

Relative seismic velocity changes at Axial Seamount

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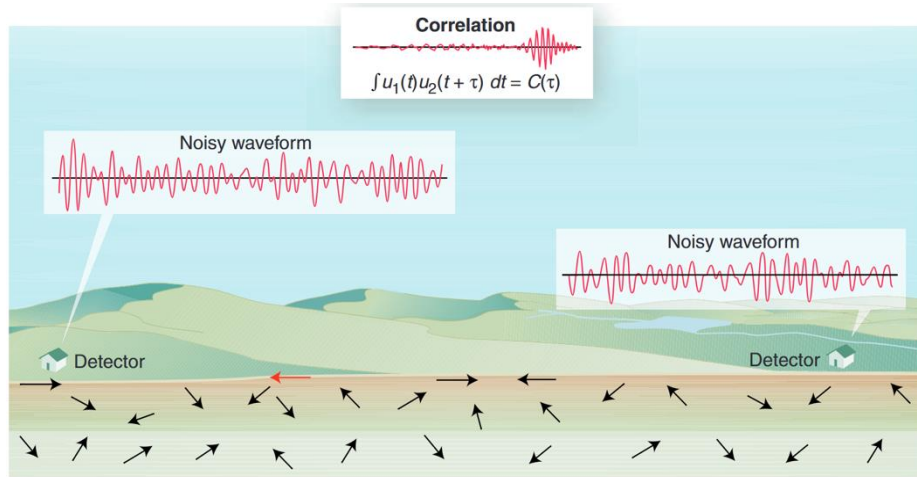


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The University of Texas at Austin



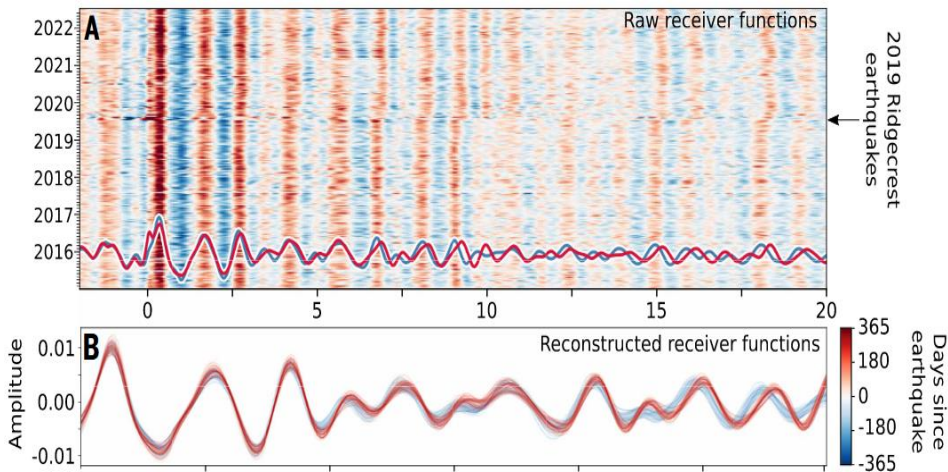
December 15, 2025

Information from Seismic Noise



Cross-correlating ambient noise between two stations recovers the Green's function (impulse response) of the medium.

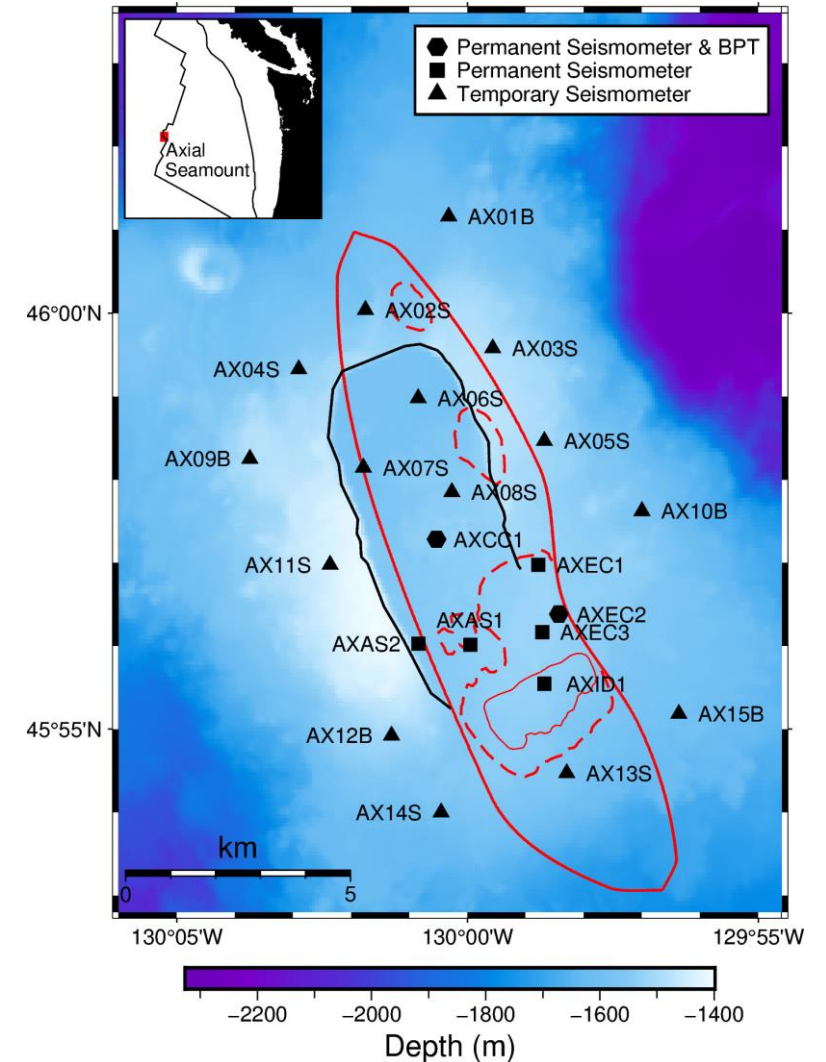
Weaver., 2005



The time delay between coda waves measures relative velocity changes (dv/v).

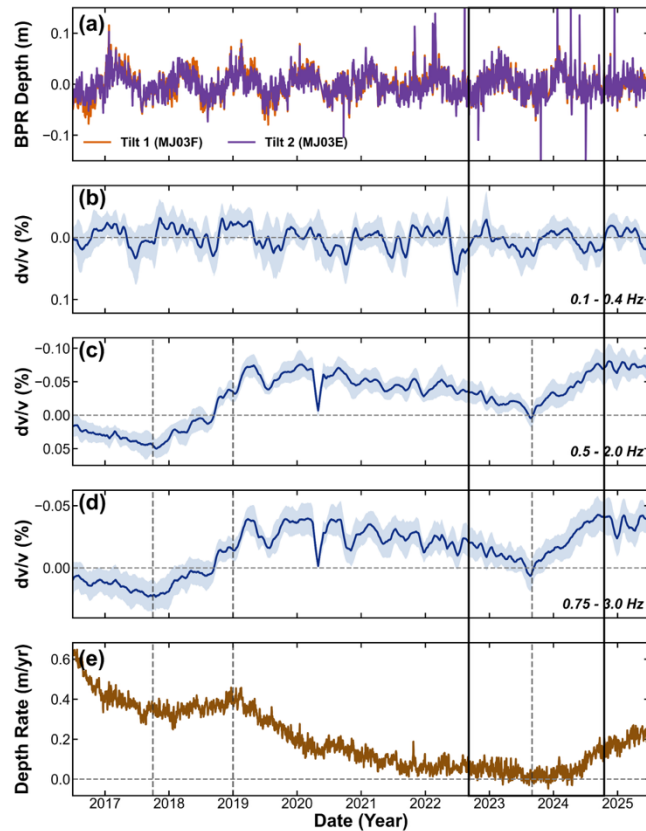
Bryan *et al.*, 2025

The Distribution of Stations

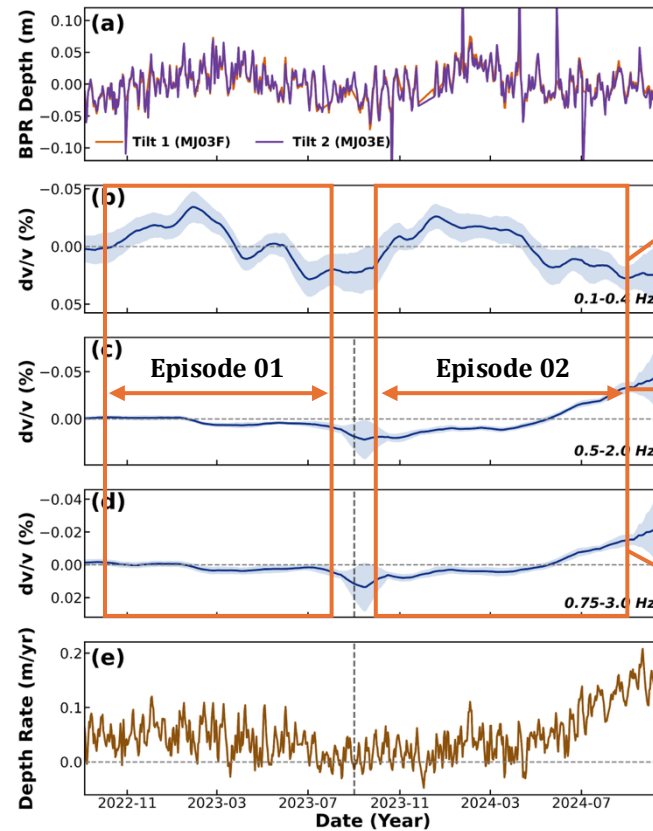


Spatiotemporal Evolution of dv/v at Axial Seamount

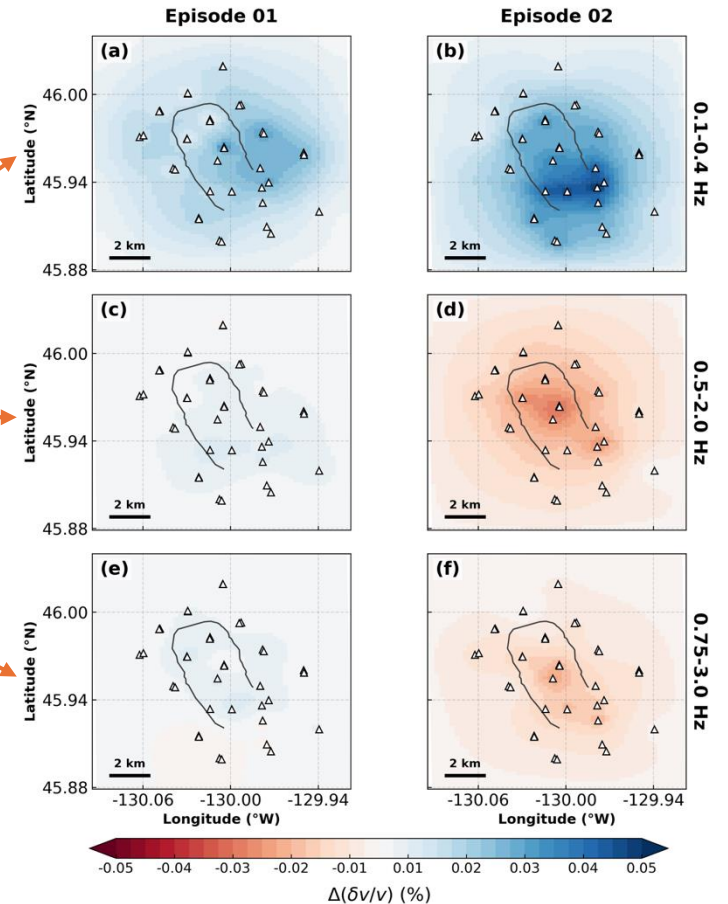
Decadal Monitoring (2015-2025)



Dense Array Period (2022-2024)



Spatial Inversion Results



0.1–0.4 Hz: Dominated by seasonal environmental noise, showing annual cyclicity consistent with the detrended tilt records.

0.5–3.0 Hz: Captures the complex volcanic cycle with **four distinct phases**:
1. **2015–2018** (Post-Eruption Healing); 2. **2018–2019** (Rapid Inflation); 3. **2019–2023** (Inter-eruptive Deceleration); 4. **2023–Present** (Re-acceleration).