

ECONOMIA E MAR E AGRICULTURA E ALIMENTAÇÃO

Portuguese Institute for the Sea and the Atmosphere, I.P.

Aviso n.º 4939/2024

Summary: International selection for the recruitment of a PhD scientific researcher within the framework of the Digital Europe project DE_330 - Destination Earth On-Demand Extremes (ECMWF).

International selection recruitment procedure for hiring a PhD researcher, fixed-term public employment contract, within the scope of DE_330 (ECMWF)

1 – In accordance with Decree-Law no. 57/2016, of August 29, in its current wording, it is hereby made public that, by deliberation of the Board of Directors of IPMA, I.P., dated 14/12/2023, recorded in minutes 121/2023, the opening of the international selection recruitment procedure for hiring a PhD researcher was authorized, within the scope of the project DE_330 - Destination Earth On-Demand Extremes, launched by the European Centre for Medium-range Weather Forecasts (ECMWF), with a fixed-term public employment contract for a period of three years, presumably renewable, with the aim of carrying out research activities within the mentioned project. The main objective of the project is the development, on EuroHPC platforms, of a European on-demand numerical system for hectometric-scale prediction of the physical conditions of the Earth system in adverse weather situations and in regions of predictable extreme risk to European socio-economic activity.

Context: Destination Earth (DestinE) is an ambitious initiative of the European Union (EU) to create a digital twin - an interactive computer simulation - of our planet. DestinE will be used to better understand the effects of climate change and environmental disasters and to permit policy makers more effectively respond to these issues. The European Centre for Medium-range Weather Forecasts (ECMWF), the European Space Agency (ESA) and the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) are the three organizations entrusted by the EU to achieve this unprecedented endeavor for climate, weather and computing sciences. A key milestone is the launch of the first two digital twins by December 2023. One of these will be the Digital Twin on Weather-Induced and Geophysical Extremes. Managed by ECMWF, this digital twin will provide capabilities and services for the assessment and prediction of environmental extremes. Météo-France, contractor and leading partner of a European team composed of 28 environmental institutes and national meteorological/hydrological services, took part in the procurement procedure, launched by ECMWF for the provision of the DE_330 On-demand Extremes Digital Twin in March 2022. The proposed solution is to develop an on-demand configurable digital twin for the assessment and prediction of environmental

extremes at sub-km scale. The tender was successfully evaluated and negotiated. The 20-month contract between ECMWF and Météo-France started on 1st September 2022.

Missions: The On-Demand Extremes Digital Twin Engine (DTE) will encompass the technological infra-structure necessary to facilitate the deployment of the on-demand, event- or user- driven hyper-resolution DT for decision making support to end-users. The system will support the atmospheric Numerical Weather Prediction (NWP) model configurations, with or without data assimilation, that are, at present, operationally run by the European National Meteorological Services (NMSs) which are members of the ACCORD Consortium (<http://www.accord-nwp.org/>). The Limited Area Model AROME (Termonia et al., 2018, <https://doi.org/10.5194/gmd-11-257-2018>), being run operationally at kilometric-scales at IPMA, will be run at increasing resolutions to reach sub-kilometric (hectometric) scales. It was originally designed to improve short-range forecasting of dangerous phenomena such heavy Mediterranean rains, violent storms, fog or urban heat islands during heat waves. On-Demand Extremes goals require a flexible and efficient workflow management, materialized by a modular scripting system, connecting the relevant components through the DTE production chain, which can fit for automated deployment across the European High Performance Computation Joint Undertaking (EuroHPC JU) platforms. During phase one of the DestinE, the building blocks of this infra-structure will be gathered and connected and focus will be targeted to the demonstration of the DTE prototype capabilities (for further details, see Press Release at: <https://stories.ecmwf.int/m-t-o-france-wins-bid-to-develop-destination-earth-s-on-demand-extremes-digital-twin/index.html>).

2 – The inherent functions of the job position include:

- a) Participation in activities of the DE_330 project (ECMWF), on behalf and in coordination with the experts of IPMA, I.P.;
- b) Contribution to the design, development, and validation of the software prototype, designated as Destination Earth on demand Extremes (DTE);
- c) Implementation and execution of simulations of a limited-area atmospheric model developed by the ACCORD community (<http://www.accord-nwp.org>) at the hectometric scale, for the DTE prototype - in collaboration with the project's team (local and international);
- d) Contribution to the submission (including planning and writing) of projects to the EuroHPC JU platform, with a focus on numerical forecasting, in cooperation with other national and international entities within the scope of DE_330 (ECMWF) developments;
- e) Participation in scientific meetings publication of national and international technological and scientific documentation associated with the project.

3 – Applicable legislation:

- a) Decree-Law No. 57/2016, dated August 29, in its current wording (RJEC);
- b) General Labour Law on Public Functions (LTFP), approved as an annex to Law No. 35/2014, dated June 20, in its current wording;
- c) Regulatory Decree No. 11-A/2017, dated December 29.

4 – Under the terms of Article 16 of the RJEC, the present recruitment procedure is exempted from:

- a) Authorization by the Government members responsible for the areas of Finance and Public Administration, specifically mentioned in paragraph 3 of Article 7 of the LTFP;

- b) Obtaining the favorable prior opinion referred to in paragraph 5 of Article 30 of the LTFP; and
- c) The recruitment procedure for workers in a professional valorization situation, as stated in Article 265 of the LTFP.

5 – Admission requirements: only national, foreign and stateless candidates who hold a Ph.D. degree in an area suitable for the profile of this recruitment procedure, i.e., a Ph.D. in Computational Sciences, Physical Sciences (including Earth and Space) or Mathematics, are eligible to apply for this competition, under penalty of exclusion. Candidates who obtained the PhD in a foreign country need a Portuguese Recognition issued by a Portuguese high degree Institution, in accordance with Decree-Law No. 66/2018, of August 16. The presentation of such Recognition is mandatory for contract signature. More information can be obtained in: <https://www.dges.gov.pt/pagina/degree-and-diploma> recognition.

6 – Remuneration: it is fixed in accordance with Article 15 of the RJEC, in conjunction with Article 2 of Regulatory Decree N° 11-A/2017, of December 29, corresponding to remuneration level 33: €2,294.95, before taxes monthly. In addition to the monthly remuneration, vacation and Christmas allowances are added, as well as the meal allowance, in the amount and conditions set out for workers with an employment relationship under the Labour Code.

7 – Workplace: Divisão de Previsão Meteorológica e Vigilância (DivMV) of the Portuguese Institute for the Sea and Atmosphere, IPMA, located at the IPMA headquarters, at Rua C do Aeroporto de Lisboa (1749-077).

8 – Contract duration: fixed-term employment contract in public functions, for a period of three (3) years, with the possibility of automatic renewal for additional one-year periods, up to a maximum duration of six years, in accordance with paragraph 2 of article 6 of Decree-Law no. 57/2016, of August 29th.

9 – Under the terms of Article 5 of the RJEC, the selection process is carried out through the evaluation of the scientific and technological curricular background of the candidates.

10 – The evaluation of the scientific and technological curricular background focuses on the relevance, quality, and up-to-dateness of the scientific career (scientific production and research experience) in the last five years, as expressed in the curriculum vitae, and its suitability for the proposed work plan.

11 – The five-year period mentioned in the previous paragraph may be extended by the jury, at the candidate's request, when justified by a suspension of scientific activity due to socially protected reasons, such as parental leave, prolonged serious illness, and other legally protected reasons of unavailability for work.

12 – The following are particularly valued:

- a) Experience in optimizing scientific code on high-performance computing systems and parallel processing, as well as in decentralized programming and management within collaborative projects.
- b) Experience or interest in using and developing models and numerical forecasting within Earth system physics, as well as in managing large volumes of data.

13 – The evaluation of the scientific and academic background is expressed on a scale of 1 to 20 points, with candidates scoring below 9.5 points being excluded. The evaluation is based on the following criteria and weights:

- a) Scientific or technological production in areas related to this competition in the past five years, considered relevant by the candidate (5 points).
- b) Applied research activities or practice-based research conducted in the past five years, considered of greater impact by the candidate, namely (10 points):
 - i) Proven experience in UNIX/Linux environment and high-level programming languages (particularly Python, C/C++, and FORTRAN);
 - ii) Demonstrated execution of applications in a High-Performance Computing and parallel processing environment;
 - iii) Proven experience in developing applications under source version control systems like Git/GitHub;
 - iv) Demonstrated participation in international collaboration projects.
- c) Knowledge of numerical models in fluid dynamics, preferably atmospheric and oceanic models, global or regional, with a special focus on collaborative development or execution (3 points).
- d) Dissemination activities carried out in the past five years, within the scope of related areas to this competition (Computational Sciences, Physical Sciences (including Earth and Space), and Mathematics) (1 point).
- e) Management activities in science, technology, and innovation programs (1 point).

14 – The evaluation of the candidate's scientific and curricular path can be completed by interview, if the jury so decides. The interview does not constitute a selection method and is not classified, aiming only to obtain clarifications or explanations of elements contained in the candidate's curricula.

15 – In accordance with Article 13 of the RJEC, the jury has the following composition:

- a) President: Isabel Alexandra Martinho Franco Trigo - Assistant Researcher with Aggregation, Earth Observation Unit (NOT), IPMA, I.P.;
- b) Effective members:
 - i) Maria José Correia Monteiro - Ph.D., Senior Technician, DivMV, IPMA, I.P.;
 - ii) Emanuel Nemésio de Sousa Dutra – Principal Investigator, NOT, IPMA, I.P., IPMA, I.P.;
- c) Alternate members:
 - i) Victor Manuel Martins Soares Prior - Ph.D., Director of the Madeira Regional Delegation, IPMA, I.P.;
 - ii) Pedro Miguel Ribeiro de Sousa - Ph.D., Senior Technician, DivMV, IPMA, I.P..

16 – The Jury deliberates through nominal vote in accordance with the adopted and disclosed selection criteria, and abstentions are not allowed.

17 – Minutes are drawn up during the jury meetings, which contain a summary of what has occurred during the meetings, as well as the votes cast by each member and their respective justifications. These minutes will be provided to the candidates upon request.

18 – The final decision of the jury will be approved by the Board of Directors of IPMA, I.P..

19 – The deadline for submitting applications to the procedure is 15 working days, counting from the day following the publication of this notice on the Public Employment Exchange (BEP).

20 – The application is accompanied by supporting documents for the conditions required for admission to this competition, namely:

- a) Candidacy form provided on the IPMA, I.P. website, expressly indicating the reference of this notice;
- b) Copy of certificate or diploma attesting the degree of Doctor (or equivalent);
- c) Detailed curriculum vitae;
- d) Letter of motivation;
- e) Other relevant documents that the candidate deems relevant for the assessment of their scientific and curricular path, including reference letters.

21 – Candidates submit the documents in digital format, in PDF format, to the email address recrutamento@ipma.pt.

22 – The following will be excluded from the procedure: candidates who incorrectly formalize their application or fail to provide evidence of the requirements demanded in this competition will be excluded from admission; candidates who do not submit the application form, fail to submit the required documentation, or submit illegible, incorrectly filled out, or invalid documentation will also be excluded; candidates without a PhD in the areas defined in Paragraph 5. The jury reserves the right to require any candidate, in case of doubt, to present supporting documents for their declarations.

23 – False statements made by candidates will be punished by law.

24 – The list of admitted and excluded candidates, as well as the final classification list, will be published on the website <http://www.ipma.pt/pt>. Candidates will be notified by email with a delivery receipt of the notification.

25 – Under the terms of Article 121 of the Code of Administrative Procedure, after notification, candidates have 10 working days to comment in writing. Within 90 days, counting from the deadline for submission of applications, the final decisions of the jury will be approved.

26 – This competition is exclusively intended for filling the indicated vacancy and may be terminated until the final ranking list of candidates is approved, becoming void upon the occupation of the position being offered.

27 – IPMA, I.P., actively promotes a policy of non-discrimination and equal opportunities in employment, in accordance with Article 9 of the Constitution, ensuring equal access to employment opportunities.

28 – The jury approved this notice during the meeting held on 25/01/2024.