VN 26/56 Research Fellowship at BIRA: MTG IRS near-real-time dust aerosol profiles

The Royal Belgian Institute for Space Aeronomy (BIRA-IASB) is a federal research organization. Since its creation in 1964, its main tasks are research and public service in the field of space aeronomy, which includes the study of the physics and chemistry of the atmospheres of the Earth and other planets, and of outer space. BIRA-IASB scientists supported by a team of engineers design and operate experiments to monitor atmospheres and the space environment. They have also developed strong know-how in the exploitation of measurements and their geophysical interpretation using theoretical and numerical models. **More information** www.aeronomie.be

The research fellow will join the *Infrared Observations* team in the *Sources and Sinks of Atmospheric Components* department, at BIRA-IASB. The fellow will work alongside BIRA-IASB scientists responsible for the retrieval of atmospheric aerosols/gases from satellites observing the Earth in the (thermal) infrared spectral range. They will also have the opportunity to interact with RMI (Royal Meteorology Institute) scientists from the *Atmospheric Composition, Measurements and Modelling* team. They will interact with Numerical Weather Prediction (NWP) scientists and aerosol forecast experts in different centers, mostly but not exclusively in EUMETSAT member states and at the European Centre for Medium-range Weather Forecast (ECMWF). Obviously, the fellow will also be in contact with EUMETSAT within the context of the EUMETSAT fellowship program.

The work will focus on expanding the mineral dust aerosols retrieval from the satellite low Earth orbit Metop/IASI instruments to the new geostationary MTG/IRS instrument. The fellow will be supported by strong experience in the team on the IASI retrievals (about 15 years), currently reaching the near-real-time (NRT) dissemination status using the European Weather Cloud (EWC) system. The work will include applied scientific research and interactions with the product ultimate users. The goal of the fellowship is to obtain a NRT dust profile product from the IRS instrument, and to help the uptake of the product by NWP centers.

LOCATION

Brussels, Belgium

QUALIFICATIONS

University degree in Remote Sensing, Physics, Mathematics, Applied Sciences or another relevant/justified field with respect to the planned work.

LANGUAGES

Ability to work effectively in English, both verbally and written.

DEADLINE

4 January 2027

Duties

- Engage with future users (e.g. NWP centers, ECMWF/CAMS, …) for a requirements analysis, and later on for product uptake support
- Take hands on the existing IASI algorithm, adapt to the IRS instrument, improve where possible, test on small data sets
- Explore the specific issue of the high viewing angles and how it impacts the retrieval / radiative transfer calculation, how to solve it if necessary
- Develop a dedicated cloud versus dust mask, using AI/ML, allowing to reject cloudy observations before running the retrieval, and if possible, to run only the retrieval on observations where dust is present (both for gaining computing time)
- Validate / compare the results with reference data and model outputs
- Implement a NRT processing chain on the EWC, relying on the experience in the team with the IASI NRT processing chain

Skills and Experience

Mandatory:

- University degree in Remote Sensing, Physics, Mathematics, Applied Sciences or another relevant/justified field with respect to the planned work
- Relevant research experience, preferably at PhD level
- Scientific programming experience
- Strong interpersonal and team working skills
- Strengths in analysis, synthesis and presentation
- High level of commitment and interest in continuing education/training
- Ability to work effectively in English, both verbally and written.

Assets:

Knowledge or experience in:

- radiative transfer modelling
- retrieval techniques
- ML/AI scientific use
- Python scientific programming
- Linux operating system

Employment Conditions

The position is a fixed-term employment contract initially for one year, with possibility of extension for up to two additional years. The amount of remuneration will be in accordance with the BIRA-IASB salary scale which depends on the university degree and number of years of relevant experience.

EUMETSAT is committed to providing an equal opportunities work environment for men and women. Please note that only nationals of EUMETSAT Member States may apply. The EUMETSAT Convention requires that Staff shall be recruited on the basis of their qualifications, account being taken of the international character of EUMETSAT.

BIRA-IASB offers to its personnel:

- Possibility of training (to be followed during working hours)
- Pleasant working atmosphere in a scientific environment located in a green setting in Uccle, Brussels.
- Attractive annual leave policy (minimum 26 days per year)
- Options to balance professional and personal life (flexible schedule) within the 38 hours week
- Full refund of commuting expenses when using public transportation, compensation when using the bicycle
- Possibility to work from home (subject to approval, max. 60% of the working time)
- Dynamic working environment with strong international orientation.

About EUMETSAT

EUMETSAT is Europe’s meteorological satellite agency. Its role is to establish and operate meteorological satellites to monitor the weather and climate from space - 24 hours a day, 365 days a year. This information is supplied to the National Meteorological Services of the organisation's Member States in Europe, as well as other users worldwide.

EUMETSAT also operates several Copernicus missions on behalf of the European Union and provide data services to the Copernicus marine and atmospheric services and their users.

As an intergovernmental European Organisation, EUMETSAT has 30 Member States (Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, The Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.)

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