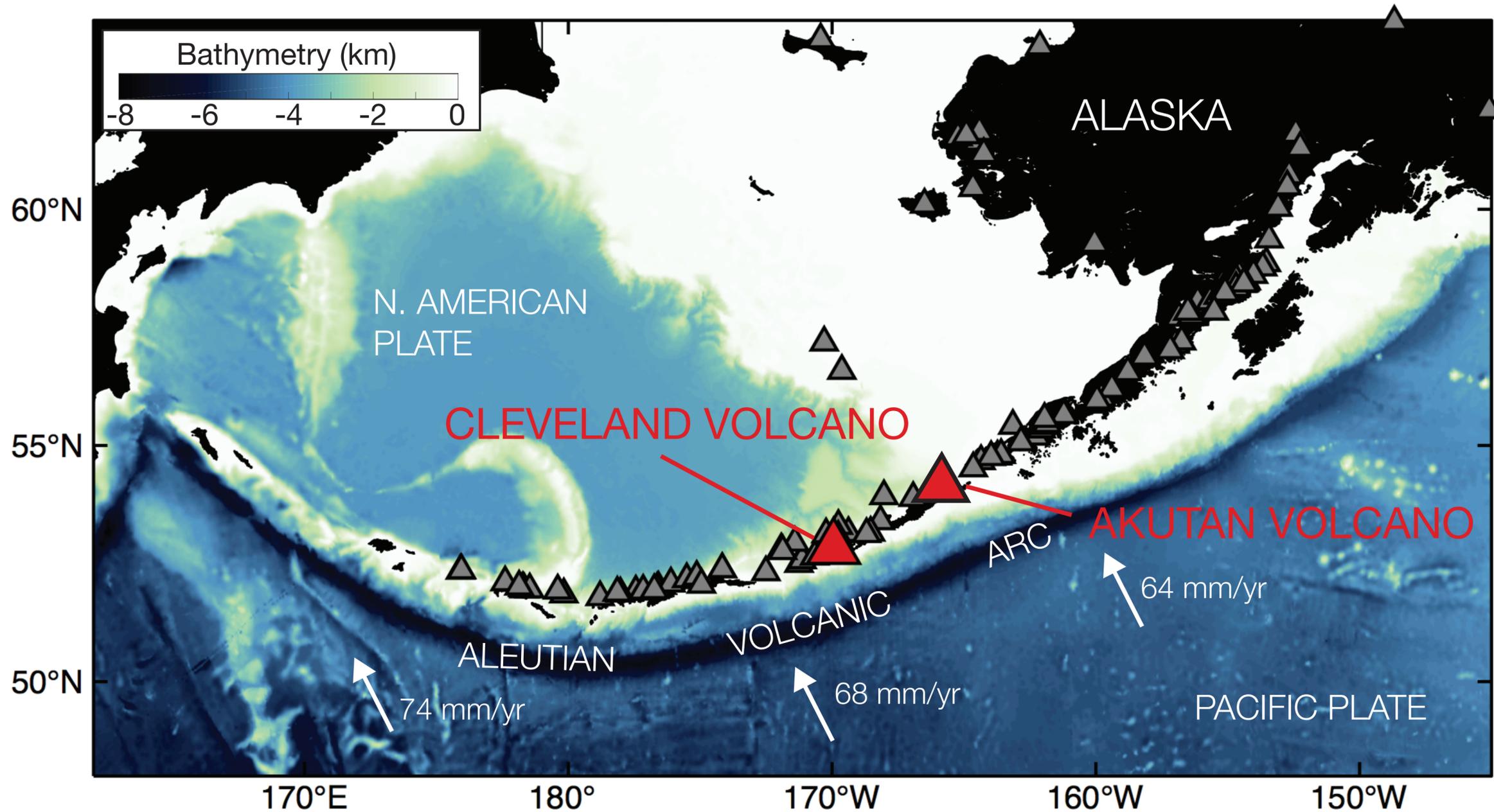
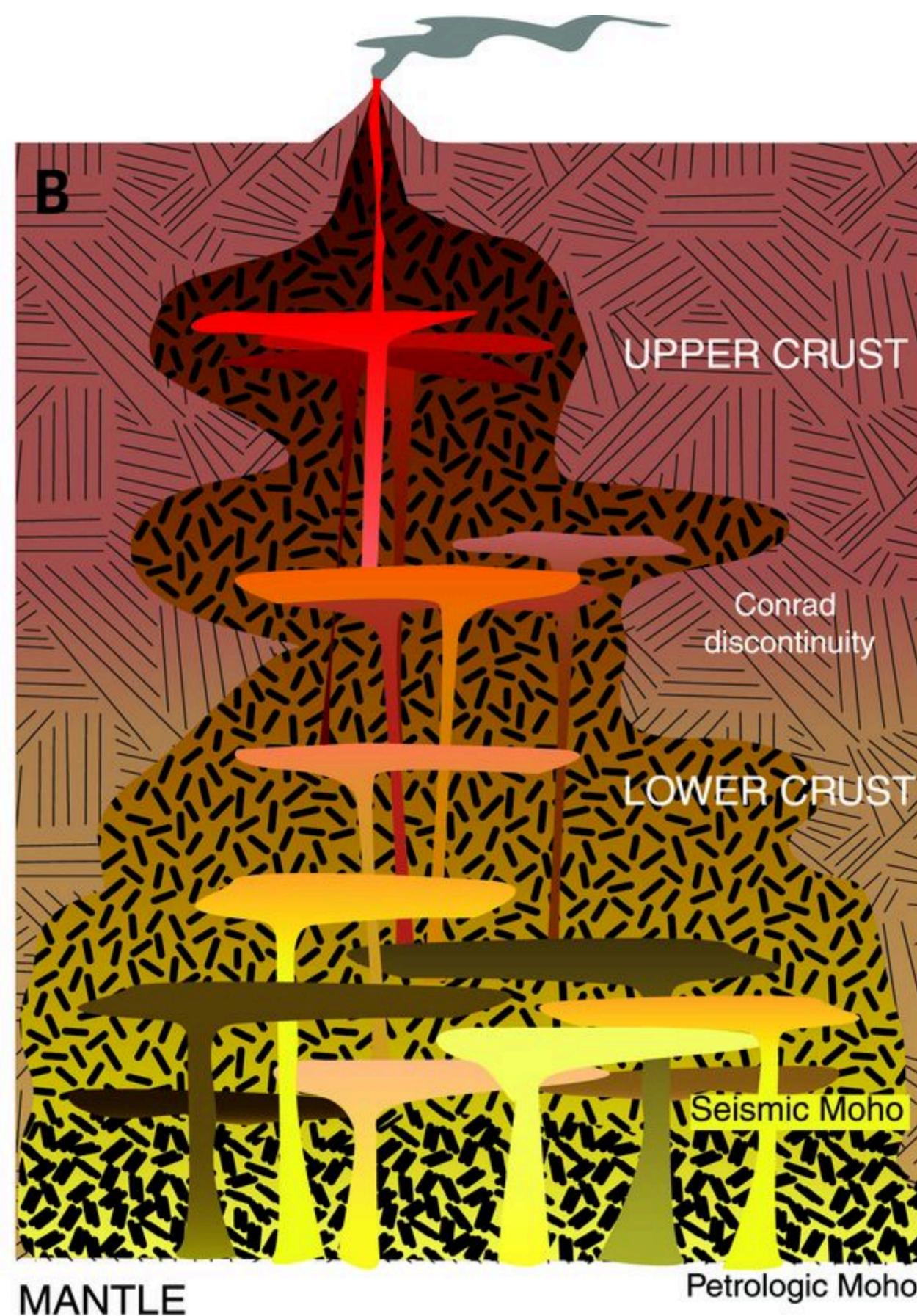


Mid-crustal magma reservoirs at Cleveland and Akutan Volcano imaged through novel receiver function analyses

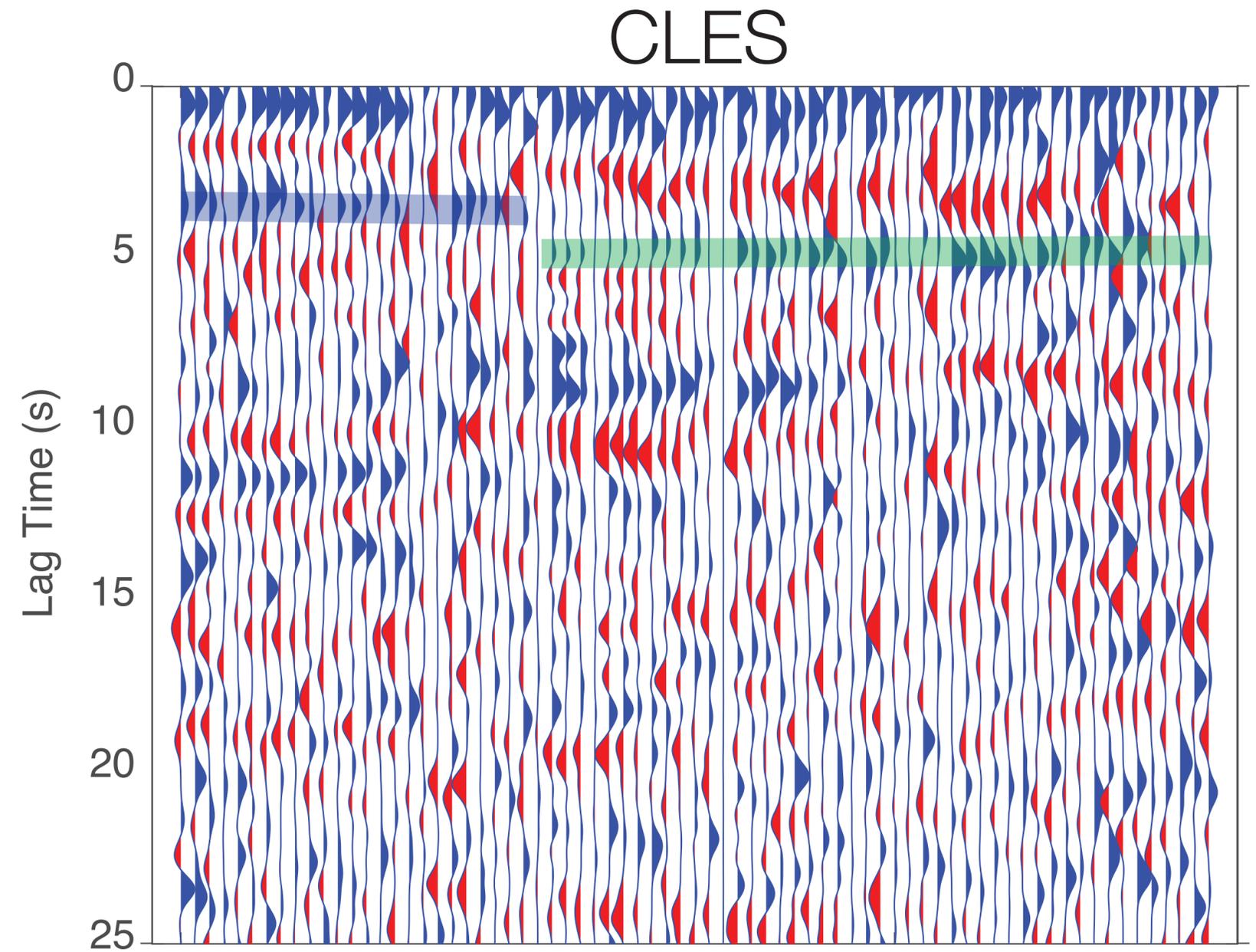
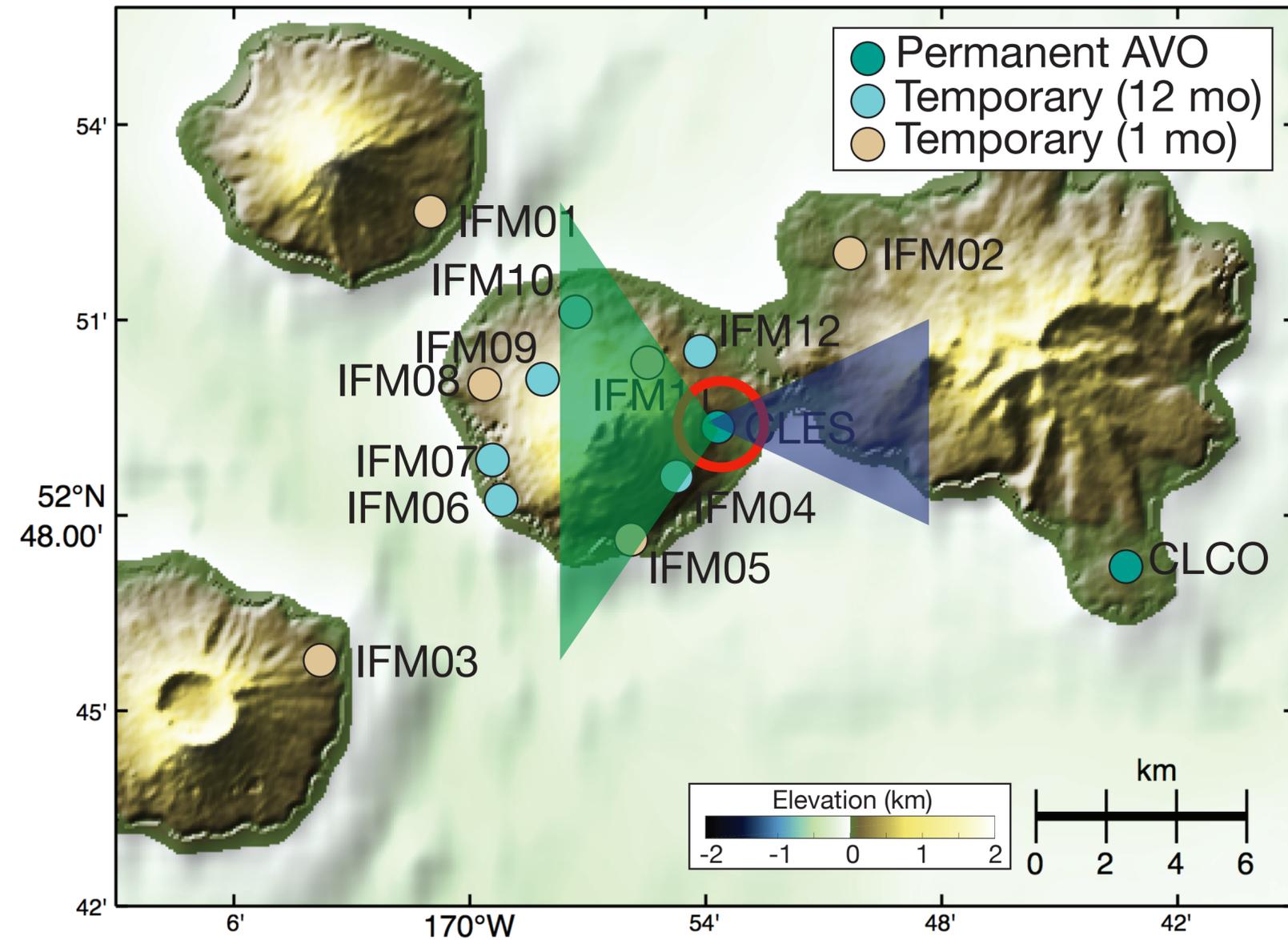


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EGU Fall Meeting

What is the crustal magmatic architecture beneath individual volcanoes?



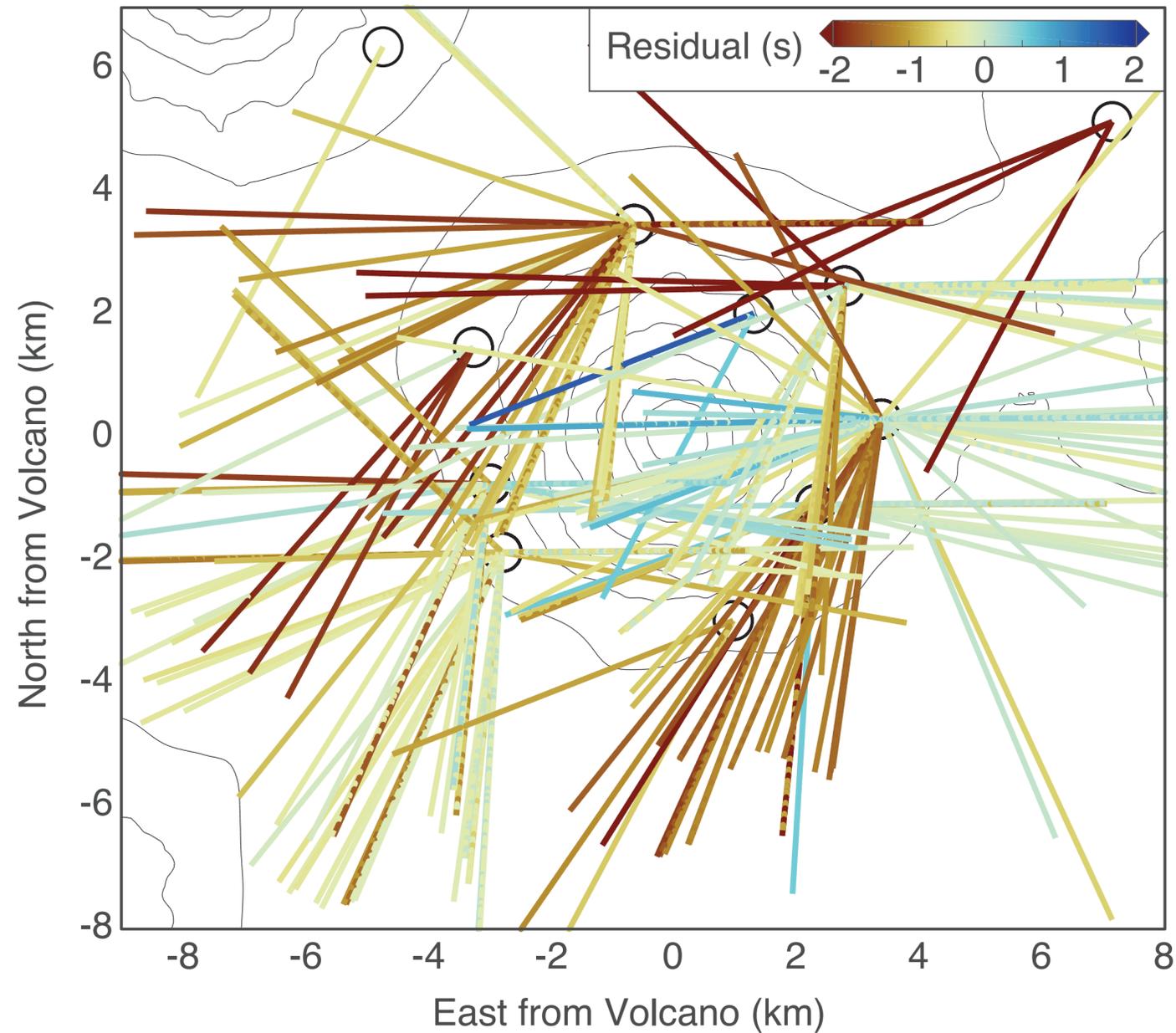
Cleveland Volcano



Janiszewski et al., submitted

We do see local variation in the receiver function data, but no distinct additional arrival. What structures causes this?

Complex Magmatic Geometries



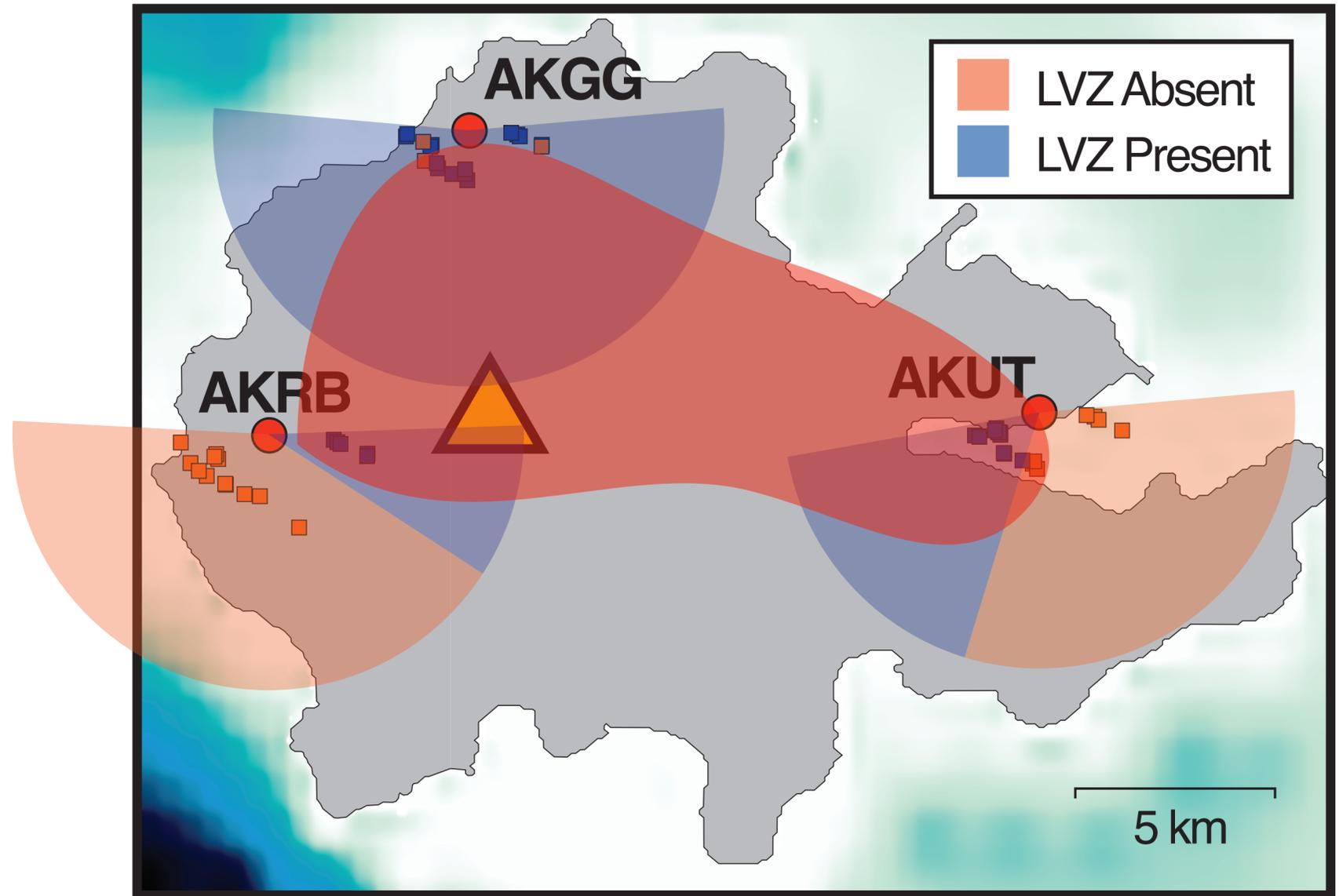
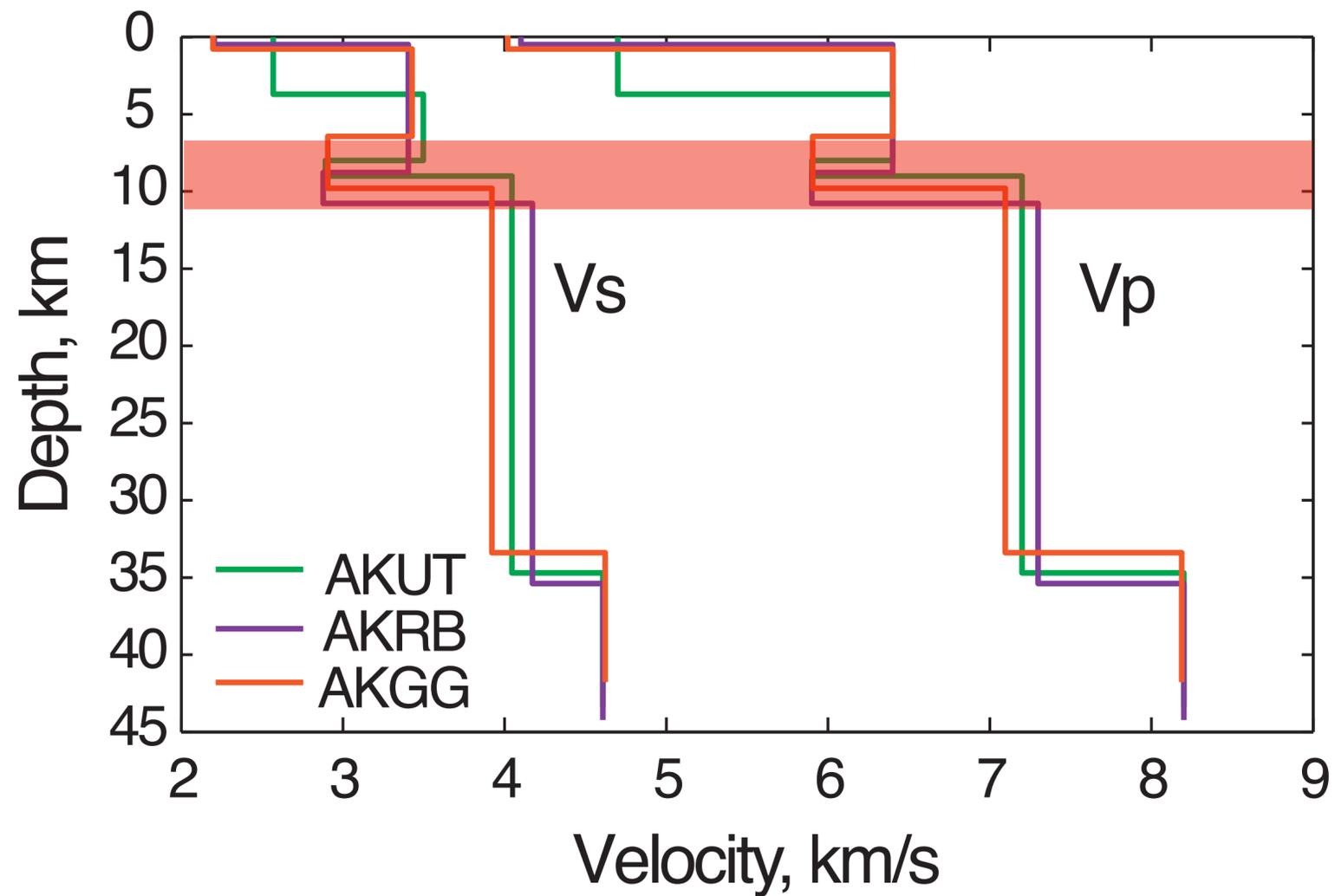
Under the main edifice, receiver functions point to a relatively thick LVZ indicating a region of mush/melt in the mid-crust.

This doesn't explain all observations beneath Cleveland volcano.

Suggests a more complex 3-D geometry of velocity anomalies - potential for more detailed analysis.

Akutan Volcano

Mid-crustal magmatic region (7 - 11 km),
widespread under island.



Main Takeaways

Receiver function techniques are useful for determining basic mid- to deep-crustal magmatic architecture with only a few seismic instruments (monitoring scale).

Unlike at Akutan, slow velocities wider depth range and likely extend much deeper than seismicity.

Evidence that we can discriminate between different “types” of magmatic architecture - sharp sill vs. gradual.

Useful for characterizing a difficult to constrain piece of the volcanic system with few instruments. Complements typical volcanology techniques.

Potentially useful in planning future dense deployments around volcanoes.

More information: Janiszewski et al., 2020, Scientific Reports