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Microplate transfer by lithospheric coupling forces at the plate boundary

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The Baja California (BAJA) microplate was ruptured from the North American (NAM) plate ĩ2 Ma ago and since then translated with the Pacific (PAC) plate. The microplates' transport mechanism has been explained by partial coupling with the PAC plate. According to this theory, the young oceanic lithosphere from the Farallon-Pacific spreading center approaching North America was too buoyant to be subducted. Therefore a zone of increased lithospheric coupling developed between the partially subducted Farallon slabs and the overlying NAM margin. In consequence both, the subduction and the seafloor spreading slowed down and ceased. With the development of this coupling region west of BAJA the main PAC-NAM plate boundary jumped inland east of BAJA, first delocalized in the Protogulf extensional province, and later localized along the Gulf of California.
We use a numerical modeling technique to test the dynamic conditions of BAJA transport as seen from present-day and from geologic plate motion studies. Using the kinematic data we test the necessary coupling forces for BAJA transport, as well as, geometrical constraints along the PAC-BAJA coupling zone. Evaluating the transport conditions at different stages of the plate boundary evolution, we want to learn about necessary pre-conditions for the BAJA transfer.