Distributed Acoustic Sensing (DAS)

for

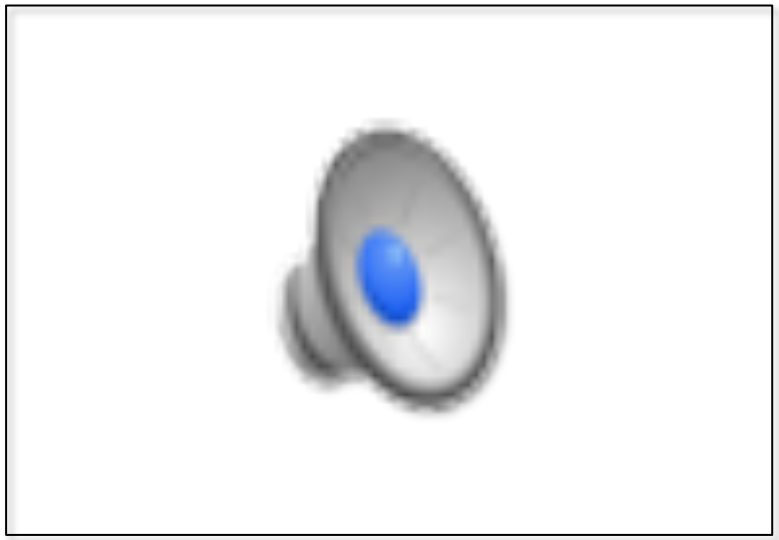
Natural Hazard Assessment

ETH *Seismology & Wave Physics*

Background & Motivation

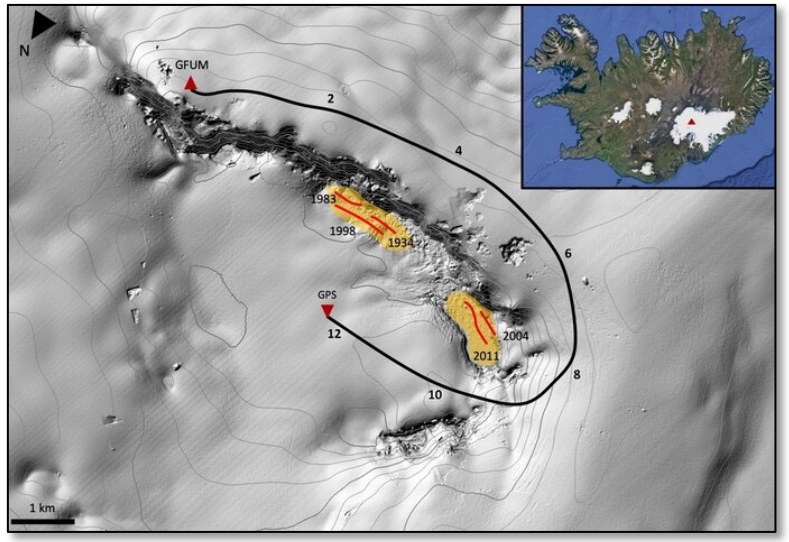
- Numerous recent studies demonstrated the applicability of DAS in seismology.
- High potential in natural hazard applications where very dense converage is desired but difficult to achieve with conventional sensors.
  - Difficult terrain.
  - Densely populated areas.
- Capability to fully exploit DAS data is lagging behind.
  - Mostly limited to conventional array processing techniques.
- The challenges of the environments where DAS is beneficial are typically ignored.
  - Rough terrain with topography.
  - Fluid-solid coupling.
  - Strong heterogeneities.

The Project



Spectral-element simulation of the Tohoku earthquake

Full-waveform modelling and inversion



DAS cable layout on Grimsvötn volcano

DAS experiments in challenging environments

The Project

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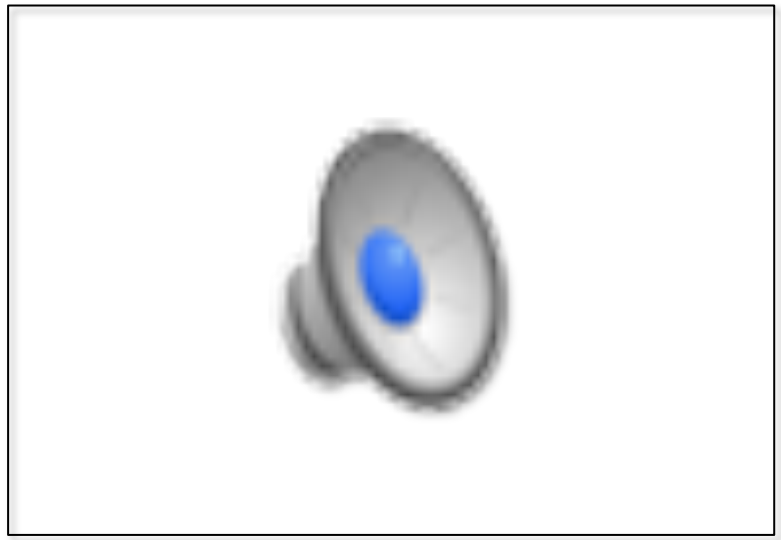

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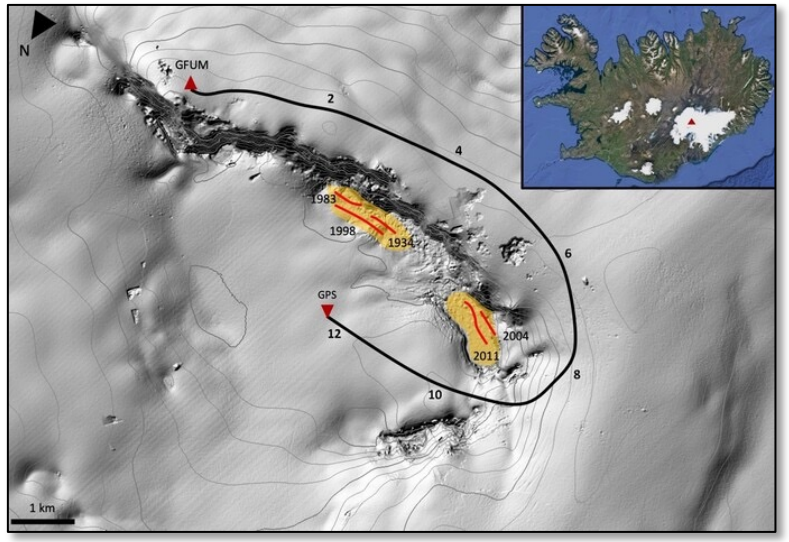

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The Person

Sebastian Noe