

Ice shelf damage evolution from satellite remote sensing in Antarctica

Institut des Géosciences de l'Environnement (IGE), Université Grenoble Alpes, France



Join our team in Grenoble to study the evolution of Antarctic ice shelf damage and its impact on ice sheet stability using innovative satellite remote sensing and modeling approaches.

Position overview

We are looking for a motivated postdoctoral researcher for a fully funded 24-month position at the Institut des Géosciences de l'Environnement (IGE) in Grenoble, France. This position focuses on understanding the spatiotemporal evolution of ice shelf fracturing and damage in Antarctica using multi-sensor satellite observations and advanced image analysis methods.

Your role

The project offers the opportunity to examine how ice shelves have changed over recent decades and what these changes may reveal about their stability in a warming climate. You will combine multi-sensor satellite observations, image analysis, and modeling to better understand patterns and mechanisms of ice shelf evolution.

- **Part 1 – Long term satellite record:** Investigate patterns in radar, optical, and altimetry datasets from the 1970s to the present to identify signals of change across Antarctic ice shelves.
- **Part 2 – Structural interpretation:** Apply modern image analysis and machine learning methods to characterize evolving surface and subsurface features and explore how they may relate to ice shelf integrity.
- **Part 3 – Model integration:** Collaborate with the Cryodyn team to place the observed patterns in the context of modeled ice rheology and ice flow dynamics, contributing to a broader understanding of Antarctic ice sheet evolution.

You'll work with an international team of researchers as part of the ERC project **IceDaM**, which investigates how Antarctic ice shelves are weakening and how it will impact future sea level rise.

What we offer

- A comprehensive experience with satellite remote sensing in glaciology
- A training on open-source software and open science practices
- Integration within an interdisciplinary environment and a dynamic team of researchers at IGE
- Collaboration with international partners (Brazil, Denmark)

Required skills:

- PhD in Earth sciences, computer science, or a related field
- Strong programming skills in Python (experience with machine learning libraries such as scikit-learn, TensorFlow, or PyTorch)
- Knowledge of GIS tools (QGIS, ArcGIS)
- Interest in glaciology and cryosphere research
- Experience with HPC and GPU environments is a plus
- Excellent written and spoken English

Start date: January 2026

Location: Institut des Géosciences de l'Environnement, Grenoble

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Ice shelf fracturing on the north east greenland ice stream.