

## GPS Constraints on Plate Coupling in central Western Oregon

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We have been using GPS data from permanent sites and campaigns in 1992 and 1994 by USGS, and in 1996, 1997, and 1998 by OSU, RPI, and NGS to examine the variability and landward extent of interplate coupling in central Oregon. We established two permanent sites and a campaign network in central Oregon to investigate potential strong variability of the coupling signal suggested by earlier leveling studies. The earlier results showed little or no landward tilt of the coast range at 45 deg. N, while other arc-normal transects showed landward tilts. The earlier data have been variously interpreted as either poor coupling at this latitude, or as a coupled zone offshore, with the lack of tilt falling within the survey error. New GPS results indicate a probable locking signal in the central Oregon corridor, with station vectors consistent with an elastic signal from JDF-NOAM coupling. Vectors are also rotated toward arc-parallel from the NUVEL 1A vector, suggesting motion of a forearc sliver. GPS measurements also suggest that rapid surface displacement related to plate coupling extend further landward than would be expected from a locked zone lying entirely offshore. Preliminary elastic dislocation models suggest that plate coupling may extend beneath the Oregon Coast Range. The anomalous lack of landward tilt in earlier uplift data might be related to broader distributed coupling beneath the coast range/Siletzia terrane. The relative lack of uplift in the same corridor is supported by geologic evidence spanning several time scales, suggesting both an elastic and anelastic response of the upper plate to coupling stress.

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