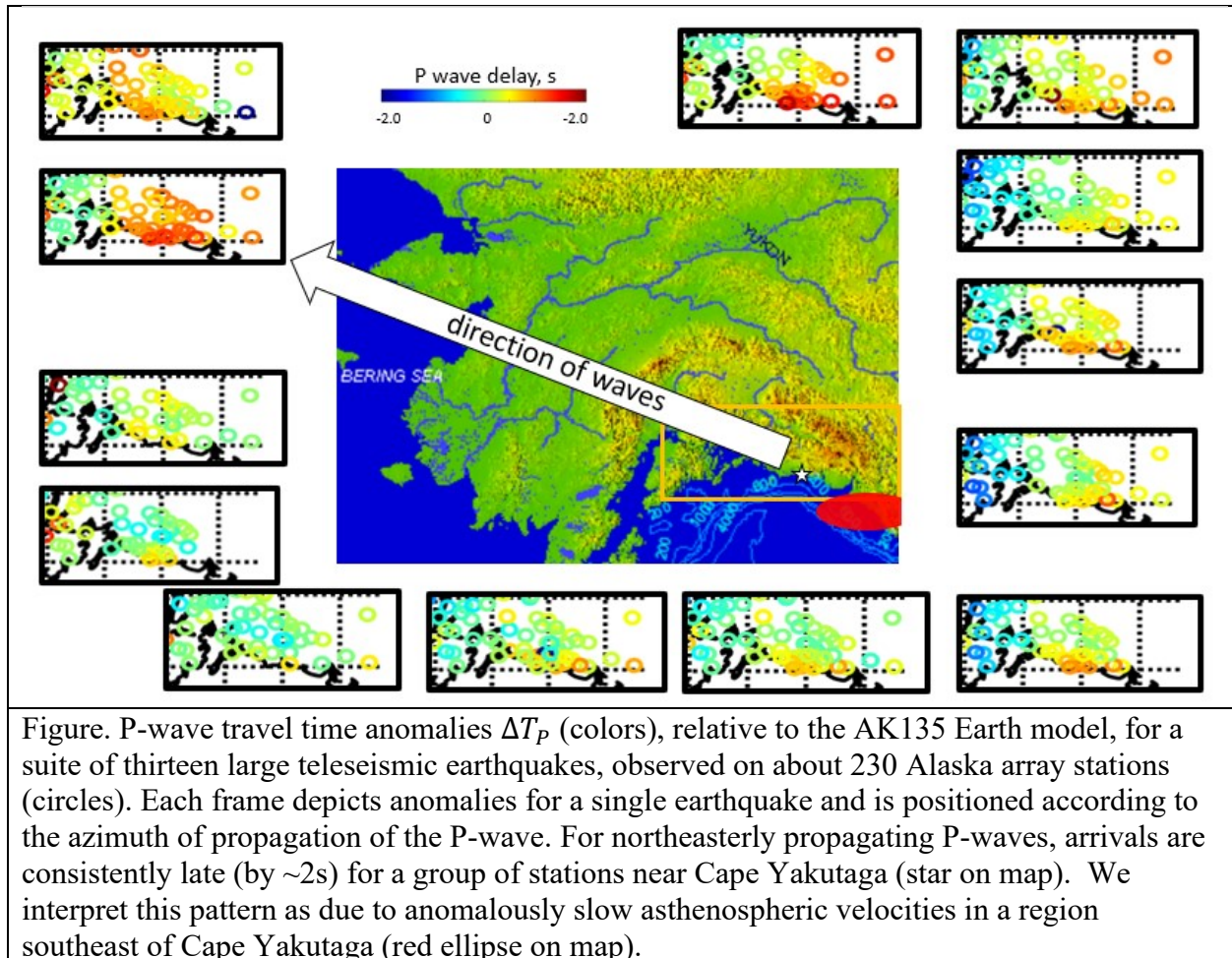


Late P-wave Traveltime Anomalies near Cape Yakutaga, Alaska

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This work was begun as the Summer Intern Project of Samuel Ofori (currently an undergraduate student at U. Nevada Las Vegas) and was later presented at the 2020 Fall Meeting.



The peak-to-peak P-wave anomaly across Alaska is 4 s, with waves that interact with hot asthenospheric features having the latest arrivals (red) and with the cold Alaska subduction zone having the earliest arrivals (blue) (Figure). For P-waves crossing the array from southeast to northwest, stations near Cape Yakutaga have late arrivals (red in the figure). These same stations are not late for P-waves crossing the array from southwest to northeast, a difference that we attribute to parallax. This pattern indicates the presence of a very slow asthenospheric heterogeneity southeast of Cape Yakutaga.

Method. We assembled very high-quality waveform data for a suite of 12 teleseisms observed on the 230 Alaska array stations. The earthquakes were all large (magnitude ≥ 6) and has epicentral distances in 40-70 degree range. Vertical component seismograms were deconvolved to displacement, band-pass filtered in the 1-20 s period range, and windowed around the arrival

time predicted by the AK135 travel time table (Kennett et al. 1995). Seismograms from pairs of stations observing a common event were cross-correlated to determine a time delay and that delay was converted to an anomaly by subtracting the delay predicted by AK135. The station with the highest average correlation coefficient for a given event was selected as the reference station. The mean anomaly for each event is not meaningful and was arbitrarily set to zero.

Kennett, B.L.N., Engdahl, E.R., Buland, R., 1995. Constraints on seismic velocities in the Earth from travel times, *Geophysical Journal International* 122, 108–124, doi: 10.1111/j.1365-246X.1995.tb03540. x.

Ofori, S. and W. Menke, 2020, Lithospheric and Asthenospheric Structure Beneath Alaska Using Travel Time Anomalies from Teleseismic P and S Waves, Abstract DI015-0011, AGU Fall Meeting, American Geophysical Union (Washington DC).