

Iceland

The Natural Science Institute of Iceland

Monitoring Iceland's Ice: New data from the 2025 Glacier Mapping Initiative

“Monitoring Iceland’s glaciers is not only about science — it is about safety, preparedness, and responsibility. Accurate geospatial data allow us to understand change, reduce risk, and support society with trusted information.”

Eydís Líndal Finnbogadóttir
Director General of The Natural
Science Institute of Iceland

Accurate glacier observations have never been more critical, and Iceland’s 2025 mapping programme delivers vital insights for climate science, public safety, and safeguarding the natural environment.

In the past year, the Natural Science Institute of Iceland (NSII) has focused its geospatial monitoring activities on glaciers, using satellite and aerial imagery to document changes in their extent and volume. A total of 3,000 km² of glacier surfaces were mapped, supporting climate research, hazard assessment, and long-term environmental monitoring.

The glacier mapping programme is carried out in close collaboration with the Icelandic Meteorological Office, the Institute of Earth Sciences at the University of Iceland, and several international partners, including the World Glacier Monitoring Service (WGMS) and the research laboratory Laboratoire d’Etudes en Géophysique et Océanographie Spatiale (LEGOS) in Toulouse.

Satellite-based monitoring relies on a series of targeted acquisitions using Pléiades satellites. During the summer season, repeated tasking focused on ice-covered volcanoes prone to jökulhlaups (glacier floods) to provide timely and consistent observations of rapidly changing conditions.

Aerial mapping campaigns conducted in summer 2025 covered Öraefajökull, an ice-covered volcano located in the southern part of Vatnajökull, Iceland’s largest ice cap. The acquired data were processed into high-resolution Digital Elevation Models (DEMs), which are used to calculate glacier volume change. In addition, the imagery supports the digitisation of crevasses, improving safety information for travellers and researchers operating on the glacier.



Benefits

- Quantifies glacier volume change linked to climate impacts.
- Supports monitoring of jökulhlaup-prone volcanoes.
- Enhances safety for glacier travel through crevasse mapping.
- Provides authoritative data for scientific and policy use.
- Strengthens national and international research collaboration.
- Establishes a robust baseline for long-term glacier monitoring.