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Correlations between Crustal Structure and Slip on the Cascadia Megathrust (*Invited*)

Details

Meeting	2013 Fall Meeting
Section	Seismology
Session	Understanding the Cascadia Subduction Zone: Contributions From the Cascadia Initiative and Multidisciplinary Studies I
Identifier	S11C-04
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Index Terms	Subduction zones [7240]

Abstract

A number of active-source seismic imaging experiments of the Cascadia forearc margin have been conducted over the past three decades. Seismic P-wave velocity models derived from these experiments, when combined with geodetic, potential field, morphological and other data, reveal structures in both the upper and lower plate that can be correlated with current microseismic activity, geodetic signals indicating interplate locking, and apparent segmentation of past large plate boundary earthquakes as determined from onshore and offshore paleoseismic data. These data are being interpreted to construct maps of the apparent seismic velocity structure averaged over several km above and below the expected plate boundary and extending from the region characterized by episodic tremor and slip up dip to the deformation front. Preliminary results for the recent CIET, COAST and Ridge-to-Trench experiments that support, challenge or extend an evolving working model for structural constraints on plate boundary deformation in Cascadia will also be discussed. Other co-PIs who have planned and executed the CIET, COAST and Ridge-to-Trench experiments are listed below with the lead PI for each group listed first. CIET (Cascadia Initiative Science Team): Doug Toomey, Emilie Hooft (both at Un. of Oregon); Bob Dziak (Oregon State Un. NOAA); William Wilcock (Un. Washington); Susan Schwartz (UC Santa Cruz); John Collins, Jeff McGuire (WHOI); Maya Tolstoy (LDEO); Richard Allen (UC Berkeley) COAST (Cascadia Open-Access Seismic Transects): Steve Holbrook (Un. Wyoming); Graham Kent (Un. Nevada Reno); Katie Keranen (Un.

Oklahoma); Paul Johnson (Un. Washington); Jackie Caplan-Auerbach (Western Washington Un.); Harold Tobin (Un. Wisconsin) Ridge-to-Trench: Suzanne Carbotte, Helene Carton, Geoff Abers (all at LDEO); Pablo Canales (WHOI); Mladen Nedimovic (Dalhousie Un.)

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