

Internal Research Fellow in Future Mission Earth Science

Job Req ID: 14605

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Internal 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. We therefore 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

ESTEC, Noordwijk, Netherlands

Our team and mission

The holder of this post will report to the respective Head of Section in the Earth and Mission Science Division within the Science, Applications and Climate Department of the Directorate of Earth Observation Programmes. In the execution of the tasks, the holder of this post will work in close cooperation with other staff of the Directorate of Earth Observation Programmes.

The Earth and Mission Science Division is a dynamic R&D team leading research and development activities, in partnership with European and international industry and academia, aiming at advancing science, developing future space missions, novel applications, and contributing to maximise the science impact of missions in implementation and future mission candidates.

Our main activities relate to Earth Observation (EO) satellite missions focusing on processes at, near, or beneath Earth's surface: study of feasibility of science and applications of new space-based EO mission concepts addressing the science domains; atmosphere, oceanography, solid Earth, cryosphere, geodesy, and land surface.

Analysis of data acquired during ground, airborne and in-orbit campaigns to simulate future EO missions and relate sensor measurements to bio-geophysical variables.

Scientific study activities in support of future ESA EO Research missions; Copernicus Sentinels, Copernicus Sentinel Expansion or Next Generation Sentinel missions; and Earth Watch missions.

Suggested research opportunities in the atmospheric domain are linked to EO satellite mission needs and recent international airborne and in-orbit campaigns including, but not limited to, the following topics:

Atmospheric Composition (Copernicus CO2M, Copernicus Sentinel-5 and ALTIUS):

Future ESA missions will provide a significant contribution to the global observation of Greenhouse Gases (GHG), Air Quality, stratospheric composition and aerosols. This Research Fellowship will contribute to the evolution of ESA's satellite mission's atmospheric composition products with several potential scientific activities, including amongst others:

- Performing investigations to exploit the Copernicus CO2M satellite mission data to extend the mission objectives to aerosol, water vapour, glyoxal and cloud studies, or to enhance the retrieval of core species (CO₂, CH₄ and NO₂).
- Research activities supporting investigation of the synergy between Copernicus Sentinel-5 imaging spectrometers and the 3MI multi-viewing, multi-spectral polarimeters embarked on the series of MetOp-SG-A satellites with the goal to explore improvements to Sentinel-5 Air Quality and GHG trace gas retrievals by exploiting aerosol information from 3MI.
- Research activities into forward modelling and retrieval algorithms for upper troposphere and stratospheric trace gases and aerosols from the ALTIUS limb sounding mission, and assessment of the expected retrieval performance. This could comprise work on the missions' end-to-end simulators, campaign data as available, and suggestions for in-flight validation.

Cloud and Cloud Microphysics (FORUM, EarthCARE, MetOp-SG):

Retrieval of cloud properties or the correction of cloud contamination are an important element in the preparation for future EO missions. There are a number of scientific activities addressing clouds in the frame of this post, including amongst others:

- Performing investigations into potential synergistic cloud product retrievals using combined data from the Earth Explorer 9 FORUM mission and MetOp-SG-A instruments.
- Investigation of ground-based and airborne thermal infrared, lidar, and microwave measurements for FORUM and EarthCARE validation efforts with respect to cloud properties.

Team and mission continued

Earth Radiation (EarthCARE, FORUM, TRUTHS):

ESA is currently developing a number of unique and unprecedented research missions addressing the Earth's radiation budget. Different research topics have been identified in support of the science activities in this domain, including amongst others:

- Performing a system-of-system study related to climate reference measurements collected by future ESA missions, including the FORUM and EarthCARE Earth Explorers, the TRUTHS Earth Watch mission, and the IASI-NG instrument on MetOp-SG.
- Research activities in support of performance assessment of the EarthCARE mission and its four instruments (imager, radiometer, lidar and radar) using ground-based, aircraft, or satellite measurements.

For more information, interested candidates are encouraged to visit the ESA website: https://www.esa.int/Applications/Observing_the_Earth/Earth_observing_missions

Field(s) of activity/research for the traineeship

Your research shall contribute to the activities of the ESA Earth and Mission Science Division related to the missions mentioned above or to new future concepts, and on Earth system science.

You will have the opportunity to work in cooperation with relevant scientific experts within ESA's Earth and Mission Science Division.

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

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.

Additional requirements

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, Lithuania, 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 and Slovakia as European Cooperating States (ECS).

According to the ESA Convention, the recruitment of staff must take into account an adequate distribution of posts among nationals of the ESA Member States*. When short-listing for an interview, priority will first be given to candidates from under-represented or balanced Member States*. (<https://esamultimedia.esa.int/docs/careers/NationalityTargets.pdf>)

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.

*Member States, Associate Members or Cooperating States.

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