LATE HOLOCENE STRATIGRAPHY , HUMBOLDT BAY, CALIFORNIA: EVIDENCE FOR LATE HOLOCENE PALEOSEISMICITY OF THE SOUTHERN CASCADIA SUBDUCTION ZONE

By

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ABSTRACT

Late Holocene stratigraphy representing rapid episodic subsidence is found in synclines of Humboldt Bay, California. These synclines are associated with the Cascadia subduction zone fold and thrust belt, which bends eastward in Northern California. In the axes of the synclines, repeated sequences of intertidal muds overlying saltmarsh to lowland peat deposits represent episodes of rapid submergence followed by gradual emergence. Observations of the contacts between the peats and overlying muds are abrupt (<1 cm). The rapid submergence most likely represents coseismic subsidence associated with large magnitude earthquakes. The evidence for these submergence events is found within both the northern Freshwater syncline and the southern South Bay syncline.

Radiocarbon dating indicates at least eight rapid episodic subsidence events during the past 3500 years. Rapid episodic events have occurred for the following age ranges: 0-300, 500-800, 1050-1350 (2 events), 1600-1900, 2450-2600, 2800-3300, 3200-3400. There are indications of additional events back to about 4300 years, with ages of 3700-3900 and 4000-4300. The age ranges of the subsidence events are similar to ages for paleoseismic events from the Little Salmon fault. The Humboldt Bay paleoseismic events may be a record of great earthquakes occurring on the megathrust of the underlying Cascadia subduction zone.

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