EUROPEAN SPACE AGENCY

Internal Research Fellow (PostDoc) in EO for Earth System Science

Job Req ID: 12494
Closing Date: 28 June 2021
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Vacancy Type: Internal Research Fellow
Date Posted: 31 May 2021

Research Fellowship Opportunity in the Directorate of Earth Observation 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.

This post is classified F2.

Location
ESRIN, Frascati, Italy

Our team and mission
Overview of the Division's mission

You will report to the Head of the Science Section in the Applications Division in the Science, Applications and Climate Department of the Directorate of Earth Observation Programmes. In carrying out your tasks, you will work closely with other staff in the Directorate of Earth Observation Programmes.

The Science Section is a dynamic R&D team leading EO research and Earth system science activities, in partnership with European and international scientific groups. You can visit our website for an overview of our activities: https://eo4society.esa.int/communities/scientists/

You will be part of the Earth System Science Hub, a new ESA science laboratory and centre for networking and scientific collaboration among world-class researchers in ESA Member States and worldwide. The Hub will bring together young and senior scientists of different disciplines in Earth observation and Earth system science to develop the next generation of EO products and jointly address some of this decade's major science challenges.

The Hub will also contribute to developing a solid scientific basis for the implementation and evolution of the "Digital Twin Earth" (an advanced high-resolution replica of our planet, its processes and its interactions with human activities and ecosystems), providing scientific input for the EU DestinE programme (https://ec.europa.eu/digital-single-market/en/destination-earth-destine).

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

Field(s) of activity/research for the fellowship
Overview of the proposed field of research

You will be responsible for different activities including:

- **Undertaking advanced research activities** addressing major observational gaps and scientific priorities in EO and Earth system science. Research will cover a wide range of innovative topics, from development of novel methods, algorithms and EO products (i.e. exploiting data from the Earth Explorers, Sentinel series, non-ESA missions) to innovative Earth and climate system research.
- **Contributing to development of an advanced reconstruction of the Earth system** establishing a solid scientific basis for the implementation and evolution of Digital Twin Earth, by undertaking collaborative research across domains with ESA experts and international scientists and science teams.
- **Supporting the definition, technical supervision and coordination of scientific exploitation** projects carried out by external teams of experts and scientists, in all areas of EO research and Earth system science.
- **Maintaining a continuous dialogue with the scientific communities**, including major international programmes and initiatives and partner space agencies (e.g. NASA), in preparation for the scientific agenda driving future ESA activities and plans.

Field(s) of activity/research for the fellowship
You will be involved in the scientific activities of the Science Section in one of the following five thematic priorities:

- **Polar and cryosphere science:** Activities will focus on exploring and exploiting the synergistic opportunities presented by the increasing international EO capacity (e.g. coordination of CryoSat and NASA's ICESat 2) to develop an advanced reconstruction of the Polar regions, their complex processes and ocean-sea-ice-atmosphere interactions, their changes and their impacts worldwide. You will also contribute to the coordination and implementation of the activities of the ESA Polar science cluster: https://eo4society.esa.int/communities/scientists/esa-polar-science-cluster/
- **Ocean science:** Activities will focus on exploiting the latest advances in EO satellite technology to enhance our observation capacity and fundamental scientific understanding of the ocean's role in the Earth and climate system and its responses to anthropogenic forcing and mitigation actions. You will also contribute to the coordination and implementation of the activities of the ESA Ocean science cluster: https://eo4society.esa.int/communities/scientists/esa-ocean-science-cluster/
- **Hydrology and water cycle**: Activities will focus on development of a new generation of observational products at high resolution characterising the complex processes of the land surface, its sensitivity to climate change and its interactions with human activities (e.g. agriculture, forestry, energy, water consumption). Activities will centre in particular on the increasing synergistic potential of the latest EO satellite systems (e.g. Copernicus Sentinel series of the European Copernicus Programme, ESA Earth Explorers, meteorological missions, novel national and commercial missions).
- **Terrestrial carbon cycle**. Activities will focus in particular on advancing land carbon research by exploiting the novel capabilities of the Sentinel missions complemented by new ESA missions such as Biomass and FLEX to better observe, characterise and understand the role of land use, agricultural areas, forests, vegetation stress and land degradation processes in the carbon cycle. You will also contribute to the coordination and implementation of the activities of the ESA carbon science cluster: https://eo4society.esa.int/communities/scientists/esa-carbon-science-cluster/
- **Climate adaptation: extremes and natural disasters**. extremes and natural disasters. Activities will focus on advancing in the integration of EO technology and environmental information, Earth system models, human behaviour models and socioeconomic information to deal with climate disruptions, hydro-climatic extremes (e.g. heat waves, droughts, floods), multi-hazards, compound and cascade events, their interactions and feedbacks with the Earth and climate system, and develop novel science-based solutions to better assess and tackle the resulting risks and expected impacts on society and ecosystems.

You should state your preferred theme in your proposal.

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
Result Orientation
Operational Efficiency
Fostering Cooperation
Relationship Management
Continuous Improvement
Forward Thinking

Education
You should have recently completed, or be close to completion of, a PhD in physics, engineering or Earth system science with research experience and peer-reviewed publications in topics relevant to the fields of research proposed.

Preference will be given to applications submitted by candidates within five years of receiving their PhD.

Additional requirements
- You should have proven research experience based on the use of relevant satellite measurements.
- Science software development experience and programming skills are also required.
- Additional experience in modelling will be an asset.
- You should have good analytical and communication skills and be able to work in a multi-cultural environment in an autonomous manner.

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.

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