



Along strike variations of Episodic Tremor and Slip in the Cascadia Subduction Zone

Gina Schmalzle (1), Giorgi Khazaradze (2), Robert McCaffrey (3), Kenneth Creager (4), Aaron Wech (5), and Brent Delbridge (6)

(1) University of Washington, Seattle, WA, United States (gschmalz@uw.edu), (2) University of Barcelona, Barcelona, Spain , (3) Portland State University, Portland, OR, United States , (4) University of Washington, Seattle, WA, United States , (5) Victoria University of Wellington, New Zealand, (6) University of California, Berkeley, CA, United States

Variations in episodic tremor and slow slip (ETS) along the Cascadia subduction zone margin are investigated using 6 years of continuous GPS time series data. The goal of this project is to explore relationships between slow slip and other features of the subduction system. An elastic block model that includes transient events is used to simultaneously invert for inter-event mega thrust plate locking, two earthquakes and a dozen slip distributions of ETS events between January 1, 2005 and January 1, 2011. Surface displacements due to slow slip are largest in Washington at the latitude of Puget Sound and to the south near Cape Mendocino, CA. Displacements due to slow-slip are nearly undetected with GPS in central Oregon during this study period. We present comparisons of the estimated GPS yearly slow slip rates with the long term, inter-ETS GPS velocity field with respect to multiple reference frames, compare its dependence on latitude and subduction interface depth as well as on topography.