMWF's Integrated Forecasting System (IFS) as part of NextGEMS.

NextGEMS aims to develop a new generation of global coupled Storm-Resolving Earth System Models (SR-ESMs), exploring kilometre-scale simulations (2-4 km both in the atmosphere and the ocean) with an explicit representation of essential Earth system processes, such as ocean mesoscale eddies and atmospheric deep convection. The NextGEMS project focuses its development around two European SR-ESMs, ICON coupled to ICON ocean and IFS coupled to both NEMO and FESOM-2.

The position sits in the Earth System Modelling Section of the Research Department. As member of the Numerical Methods team, there will be a lot of collaboration with both the Coupled Processes and Physical Processes Team members, so strong communication and interpersonal skills will be key in this role.

The successful candidate will develop an improved and flexible coupling between the atmosphere and the ocean that enables the coupling of IFS to two different ocean models, NEMO and FESOM-2, to initialise and conduct coupled simulations at 2-4km resolution (of the atmosphere and ocean), to improve efficiency and scalability of selected coupled configurations and explore different grid and configuration options for the ocean models.

The Scientist will help to identify model errors of IFS coupled to the two ocean models, through targeted diagnostics and numerical experimentation, in close collaboration with teams across ECMWF and the NextGEMS partners. They will also contribute to the communication and dissemination of these results to an extensive range of stakeholders.

Whilst this position will be based in Bonn, Germany, there will be a lot of collaboration with staff based at the HQ in Reading, United Kingdom so it is anticipated that visits to the HQ in Reading will be required.

4. Main duties and key responsibilities

- Conducting coupled simulations with IFS/FESOM-2 and IFS/NEMO
- Further developing the atmosphere-ocean coupling in ECMWF's IFS
- Contributing to the development of an ocean model dynamical core
- Considering initialisation options for the two ocean models
- Optimising the interaction of atmosphere and ocean, both technically and scientifically, e.g. the coupling to the wave model
- Diagnosing the feedbacks of the two ocean models on the atmosphere
- Identifying and exploring coupled model errors
- Managing project deliverables in the framework of the NextGEMS project and contributing to publications, communication activities and reporting
- Participating in NextGEMS hackathons workshops and hackathons and representing ECMWF and NextGEMS results in relevant meetings

5. Personal attributes

- Very strong interpersonal and communication skills
- Initiative and ability to work collaboratively with other team members and project partners, but also able to work independently
- Excellent analytical and problem-solving skills with a proactive continuous improvement approach
- Dedication, passion and enthusiasm to succeed both individually and across teams of developers
- Ability and willingness to collaborate with internal and external experts on related aspects of forecast and coupled model development
- Active listener who seeks and respects the views of others
- Highly organised with the capacity to work on a diverse range tasks to tight deadlines

6. Qualifications and experience required

Education	A university degree or equivalent professional experience in atmospheric science, geosciences or related areas of physics. A PhD is desirable but not essential.
Experience	Professional experience in oceanography, meteorology, geosciences, or a related subject, with a background in ocean modelling. A background in data assimilation would be an advantage. Experience with developing and maintaining large scientific codes. Experience with large Earth Observation datasets 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. Experience with parallel programming and profiling tools. 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

Grade remuneration

The successful candidate will be recruited at the **A2** grade, according to the scales of the Co-ordinated Organisations and the annual basic salary will be up to **EUR 75,178.92** net of tax. This position is assigned to the employment category **STF-PL** 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: As soon as possible.

Length of contract: Three years, with possibility of a further contract. This is subject to the signing of the grant agreement, expected on 1 April 2021.

Location: The position will be based at ECMWF's duty station in Bonn, Germany, which is currently expected to open in the second half of 2021.

Successful applicants and members of their family forming part of their households will be exempt from immigration restrictions.

Videoconference interviews (via BlueJeans) are expected to take place in early May 2021.

8. How to apply

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

To contact the ECMWF Recruitment Team, please email jobs@ecmwf.int.

Please refer to the ECMWF Privacy Statement. For details of how we will handle your personal data for this purpose, see: https://www.ecmwf.int/en/privacy.

At ECMWF, we consider an inclusive environment as key for our success. We are dedicated to ensuring a workplace that embraces diversity and provides equal opportunities for all, without distinction as to race, gender, age, marital status, social status, disability, sexual orientation, religion, personality, ethnicity and culture. We value the benefits derived from a diverse workforce and are committed to having staff that reflect the diversity of the countries that are part of our community, in an environment that nurtures equality and inclusion.

Applications are invited from nationals from ECMWF Member States and Co-operating States, listed below:

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

Applications from nationals from other countries may be considered in exceptional cases.