BIRA-IASB recruits

Research assistant (m/f/x)

(Non-permanent mission - SW00038)

This is a translation about the vacancy available in French on our website
https://www.aeronomie.be/fr/vacancy

Hereinafter, the masculine form is used to refer to all persons regardless of gender.

Context

You work within the group D31 'UV-visible observations' of the Scientific Division 'Atmospheric reactive gases'. For over 30 years, the group has developed a strong expertise in exploiting ground-based, airborne and satellite atmospheric composition measurements. This includes instrument design, algorithm developments, data processing and geophysical interpretation. Based on this expertise, the group has been strongly involved in level-2 processor developments for the Copernicus Sentinel 5 Precursor mission and it is similarly involved in the preparation of the future Sentinels 4 and 5. It also develops and maintains ground-based MAX-DOAS systems at several sites worldwide and acts as co-chair of the NDACC UV-Vis working group. In addition, it develops compact instrumentation for mobile observations of tropospheric gases (NO2, SO2, HCHO, HONO, CHOCHO) using various platforms such as cars, bike, UAVs and small aircrafts. These instruments aim to document the spatial variability of tropospheric reactive gases, e.g. in support of satellite validation projects. The group D31 works in close collaboration with other teams within the institute and national and foreign partners.

Objectives of the function – Responsibilities of the researcher.

Recent advances in satellite-based monitoring of atmospheric composition have enabled unprecedented spatial and temporal resolution in observing trace gases, offering new possibilities for mapping air pollution at urban to regional scales. With missions such as Sentinel-5 Precursor (S5P) and the forthcoming Sentinel-5 and Sentinel-4, we now have access to high-quality tropospheric column data for key pollutants such as NO_2, HCHO, and O_3, including high-frequency (hourly) measurements over Europe from the geostationary orbit.

This position will focus on the development of AI-based methodologies to derive physically consistent and interpretable estimates of air pollution by fusing information from satellite remote sensing, chemical transport models, meteorological reanalyses, in-situ air quality networks, and other ground-based remote sensing platforms (e.g., MAX-DOAS, low-cost sensors). The

More about BIRA-IASB

The Royal Belgian Institute for Space Aeronomy (BIRA-IASB) is a Belgian Federal Scientific Institution. Since its foundation in 1964, BIRA carries out research and provides public services in the field of space aeronomy, i.e. the physics and chemistry of the Earth's atmosphere and of other planets, and of interplanetary space.

Our scientists use instruments on the ground, in the air (e.g., onboard aircraft) or in space, and numerical models.

www.aeronomie.be

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(Brussel)

goal is to advance the estimation of both surface-level pollutant concentrations and vertical distribution (3D profiles), with applications ranging from health exposure assessment to model evaluation and satellite product improvement or validation.

Rather than relying solely on satellite data, the work emphasizes a synergistic and integrated ML approach, leveraging the strengths of CTMs for physical consistency, satellite observations for spatial coverage, and ground-based measurements for accuracy and validation. The research will also explore data-sparse regions, where hybrid modeling strategies are needed to compensate for limited ground truth, using transfer learning or physics-informed machine learning. He will work in close collaboration with the other members of the team and to some extent with the tropospheric modelling team at BIRA-IASB.

The researcher shall be available for regular short-duration stays abroad, on the purpose of participating to potential campaigns, meetings and international conferences.

Diploma requirements

Diploma of master or doctor in sciences or applied sciences, preferentially orientation physics or environmental engineering.

Would you like to apply but your diploma is not in French or Dutch?

We invite you to contact the HR department: hr-select@aeronomie.be to find out whether you need to take a language test article 7 - level 1/A. The selection commission is responsible for the verification of the diploma.

If it appears that a language test must be taken, you can register by clicking on the following link https://werkenvoor.be/nl/testen-en-certificaten/taal/inschrijven or www.travaillerpour.be/fr/tests-et-certificats/linguistique/inscription.

In such case, passing the language certificate is a prerequisite for selection. Therefore it is recommended to register for the language test as soon as possible.

Generic Skills

The candidate must be able to demonstrate the following competences:

- **Team spirit:** Ability and willingness to collaborate effectively with other team members.
- **Working in an international context**: Ability to work comfortably with international teams and in multicultural environments.
- **Working in an interdisciplinary environment:** Ability to collaborate on projects involving atmospheric remote sensing, modeling, in situ measurements, computational sciences, and emerging technologies.

Technical Skills

The candidate must be able to demonstrate the following competences:

- **Development of deep learning models** for simulating atmospheric pollutant distribution, including multi-source data fusion, uncertainty quantification, model interpretability, integration of physical constraints, design of complex neural network architectures, and custom loss functions (Expert level).

- **Atmospheric chemistry modeling** (e.g., GEOS-Chem) and related applications (e.g., CAMS) (Basic proficiency).
- **Application of atmospheric remote sensing techniques** (Basic proficiency).
- **Processing and integration of diverse datasets** (meteorological variables, emission inventories, geographic data, chemical transport model outputs, ground-based measurements, and satellite observations) (Advanced proficiency).
- **Programming in Python and use of deep learning libraries** (e.g., PyTorch, TensorFlow) (Advanced proficiency).
- **Project management** applied to instrument development and automation (Basic proficiency).
- **Technical and scientific writing**, including documentation of software and operational procedures (Advanced proficiency).

Assets

- Knowledge of one of the two national languages and proficiency in English
- Knowledge of aeronomy.
- Knowledge of UV-Vis spectroscopy .
- Experience with optical remote sensing techniques for terrestrial or planetary atmospheres.
- Experience in international projects, particularly those funded by the EU, EUMETSAT, or ESA.

We offer

Type of contract and salary scale:

You will be employed on a fixed-term contract (1 year) in Activity Group I 'Scientific Research and Experimental Development' with the corresponding salary scale SW1.

All relevant professional experience (public and private sector) will be taken into account in determining seniority.

The selected candidate will be appointed

- in salary scale SW10 or SW11 (SW11 if at least 2 years of recognized scientific seniority) if he has a master's or doctoral degree;
- in salary scale SW11 if he has a master's or doctoral degree.

Minimum remuneration (gross yearly amounts, at current index, regulatory allowances not included):

- SW10 (0 years of seniority): 46.436€ per year (3870€ per month)
- SW11 (0 years of seniority): 54 925 € per year (4577 € per month))
- SW11 (2 years of seniority): 57 357 € per year (4779 € per month)

Additional advantages

- Opportunity to obtain a bilingual bonus (French/Dutch) or training (possibly taken during working hours).
- Pleasant and dynamic working atmosphere in a scientific environment located in green surroundings.
- Opportunity to establish international contacts.
- Free travel to and from work by public transport and/or the possibility of a bicycle allowance.
- Attractive holiday scheme (minimum 26 days per year) and various possibilities to combine private and work life.
- Flexible working hours of 38 hours per week and/or the possibility of teleworking.
- Access to various socio-cultural benefits: museum card, hospital insurance, discounts via the Fed+

card, etc.
- Meal vouchers
- Childcare available during the long school holidays (July - August).
- Dynamic work environment with a strong international focus

Selection Procedure

Notification

You will receive a notification containing the result of your application, after each stage of the selection procedure

If you are unsuccessful at a particular stage, the procedure will be ended and you will not be invited to any subsequent stages of the same selection. At the end of the selection process, a group of successful candidates, who are not ranked among them, will be formed. This group consists of the candidates who have been found most suitable for the vacant position according to the conditions of participation. The list of successful candidates remains valid during 12 months.
For further information, please read the Annex to the job offer.

Recruitment requirements
If you have passed this selection, you can be recruited only if you meet all following conditions on the appointment date:

- enjoy civil and political rights,
- comply with the conscription laws
- have a conduct consistent with the requirements of the intended job
- be holder of the required diploma(s)
- meet the special skills and requirements set out in the job profile

Contact

For more information on this position, please contact:
Frederik Tack – workleader in the team D31 'UV-visible observations'
Email : frederik.tack@aeronomie.be

Interested?

Would you like to apply? Please send your application by e-mail to frederik.tack@aeronomie.be with a copy to: hr-select@aeronomie.be, quoting reference: **'D31_UVVIS_2025'.**

Deadline for submission of applications: 29/08/2025

Your application file should include the following:
- CV (we recommend using the model available below)
- Motivation letter
- Copy of the required diploma(s) with all attachments. If one or more of these diplomas are not in French, Dutch, German or English, a translation in French or Dutch of the diploma(s) in question must also be attached.
- Any other relevant document proving your relevant experience

Annex to the job offer

Additional information

Selection procedure

Stage 1: Checking the conditions for participation

You will be admitted to the selection procedure if you meet all the conditions for participation. The selection committee will check this on the basis of the application files you have submitted. The committee will decide whether the qualifications, merits and experience you present correspond to the requirements of the function for which you apply. If so, you will be invited to the next stage.

Depending on the number of applications received, the selection committee reserves the right to limit the number of candidates going on to the next stage by determining those it considers most suitable for the function.

Stage 2: Audition

The audition will be held at the Royal Belgian Institute for Space Aeronomy. If the audition cannot be held on site, auditions can be held online (via Teams). For practical details, you will receive an email from one of our staff members.

The selection committee will assess to what extent the qualifications, merits and experience you present in your application match the requirements of the job.

Equal opportunities and reasonable accommodation

The federal administration has an active diversity policy.

If you are a person with a disability, a learning disability or an illness? You can inform us when you apply so that we can prepare reasonable accommodation for you when you arrive for the audition.

In case of absence

If you don't show up for the audition, you are automatically excluded from the rest of the selection procedure unless you can demonstrate, within three days, that your absence was justified by one of the following reasons:

- illness
- emergency concerning a member of the household (= any person living with the candidate) or family (= the candidate's spouse or the person with whom the candidate is legally cohabiting, the candidate's first- or second-degree relatives)
- essential presence at work
- interruption or delay of public transport by at least thirty minutes
- force majeure.

If necessary, you may ask to be heard by the committee within ten days of the date of the above-mentioned audition. You will then be offered a new date.

CV – Scientific Functions

Please indicate the position you are applying for:
Click or tap here to enter text.
This CV must be accompanied by a cover letter.

Personal Information

First Name: Click or tap here to enter text.
Last Name: Click or tap here to enter text.
Gender : Choisissez un élément.
Current Nationality: Click or tap here to enter text.
Date of Birth: Click or tap here to enter text.Click or tap here to enter text.Click or tap here to enter text.
Address: Click or tap here to enter text.
Postal Code: Click or tap here to enter text.
City or Town: Click or tap here to enter text.
Country*:* Click or tap here to enter text.
Phone: Click or tap here to enter text.
Mobile*:* Click or tap here to enter text.
E-mail address: Click or tap here to enter text.

Degrees

Please list all the degrees you have obtained. For each degree mentioned, you must attach a copy with its annexes to your application.
Click or tap here to enter text.

Certifications

Please specify the certifications you have obtained. For each certification mentioned, you must attach a copy with its annexes to your application.

Click or tap here to enter text.

Language Skills

Please specify your level of proficiency.

- French: Click or tap here to enter text.
- Dutch: Click or tap here to enter text.
- Engels: Click or tap here to enter text.
- Other languages (specify): Click or tap here to enter text.

Professional Experience

Please mention all your professional experiences and describe your mains tasks. For each experience, you must mention the start and end dates of your contracts and attach employment certificates to your application.
Click or tap here to enter text.

Scientific Work

List your scientific work that may have been published.
Click or tap here to enter text.

Strengths

Mention your strenghts.
Click or tap here to enter text.