Consultant responsible for NWP software development (OpenIFS Project) ECMWF

FUNCTION: Consultant responsible for NWP software development (OpenIFS Project)

REFERENCE NO: AP11-07

LOCATION: ECMWF Headquarters at Shinfield Park, near Reading, Berkshire, United Kingdom.

ENVIRONMENT: The European Centre for Medium-Range Weather Forecasts (ECMWF) is an international organisation supported by 34 States*. ECMWF’s principal objectives are the development of numerical methods for medium-range forecasting; the preparation, on a regular basis, of medium-range and extended-range weather forecasts for distribution to the meteorological services of the Member States; scientific and technical research directed to the improvement of these forecasts; collection, processing and archiving of appropriate meteorological data. ECMWF’s main computing facility includes supercomputers, archiving and data handling systems. ECMWF is connected to the meteorological organisations of its Member States and Co-operating States via efficient networks linking currently 44 countries. A detailed description is available at: www.ecmwf.int [1]
MAIN DUTIES:
The vacancy is in the Numerical Aspects (NA) Section of the Research Department. The NA Section is responsible for the development and maintenance of the dynamical core of the ECMWF Integrated Forecasting System (IFS). It conducts research into numerical methods for NWP with the aim of improving the stability, accuracy and efficiency of the model. The IFS software is written in FORTRAN-90 using MPI and OpenMP standards for parallelisation and comprises approximately 1,000,000 lines of code.

ECMWF is developing an exportable version of the IFS code (OpenIFS) to foster the model's use within the Member States and to facilitate the incorporation of external scientific developments in future upgrades.

The ECMWF model has a spectral representation in the horizontal and a finite-element scheme in the vertical, and uses semi-implicit semi-Lagrangian time integration. The operational model is hydrostatic. The section is currently working on (1) developing a non-hydrostatic dynamical core; (2) increasing the efficiency of the spectral transforms; (3) improving mass and tracer conservation of the semi-Lagrangian scheme; (4) research into physics-dynamics coupling; (5) increasing the vertical resolution.

The successful candidate for this post will be expected to:

- work on the development of an exportable version of the IFS, with focus on the dynamical and numerical aspects of the code;

- support the scientific and technical developments to improve the dynamical model;

- perform restructuring for enhanced code efficiency and management, including the development of scripts to compile and run the exportable IFS version;

- provide support for external users regarding technical and scientific aspects;

- produce and maintain required documentation.

QUALIFICATIONS:
A university degree in Meteorology, Physics, Mathematics or a related subject is required. Experience in atmospheric dynamics and numerical methods for NWP and experience with complex geophysical models are important. Prior experience with the IFS is not essential but desirable.

Very good programming skills in FORTRAN-90 and UNIX-scripting are essential and knowledge of at least one high-level computer language (C++, Java, Python) is desirable. The suitable candidate should have experience with coding, code testing and code maintenance on large computers and with different compilation systems.

The position will have strong interaction with other sections and divisions in the ECMWF Research Department, with the ECMWF Operations Department, and with external users; good communication and the ability to work in a team are thus very important.

The working languages of ECMWF are English, French and German. Candidates must be able to work effectively in English and have a good knowledge of one of the other working languages. Interviews will be conducted in English.

REMUNERATION:
Typically within the range of £3,920.00 to £5,429.00 per month net of tax, depending on qualifications, experience, personal situation and eligibility for expatriation allowance. A deduction of £31.94 per beneficiary or 4.14% of the monthly remuneration will be made for the supplementary health insurance scheme.

STARTING DATE:
As soon as possible.
LENGTH OF CONTRACT: One year with the possibility of extension of two further years.

APPLICATIONS: Application forms can be downloaded from ECMWF’s website: www.ecmwf.int/newsevents/employment/en/ [2]

CLOSING DATE: Completed applications for this post must reach the Personnel Section of the European Centre for Medium-Range Weather Forecasts not later than 3 June 2011.

News Date: Tuesday, May 3, 2011

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Links
[1] http://www.ecmwf.int