

Job Title: Internal Research Fellow in Earth Observation and Ocean Science

Requisition ID 11982 - Posted 12/02/2021



EUROPEAN SPACE AGENCY

Research Fellowship Opportunity in the Directorate of EO Programmes.

ESA is an equal opportunity employer, committed to achieving diversity within the workforce and creating an inclusive working environment. For this purpose, we welcome applications from all qualified candidates irrespective of gender, sexual orientation, ethnicity, beliefs, age, disability or other characteristics. Applications from women are encouraged.

Post

Post

Internal Research Fellow in Earth Observation and Ocean Science

This post is classified F2.

Location

ESRIN, Frascati, Italy

Our team and mission

You will report to the Head of the Science Section in the Applications Division within the Science, Applications and Climate Department of the Directorate of Earth Observation Programmes. In executing your assigned tasks, you will work in close cooperation with other staff of the Directorate of Earth Observation Programmes.

The Applications Division is a dynamic R&D team leading research and development activities in partnership with European and international industry and academia, with the aim of advancing science, developing novel applications, supporting the growth of industry and contributing to establishing a European ecosystem of exploitation platforms to maximise the impact of European missions in society.

You will be part of the Earth System Science Hub, a new science facility within ESA promoting networking and scientific collaboration among world-class researchers in Member States and worldwide. The Hub will be an integral part of a new strategy to implement the scientific exploitation programme of ESA and will serve as a catalyser for new ideas and scientific breakthroughs in EO and Earth system science.

This facility will bring together young and senior scientists of different disciplines in Earth Observation and Earth system science to work together sharing different expertise and capabilities and undertaking collaborative research in order to promote a community response to the main science challenges of this decade and contributing to the development of a community science solution to the "Digital Twin Earth" vision.

Interested candidates are encouraged to visit the ESA website: www.esa.int

Field(s) of activities/research/learning areas

ESA, together with the scientific community, is actively engaged in a number of scientific developments in the research domain of ocean science aimed at advancing ocean observations and enhancing the scientific understanding of the oceans' role in the Earth and climate system.

In particular, together with international partners and the scientific community, ESA aims to contribute to the development of novel science-based solutions, through the development of a Digital Twin of the Ocean (DTO), with a particular emphasis on Ocean Health issues, based on the effective integration of a wide range of data sources (satellites, in situ, citizen science), ocean models (physics, biogeochemistry, ecosystems) advanced Earth system science and latest ICTs to transform data into knowledge and to connect, engage, and empower citizens, governments and industry by providing them with the capacity to inform their decisions.

To this end, ESA is engaged in a number of different Ocean Health-related research activities:

- Developing innovative methods, algorithms and products to improve our capacity to observe and monitor the green ocean;
- Developing innovative methods to retrieve ocean colour products from non-oceanographic missions (e.g., Sentinel-5p, Aeolus);
- Developing multi-mission joint products to support the understanding and monitoring of major Ocean Health stressors such as acidification, eutrophication, deoxygenation, pollution;

- Advancing the capacity to better characterise from space and in conjunction with in-situ data and ocean modelling, the different components of the ocean carbon cycle, and better understand its role in the Earth Carbon Cycle;
- Enhancing knowledge of the impact of extreme events (extreme winds, marine heat waves, extreme acidification events) on ocean biology and ecosystems.

Field(s) of activities/research/learning areas

The availability of Copernicus Sentinel data, their synergies with the Earth Explorers (e.g., SMOS) and other data (in particular in-situ measurements) as well as the exploitation of the long-term EO data archives open new frontiers for science and research in the domain of Ocean Health.

Specifically the exploitation of oceanographic datasets in the context of developing new algorithms and products for a better understanding and quantification of the impact of different stressors (including multiple stressors effect) on Ocean Health is to be investigated.

In this context, you will be involved in the definition, design and implementation of a community prototype science version of DTO, as a test bed for novel scientific developments and testing of novel solutions tackling Ocean Health issues before operational implementation within the DTE infrastructure.

This will involve three main activities:

1. Undertaking internal research activities aimed at addressing major observations and knowledge gaps in ocean sciences enhancing our fundamental scientific understanding of the complex processes governing the role of the oceans in the Earth and climate system, and the feedback with human activities and marine management actions, both in the open ocean and in coastal areas.

Activities will focus, in particular, on advancing our capacity to better assess, monitor and predict the complex and poorly-understood processes driving Ocean Health status and changes needed to fulfil the requirements to develop a fit-for-purpose Digital Twin of the Ocean. This includes enhancing our understanding of ocean biology, biogeochemistry and ecosystems, ocean physics-biology interactions, ocean-land-atmosphere interactions and coastal processes.

2. Supporting the scientific development, definition and technical supervision of science projects, carried out by external teams of experts and scientists, addressing the next generation ocean geo-information products and observation systems with special attention on addressing fundamental observation gaps to better characterise complex ocean dynamic processes (ecological, physical and biogeochemical) and advancing towards novel high-resolution data models of the oceans and its interactions with human activities.

Activities will focus particularly on the exploration and exploitation of the novel and increasingly synergistic potential offered by the latest EO satellite systems (e.g., Sentinel series of the European Copernicus Programme, novel ESA Earth Explorers, new meteorological missions, novel national and commercial missions) complemented with in-situ measurements including citizen observations.

3. Supporting ESA's interface and dialogue with the scientific communities, including supporting the organisation of ESA workshops and conferences on ocean sciences, relevant training, education and outreach actions and the continuous dialogue with international science groups such as IOCCG, WCRP, SOLAS or IMBER. In addition, supporting the collaboration with partner organisations and programmes such as EC-RTD, EUMETSAT or CMEMS.

Technical competencies

Knowledge relevant to the field of research

Research/publication record

Ability to conduct research autonomously

Breadth of exposure coming from past and/or current research/activities

General interest in space and space research

Ability to gather and share relevant information

Behavioural competencies

Innovation & Creativity

Continuous Learning

Communication

Relationship Management

Self Motivation

Problem Solving

Cross-Cultural Sensitivity

Education

Applicants should have recently completed, or be close to completing a PhD in a related technical or scientific discipline. Preference will be given to applications submitted by candidates within five years of receiving their PhD.

In particular for this position, the following is required: PhD or equivalent qualification in Space Oceanography with research experience and peer-reviewed publications in relevant topics for the fields of research proposed.

Additional requirements

You should also have:

- Experience in research on ocean biology and biogeochemistry based on the use of relevant satellite measurements, in particular optical sensors, and in-situ data;
- Experience in Science software development and programming skills;
- Good analytical and communication skills and an ability to work in a multicultural environment in an autonomous manner.

Additional experience in ocean modelling will be an asset.

The working languages of the Agency are English and French. A good knowledge of one of these is required. Knowledge of another Member State language would be an asset.

Other information

For behavioural competencies expected from ESA staff in general, please refer to the [ESA Competency Framework](#).

The Agency may require applicants to undergo selection tests.

The closing date for applications is 12 mrch 2021.

In addition to your CV and your motivation letter, please add your proposal of no more than 5 pages outlining your proposed research in the "additional documents" field of the "application information" section.

At the Agency we value diversity and we welcome people with disabilities. Whenever possible, we seek to accommodate individuals with disabilities by providing the necessary support at the workplace. The Human Resources Department can also provide assistance during the recruitment process. If you would like to discuss this further please contact us at contact.human.resources@esa.int.

Please note that applications are only considered from nationals of one of the following States: Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, and the United Kingdom. Nationals from Latvia and Slovenia, as Associate Member States, or Canada as a Cooperating State, can apply as well as those from Bulgaria, Cyprus, Lithuania and Slovakia as European Cooperating States (ECS).

Priority will first be given to candidates from under-represented Member States.

In accordance with the European Space Agency's security procedures and as part of the selection process, successful candidates will be required to undergo basic screening before appointment