

Permanent, seasonal, and episodic seismic sources around Vatnajökull (Iceland) from the analyses of correlograms

Sylvain Nowé ^{1,2}, Thomas Lecocq ¹, Corentin Caudron ³, Kristín Jónsdóttir ⁴, and Frank Pattyn ²

¹ Seismology-Gravimetry, Royal Observatory of Belgium, Avenue Circulaire 3, 1180 Brussels, Belgium

² Laboratoire de Glaciologie, Université Libre de Bruxelles, B-1050 Brussels, Belgium

³ Univ. Grenoble Alpes, Univ. Savoie Mont Blanc, CNRS, IRD, IFSTTAR, ISTERre, 38000 Grenoble, France

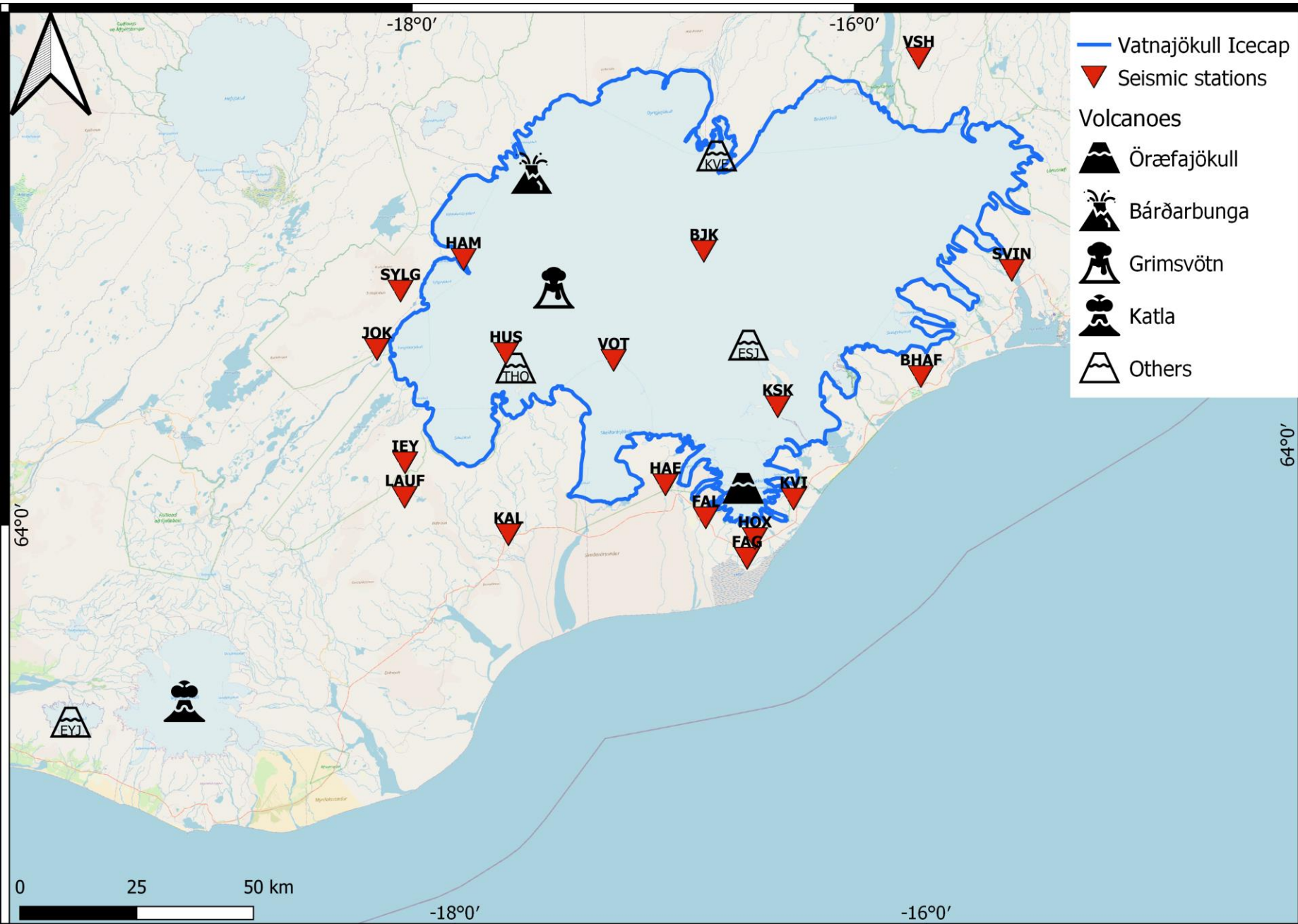
⁴ Warning – Forecasting, Icelandic Meteorological Office, IS-150 Reykjavík, Iceland



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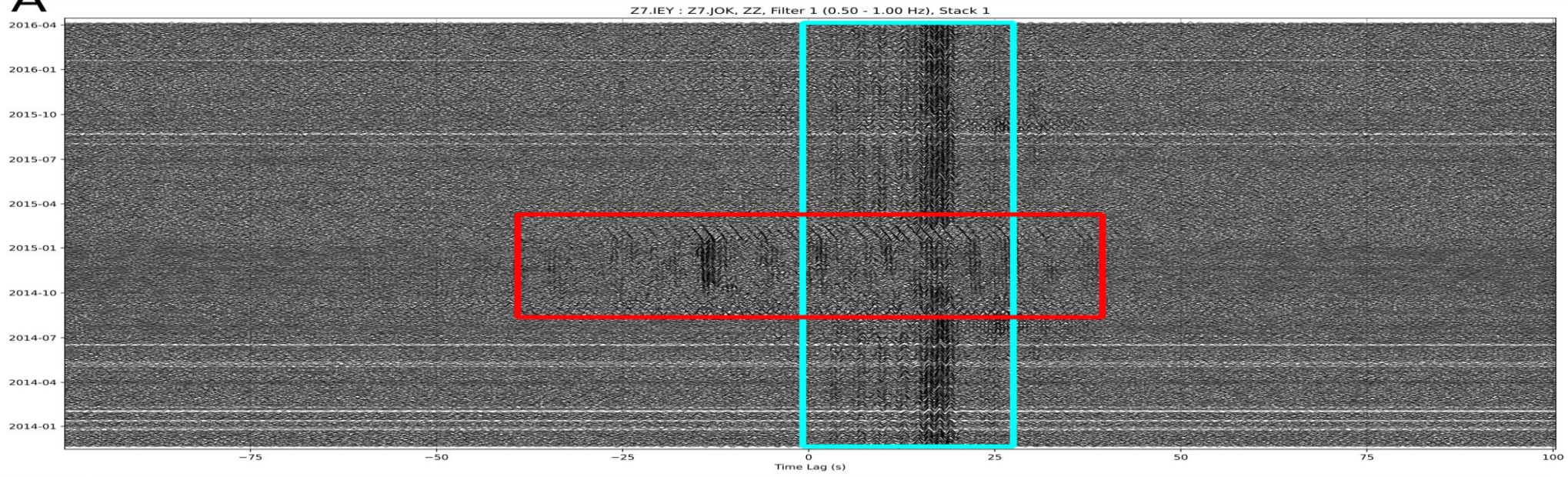
General context and workflow



- Permanent seismic networks
- Seismic interferometry
- Determination of propagation velocity
- Location of seismic sources with :
 - Hyperbolas geometry
 - Grid search method

Cross-correlation functions

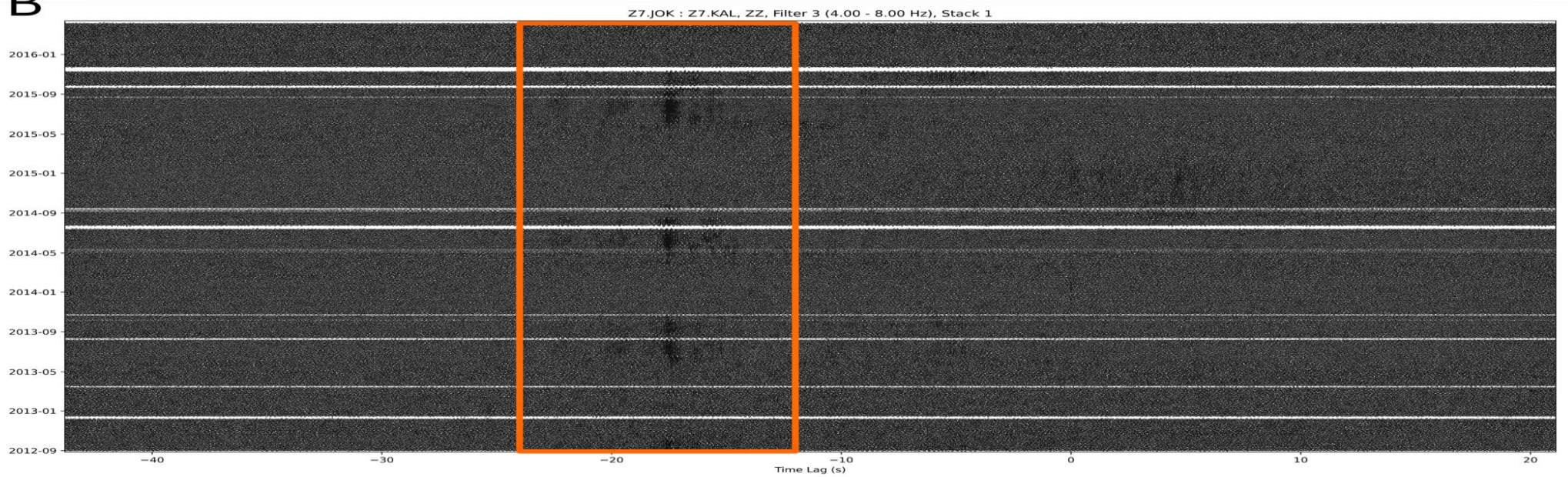
A



Constant
seismic source

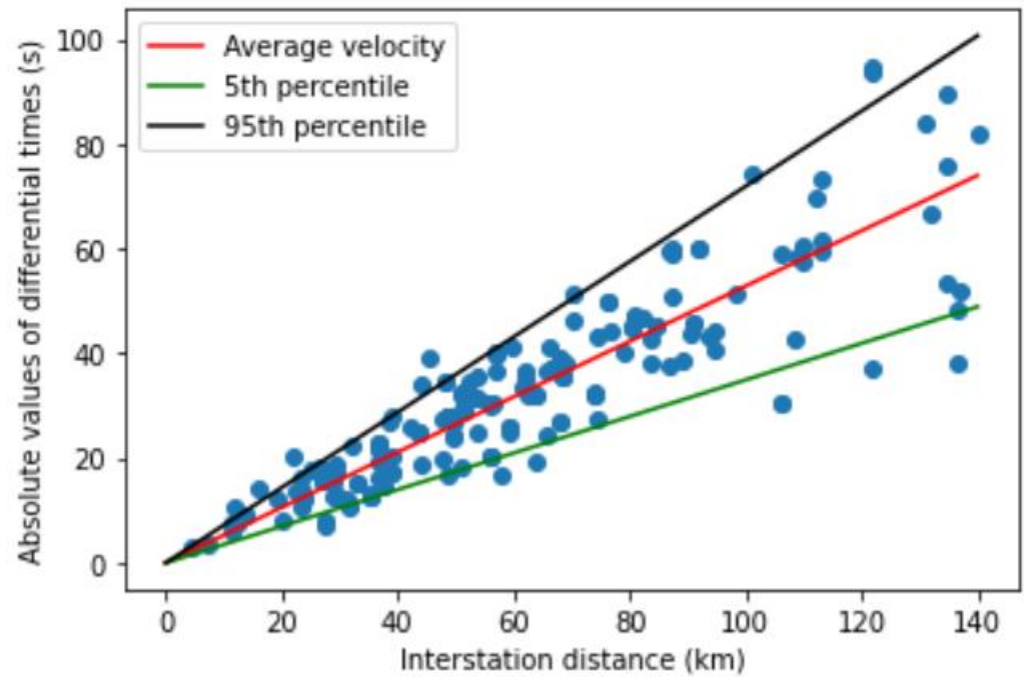
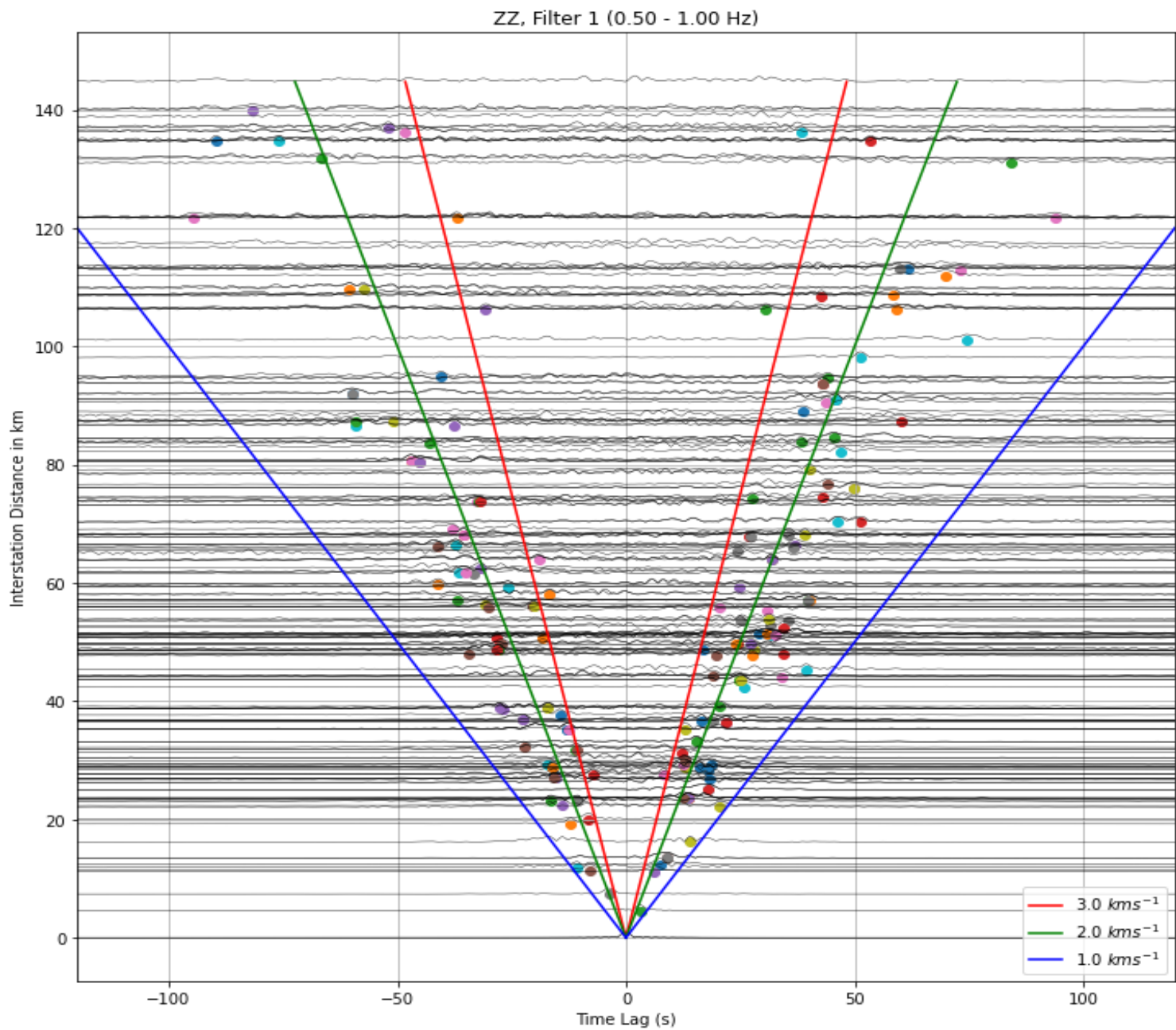
Episodic
seismic source

B



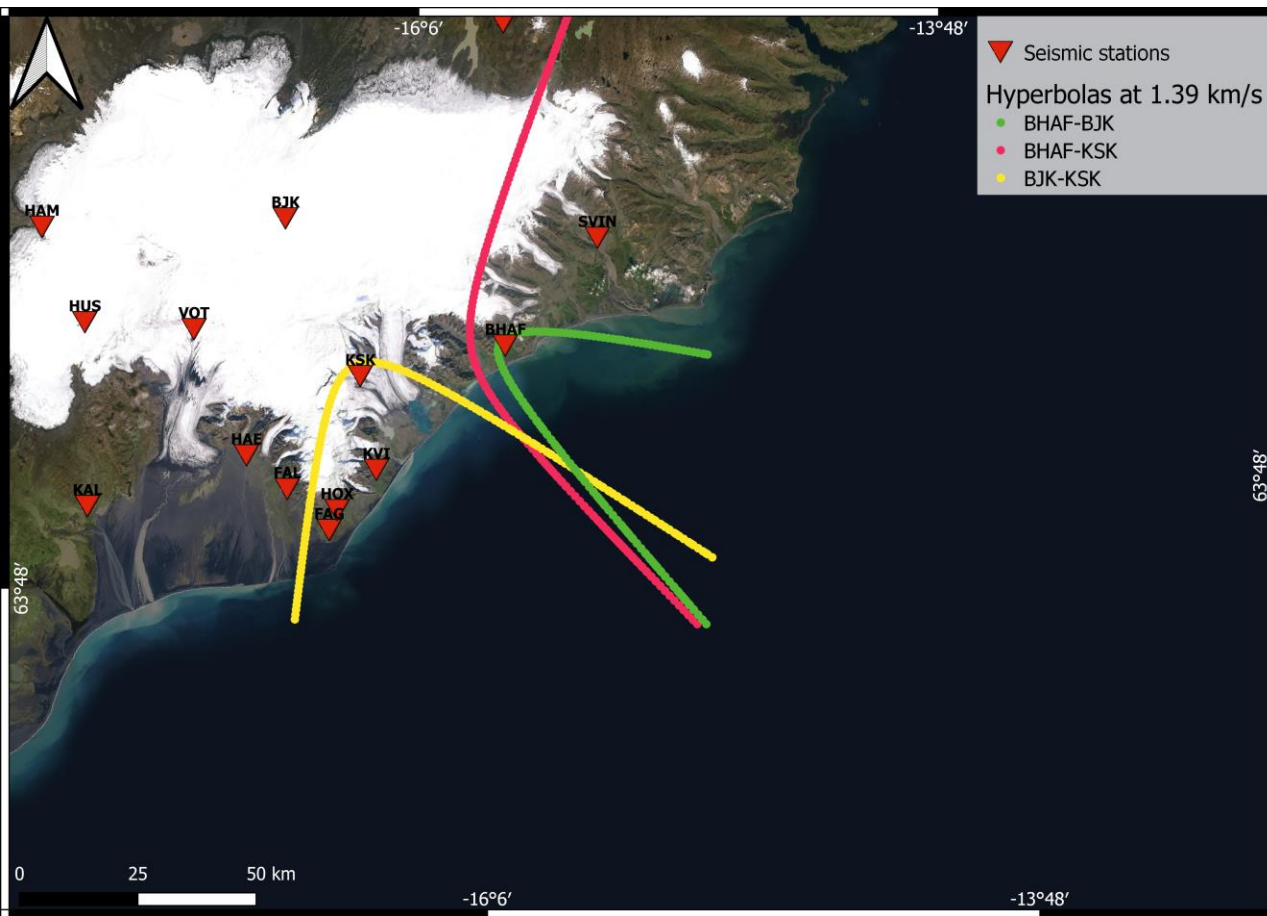
Seasonal
seismic source

Propagation velocities

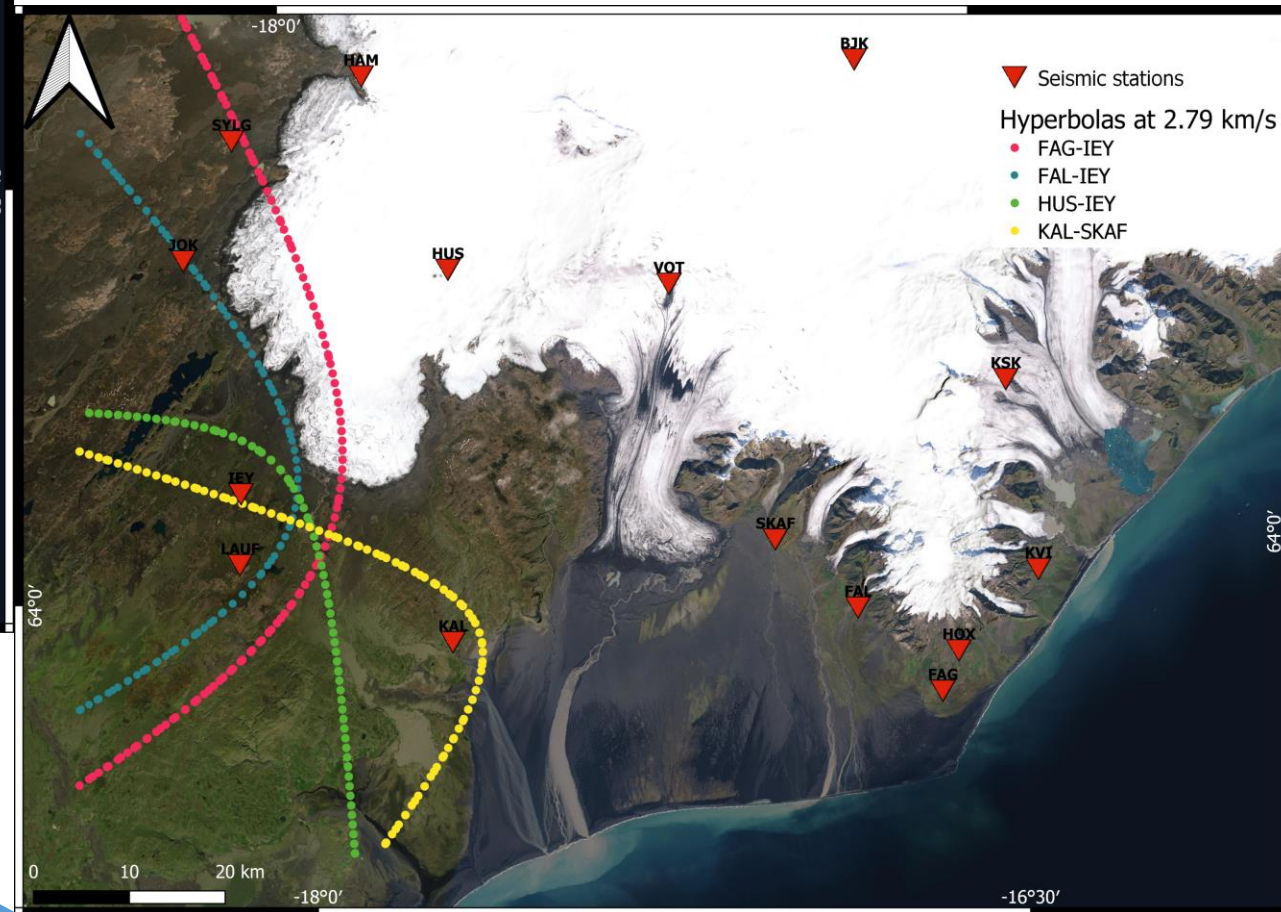


	0.5 – 1 Hz	1 – 4 Hz	4 – 8 Hz
95 th percentile velocity (km/s)	1.39	1.47	2.12
Average velocity (km/s)	1.89	2.79	2.79
5 th percentile velocity (km/s)	2.86	3.78	3.92

Hyperbolas locations

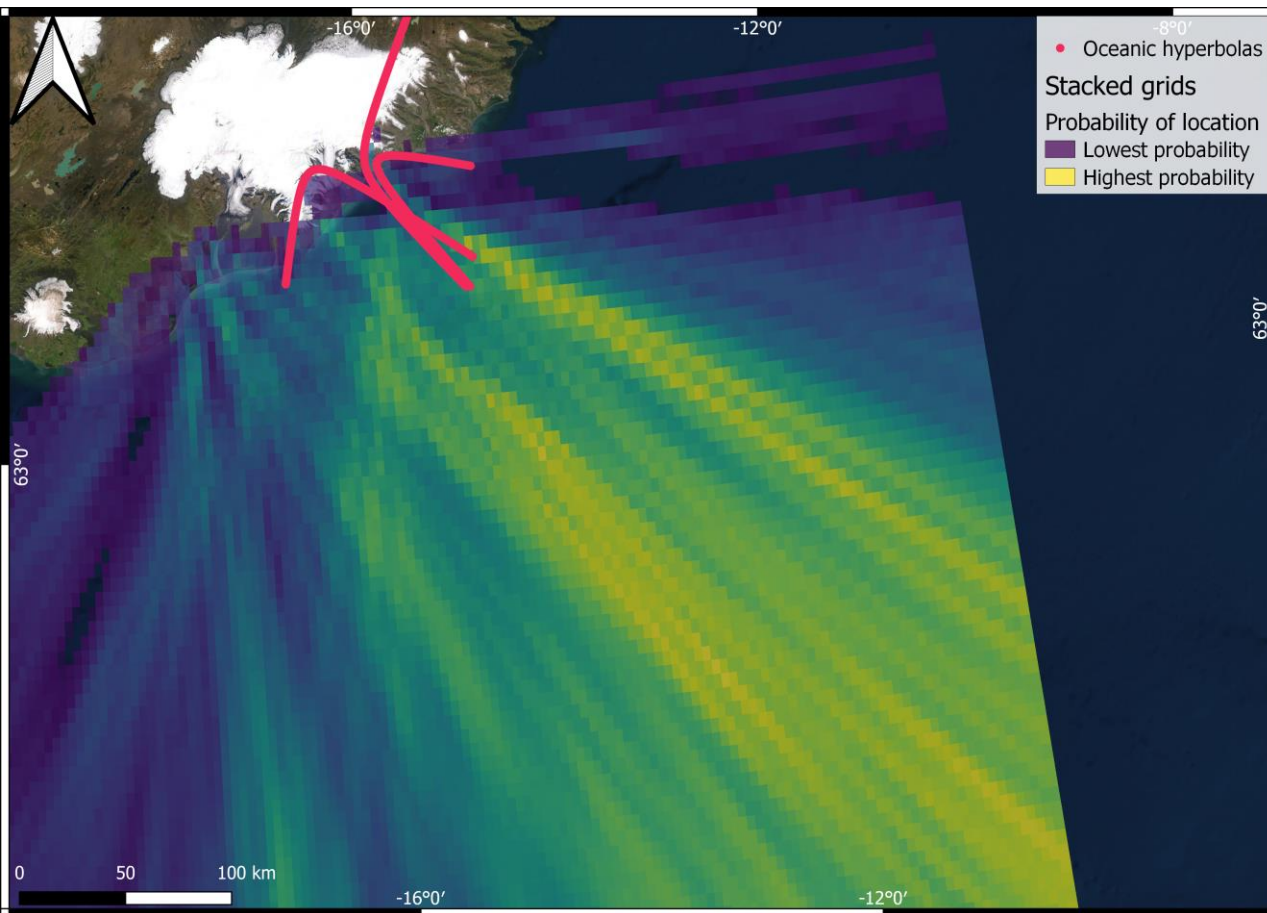


Constant oceanic seismic source.



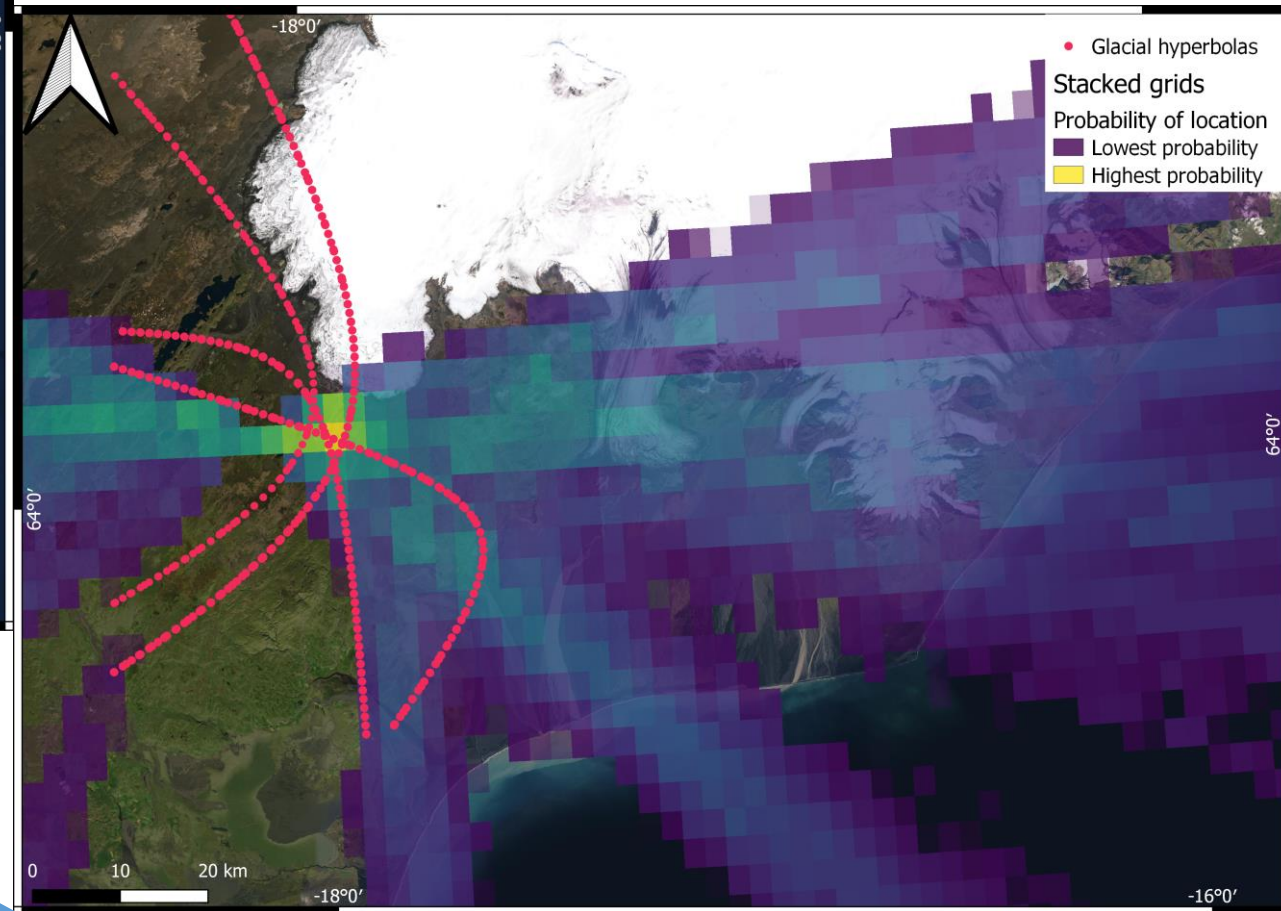
Episodic, glacial related, seismic source.

Grid Search locations + comparison with hyperbolas

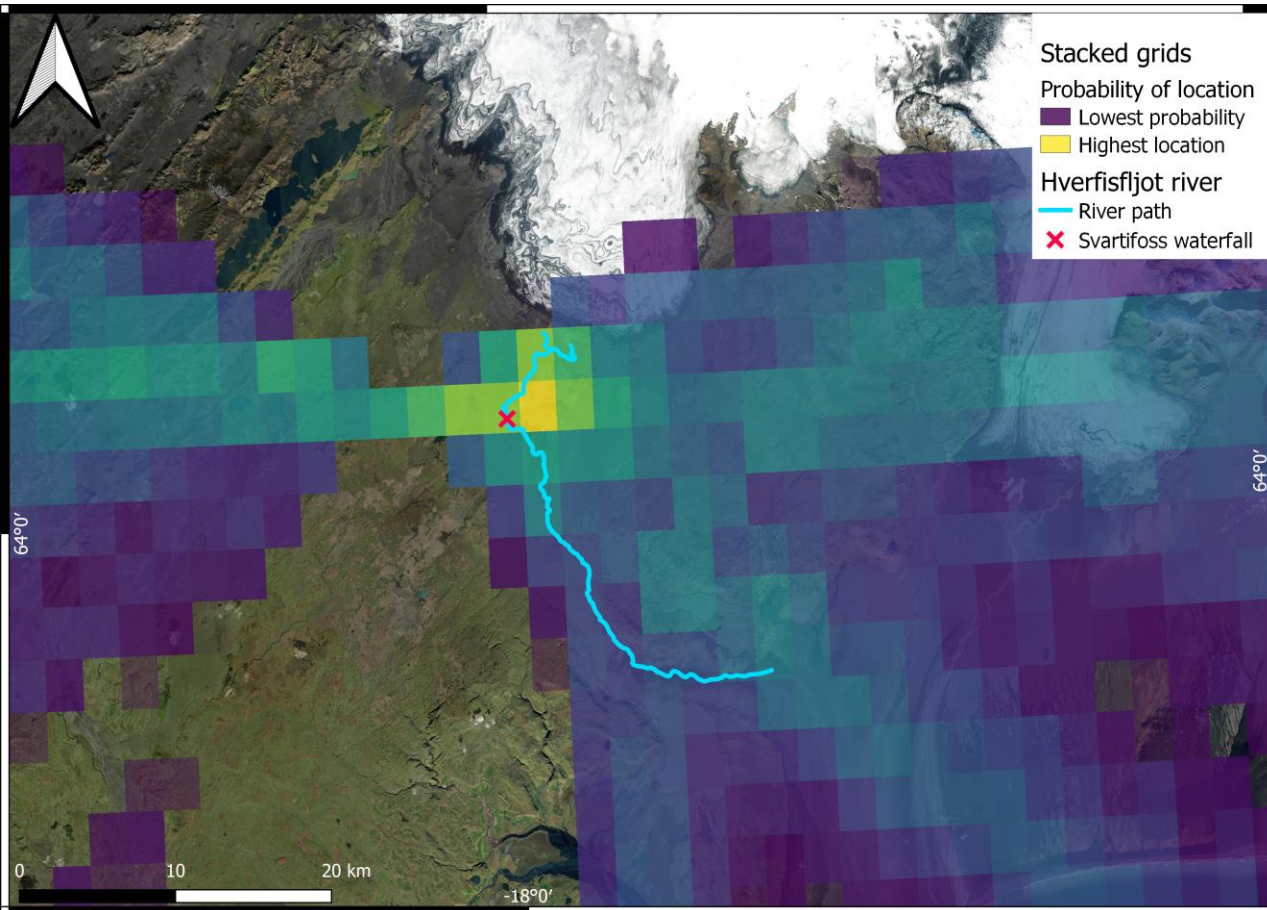


Constant oceanic seismic source.

Episodic , glacial related, seismic source.

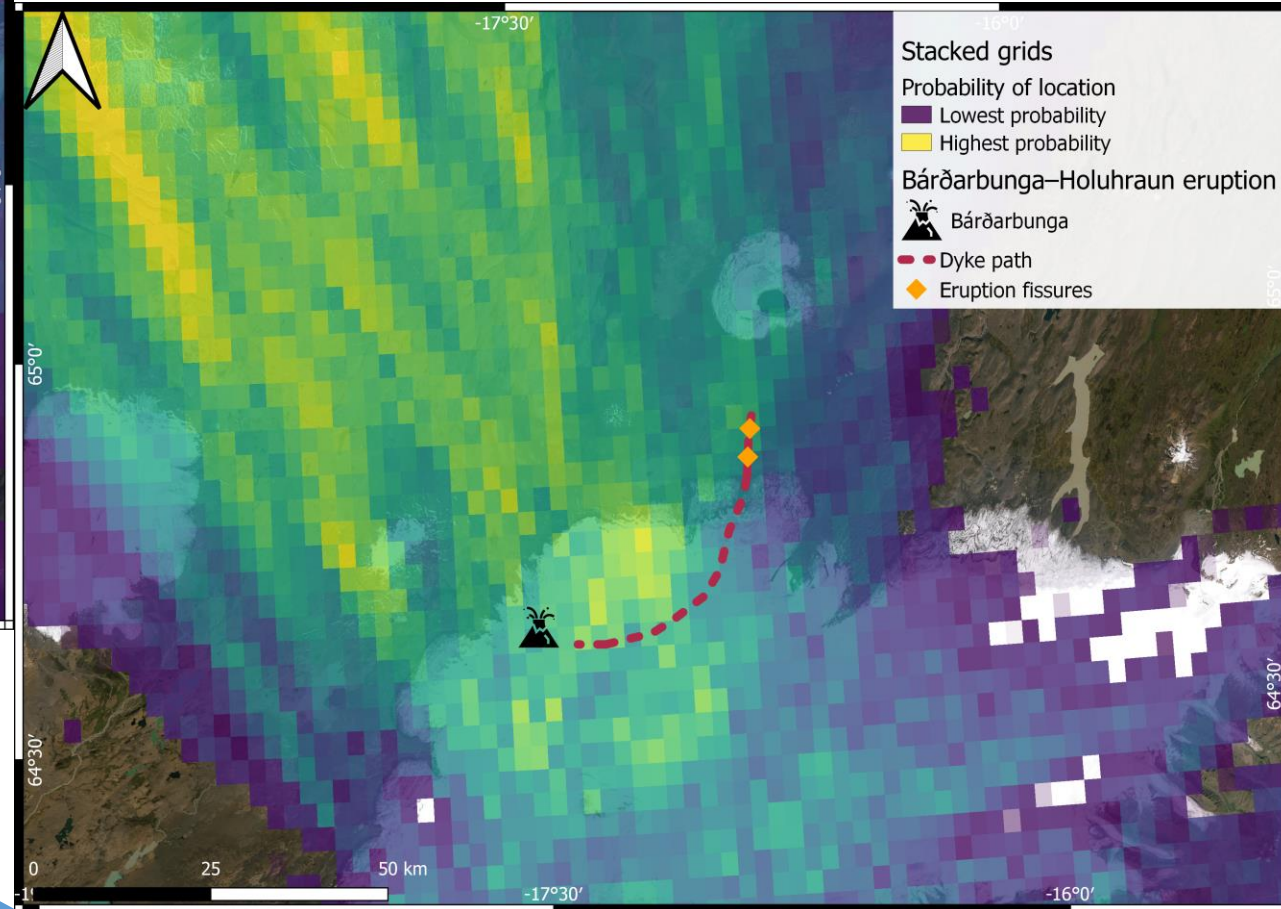


Seasonal and episodic sources



Episodic Grid search location compared with volcanic dyke path and eruption sites during the Bárðarbunga–Holuhraun event between 16 August 2014 and 27 February 2015.

Seasonal Grid search location compared with Hverfisfljot river path and Svartifoss waterfall.



References

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