

STRIKE-SLIP TSUNAMI SOURCES

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ABSTRACT

A recent tsunami warning issued for the US West coast catalyzed discussions on the possibility of strike slip earthquakes as tsunami sources. The June 15, 2005 earthquake off the Northern California coast (Mw 7.2) was a pure-slip event, yet it produced a small (~10 cm) tsunami at Crescent City, CA.

A search was conducted of both the West Coast and Alaska Tsunami Warning Center historical data (based largely on records from NOAA's National Geophysical Data Center) and the Harvard CMT catalog for correlations between earthquake mechanism and tsunami genesis. From 1977 to the present, 109 earthquakes have produced a tsunami – 14 of which were strike-slip. Focusing on just the subset of those events which produced 1 m runups or greater, 6 of 42 were strike-slip.

From the perspective of tsunami science, understanding how purely horizontal motion of the sea-floor can produce a tsunami is valuable. Several plausible tsunami source dynamics are explored.