Geophysical Research Abstracts,
Vol. 10, EGU2008-A-07251, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-07251
EGU General Assembly 2008

Do stalled Slab Fragments drive Baja California?

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The Baja California microplate was ruptured from the North American plate $\sim$ 12 Ma ago. A current hypothesis explains the transport process by lithospheric coupling forces dragging Baja California by the Pacific plate. According to this hypothesis the young oceanic lithosphere from the Farallon-Pacific spreading center, which was approaching North America, was too buoyant to subduct. Therefore a zone of increased lithospheric coupling of the Farallon slab developed and subduction slowed down or ceased along Baja California. Using a Finite Element Model, we test whether such coupling forces can explain the transfer kinematics of Baja California as seen from our previous GPS study (Plattner et al., 2007). We calibrate the coupling force to fit Pacific, Baja California and North America rigid plate relative motions along the plate boundary of the rigid Baja California microplate. We test different assumptions on the rigidity of Western North America (in plate motion direction) and compare strain patterns and geological fault slip rates along the major fault systems, surrounding the Sierra Nevada microplate. Though the model is largely sensitive to the rigidity assumptions of Western North America we can show that in the case of Baja California lithospheric coupling forces can explain terrane transfer kinematics in the case of Baja California.