

## Iceland

The Natural Science Institute of Iceland

# Monitoring lava flow to protect critical infrastructure and support decision-making in Iceland

*“The Natural Science Institute of Iceland’s swift response to the Svartsegi eruptions and innovative use of geospatial technology demonstrate how science and collaboration can safeguard communities and critical infrastructure from the challenges of nature.”*

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

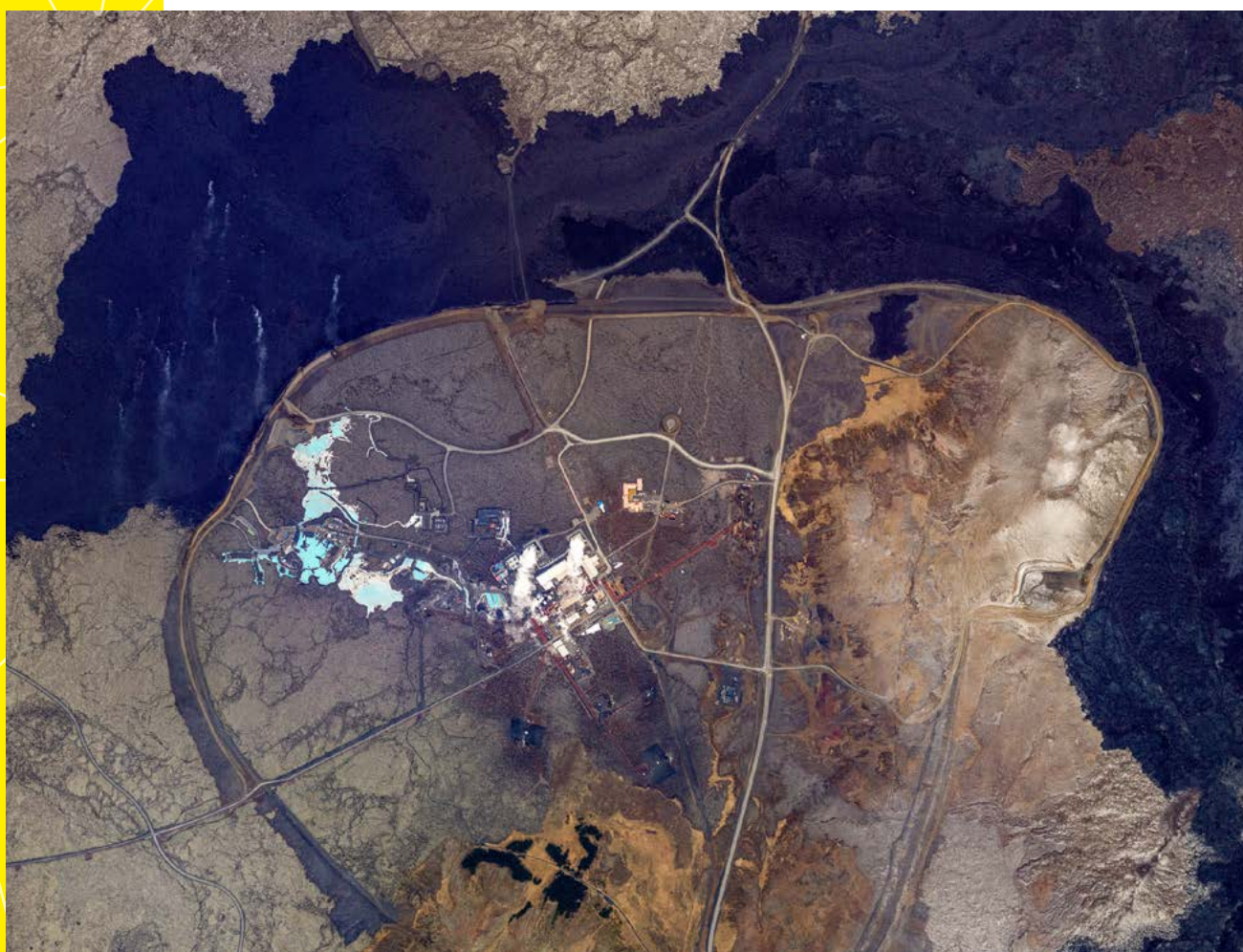
**Data provided by the Natural Science Institute (NSII) was critical to Iceland’s civil protection activities following a series of volcanic eruptions in the Svartsengi region.**

The NSII used arial photography to monitor 220 million m<sup>3</sup> lava flowing across an area of 50 km<sup>2</sup>. after the six eruptions in 2024. The insights provided were used to support decision-making and protect critical infrastructure after a state of emergency was declared.

Aerial imagery was collected before, during and after each eruption. It was then processed in near-real-time to produce a series of geospatial datasets, including orthophotomosaics, elevation models, lava outlines, lava thickness maps and lava volumes.

This information was used to design and position dikes and barriers, and to model and predict future scenarios of lava flows, safeguarding infrastructure such as the Blue Lagoon, Grindavík town, and a geothermal power plant. Thanks to a highly automated and streamlined workflow, all the data was distributed to the public within six hours of data acquisition.

The open and accessible data was used to underpin decisions to ensure public safety, minimise the economic impact, and enhance collaborative between public and private organisations.



## Benefits

- Protects critical infrastructure, including power plants and businesses.
- Ensures the safety of communities in Grindavík and nearby areas.
- Supports informed decision-making during emergencies.
- Reduces economic losses from potential lava damage.
- Provides open and accessible data for researchers and policymakers.
- Enhances collaboration between public and private sectors.
- Demonstrates innovative use of geospatial technology.
- Strengthens public trust through transparency and rapid response.