



Deformation in the central Gulf of California from the August 2009 M 6.9 event

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The central Gulf of California hosts one of the fastest Transform faults on Earth. About 90% of the Pacific – North America plate motion (thus about 45 mm/yr) is localized at the narrow Ballenas channel between the Baja California peninsula and Isla Angel de la Guarda. We use InSAR data acquired by Envisat over the Baja California peninsula and Isla Angel de la Guarda in combination with campaign GPS data (2004 –2009) from this region to quantify the deformation resulting from the August 3rd 2009 M 6.9 earthquake at the Ballenas Transform. The rupture area and slip is estimated using elastic halfspace modeling (Okada, 1985) using uniform and non-uniform slip distribution. The coseismic rupture depth agrees with the fault locking depth (8 - 10 km) estimated from interseismic strain accumulation modeling using the GPS data (Malservisi et al., 2009). The coseismic slip in relation to the earthquake cycle and the interseismic fault slip rate furthermore confirm the strong localization of deformation in the central Gulf of California at the Ballenas Transform.