



JOB OPENING

The Royal Observatory of Belgium
seeks an
Earth Observation scientist (F/M)
for the
Earth Climate Observatory Earth Explorer 12 space mission consolidation

The **Earth Energy Imbalance (EEI)** is defined as the small difference between the incoming energy received by the Earth from the Sun and the outgoing energy lost by the Earth to space. The EEI is accumulated in the Earth's climate system, and results in global temperature rise. Over the past six decades, the EEI has been **increasing** at a relatively consistent pace of **+0.15 W/m²dec**. Monitoring EEI is critical as part of the **Global Stocktake** initiative, to verify whether mankind is succeeding in implementing the **Paris Climate Agreement**. Monitoring EEI will reveal the direction of future climate change one to two decades earlier than monitoring temperature alone.

Despite its fundamental importance, the EEI is currently poorly measured from space, due to challenges in the radiometric accuracy, and in the diurnal cycle and angular sampling. A new space mission concept, called the **Earth Climate Observatory (ECO)** - with as primary mission objective the accurate and stable monitoring of the EEI - was recently selected by the European Space Agency (ESA) for Phase 0 study as a candidate Earth Explorer 12 mission. ECO was proposed by a **European consortium** – led by the Royal Observatory of Belgium (ROB) - with members from Belgium, Sweden, France, the UK, Germany and Switzerland.

In order to consolidate the ECO space mission concept, in particular the prototype data processing, and the accuracy of the data products, ROB is seeking to hire an Earth Observation scientist.

The selected candidate will work within a joint Belgian-Swedish ECO Phase 0 task force, consisting of 4 project scientists, jointly led by a Belgian and a Swedish senior scientist, with respectively a climate observation and a climate modeling background. The candidate will be part of the larger ROB Solar Physics & Space Weather department (SIDC, Solar Influence Data Analysis Center) of about 50 people from a diverse background.

Tasks

The offered position involves:

- **Develop prototype** ECO data processing **algorithms**, and **evaluate** their **performance** using existing satellite remote sensing data, in particular from the **MODIS, CERES, MISR** and **SEVIRI** instruments.

The current state of the ECO space mission concept is described in the paper

<https://www.mdpi.com/2072-4292/15/23/5487>

The work to be carried out is similar to the work described in the papers

<https://agupubs.onlinelibrary.wiley.com/doi/epdf/10.1029/2006JD007146>

<https://doi.org/10.1175/2008JTECHA1002.1>

Innovative Deep Learning satellite processing methods are welcome, similar to

<https://www.mdpi.com/2072-4292/13/16/3278>

<https://www.mdpi.com/2072-4292/13/16/3209>

- Contribution to mission performance/complexity trade-offs.
- Generation of high-quality graphical content, and contribution to the maintenance of an ECO Phase 0 web portal.
- Presentation of the results at ESA progress meetings, and at scientific conferences, as well as the writing of technical reports and scientific papers.
- Collaboration with ESA, and with the ECO Science Team – consisting of about 20 European senior scientists – for the promotion of the ECO space mission concept within the relevant science community, and for the preparation of the **User Consultation Meeting** at the end of Phase 0, in July 2026.

Profile

Requirements for the Candidate:

- Must hold a Master's or PhD degree in exact or applied sciences.
- Must possess excellent communication skills in English.
- Must have experience in observational data processing, preferentially in Earth Observation.
- Good programming skills, preferentially in C++.

We are looking for a candidate who shares our dedication to make the ECO space mission a reality, and who wants to start a long term career dedicated to climate change research.

ROB offer

The ROB (<http://www.observatory.be>) is a Belgian federal institute located in the green outskirts of Brussels in Ukkel. The institute is seeking a qualified candidate for a job opening in the “Solar Physics and Space Weather” Operational Directorate (<https://www.sidc.be>),. The working conditions include a flexible system of working hours and teleworking, allowing for a healthy work-life balance.

The job offer is a **full-time position** in the SW1 category, activity group I: research. To get an estimate of the salary, a simulator is available at <https://salsim.fedweb.belgium.be/mod2-q1.php>. The position is for a **two-year contract**, renewable based on mutual satisfaction.

How to apply

Send your CV and an accompanying motivation letter to Steven Dewitte (steven.dewitte@oma.be), and dir-rob@oma.be. Candidates can contact steven.dewitte@oma.be for additional information. Applications are welcome until **September 08, 2024**.

