



Rupture processes of the 28 October 2012 (Mw 7.7) and 5 January 2013 (Mw 7.6) earthquakes along the Queen Charlotte Fault system (South Alaska)

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The plate boundary linking the Alaska and Cascadia subduction zones is known as an oceanic transform fault system, called Queen Charlotte. However, the bathymetry along the system shows a trench-like structure. Two major earthquakes with different mechanisms ruptured two segments of the system about 200 km apart. The 28 October 2012 (Mw 7.7) event has a high-angle thrust mechanism, while the 5 January 2013 (Mw 7.6) earthquake has a pure strike-slip mechanism. We analyze these two earthquakes through body-waveform inversion and a gravity-derived anomaly, “Trench Parallel Bouguer Anomaly” (TPBA). TPBA can be used for detecting asperities of earthquakes along forearc settings independent of the earthquake. A likely scenario for these two events will be presented.