

Frontiers in earthquake science, education, and outreach in Alaska

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Alaska's sparse population, vast roadless regions, and challenging conditions have made it difficult to geophysically and geologically cover the continent's most seismically active region. At the onset of Transportable Array's arrival in Alaska, there are California-sized regions of Alaska with only a few broadband seismic stations. Expanded coverage of stations will afford improved analyses of seismic imaging and seismicity that can inform our understanding of active processes such as flat-slab subduction, collision, and widespread intraplate crustal deformation. Improved images of the lower crust should help in understanding the accretionary tectonic history of the continent. Our current efforts aim at using seismic wavefield simulations within adjoint-based imaging problems (Figure 1). A broad effort is needed to aggregate existing information into a community velocity model for Alaska; this includes industry data (North Slope, Cook Inlet, Interior Alaska basins), offshore active source velocity models, potential field data, and recent tomographic models for the crust, slab, and mantle.

Our earthquake science education and outreach efforts deliver content to Alaskans through creative in-person opportunities as well as through virtual methods. Coordinated efforts supported by the Alaska Earthquake Center, EarthScopes Transportable Array, the Alaska Summer Research Academy, and GeoFORCE Alaska have allowed us to maximize our reach within Alaska. For those outside Alaska, our IRIS Active Earth Monitor module for Alaska delivers content on earthquakes, volcanoes, tsunamis, and tectonics in a user-driven, interactive manner.

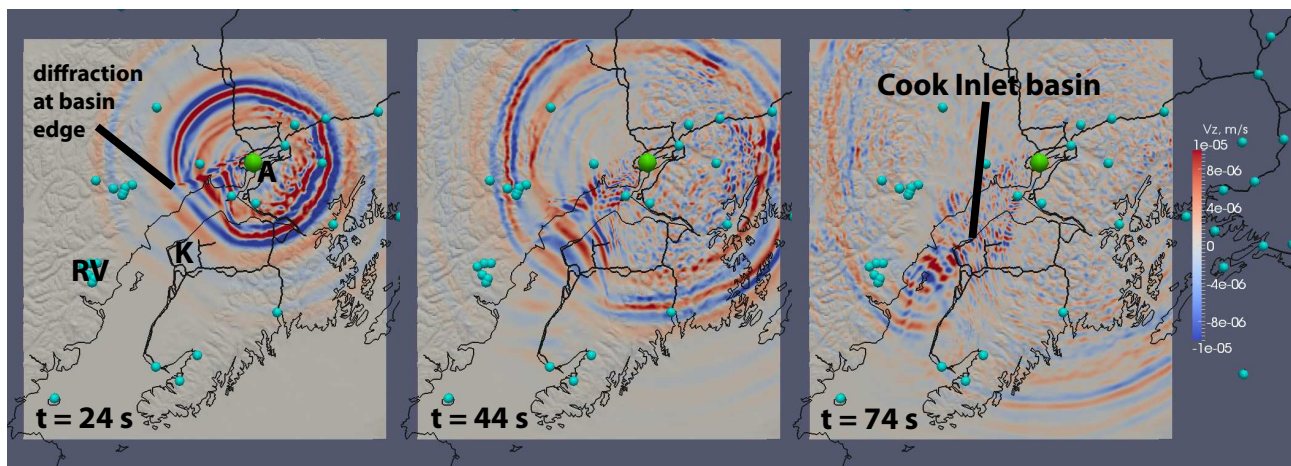


Figure 1: Snapshots of a 3D wavefield simulation, showing the strong influence of the Cook Inlet basin on the wavefield. Blue circles denote permanent broadband stations. A = Anchorage, K = Kenai, RV = Redoubt volcano.