



Research engineer or postdoctoral researcher in remote sensing

18 months contractual position

Context

This position will be conducted as part of the DIVERGENCE research project led by A. Dehecq, which focuses on the evolution of glaciers in Central Asia (Karakoram, Pamir, Kunlun) since 1960. Glacier fluctuations will be documented using data from American reconnaissance satellites, now declassified (Corona, Hexagon) and current satellite data (SPOT, Pléiades, etc.).

The hired engineer/postdoc will be in charge of developing image classification schemes based on multi-sensor satellite images and deep learning approaches, which will then be used within the framework of the project to reconstruct glacier evolution from 1960 to 2025.

Research tasks

The main research task of the hired person will be to develop, test and train various image classification methods based on deep learning in order to generate multi-temporal classification maps of clean glaciers, debris-covered glaciers and supra-/pro glacial lakes over the study period (1960 à 2020) using satellite imagery. Specifically, the tasks are:

- conduct a thorough literature review of methodology
- compile existing data (glaciers, lakes etc.) over the study area and the period considered
- develop and compare various convolutional neural network (CNN) algorithms such as U-Net, DeepLabv3+ or those based on foundation methods (DINOv3), adapted to modern multispectral images (SPOT, Pléiades) as well as panchromatic images acquired by spy satellites (Corona, Hexagon) with heterogeneous spatial resolution
- process the entire satellite image archive available over the study area for the period 1960 to 2025 to generate multi-temporal glacier and lake inventories.

Candidate profile

The candidate must have a Master in data science, with a strong expertise in image segmentation using deep learning methods and ability to apply these approaches to large volumes of data.

■ **Required skills:**

- Strong expertise in deep learning applied to image segmentation/classification;
- Experience with remote sensing data, particularly optical images;
- Proficiency in scripting languages, including Python;
- Expertise in intensive and parallel scientific computing, including the use of GPUs on supercomputers;
- Ability to write scientific articles in English for international journals;
- English language: above B2 (Common European Framework of Reference for Languages)

■ **Optional (but appreciated) skills:**

- Proficiency in the design and development of calculation code, version management in a Unix/Linux environment (git), and the preparation of Python packages
- Geographic Information Systems (GIS) experience (e.g., QGIS, ArcGIS)
- Experience in glaciology is a plus.

■ **Soft skills**

- Autonomy
- Intellectual curiosity
- Adaptability and conceptualization skills
- Rigorousness/reliability
- Critical thinking skills

Diploma: Master's degree in data science

Experience: 0 - 5 years of experience after Master's degree

Working environment

The selected candidate will work within the CryoDyn/C2H teams at IGE, which focus on monitoring the evolution of glaciers and polar ice caps, their dynamics and relationship with the climate system, under the supervision of Adina Racoviteanu and Amaury Dehecq. They will also be co-supervised by Flora Weissgerber from ONERA Paris on deep learning aspects, with possible short stays in Paris. At IGE, the candidate will be able to interact with other researchers, doctoral students, and engineers working on remote sensing topics.

Institutional context

Institute of Environmental Geosciences (IGE) is a public research laboratory under the CNRS/INSU, IRD, Grenoble Alpes University (UGA), INRAE, and Grenoble-INP.

It brings together around 330 people, including 190 permanent members (researchers, teacher-researchers, engineers) and around 140 doctoral students, post-doctoral students, and staff on fixed-term contracts. The laboratory also welcomes a few dozen interns and visiting scientists each year. The laboratory is spread on three sites on the Grenoble University Campus (Glaciology, OSUG-B/Maison Climat Planète, and INRAE Grenoble Saint Martin d'Hères).

IGE is one of the main laboratories of the Grenoble Observatory of Universe Sciences (OSUG), which is a federative structure of the INSU.

Contract information

Contract type: fixed term

Position: Research engineer

Duration: 18 months (possible extension up to 6 months)

Start date: 01/10/2026 or later

Workload: full time

Academic level: Master

Research experience: 0 - 5 years

Gross month salary: 3100€ or higher, depending on experience

To apply, click here: https://emploi-recrutement.ird.fr/offre-de-emploi/emploi-ingenieur-de-recherche-en-teledetection-h-f_750.aspx

