



Diffuse plate boundary and microplate motion: kinematic effects of partial coupling between blocks in Western North America.

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The North America/ Pacific Plate boundary is an example of diffuse plate boundary where the motion is accommodated along localized shear zone dividing more rigid blocks. Although some of these blocks seem to behave as independent entities, the definitions of the block's boundaries are not always straightforward. The Sierra Nevada Great Valley microplate (SNGV) is one of such blocks. While the western and south border of the microplate are clearly marked by the San Andreas Fault and its restraining bend, the eastern and northern boundary are more difficult to identify. The southern part of the eastern boundary is clearly marked by the presence of a fairly localized shear zone accommodating $\sim 20\%$ of the North America Pacific plate relative motion, the Eastern California Shear Zone. Moving northward the Walker lane accommodates the relative displacement on a more diffuse zone and the northern extent of the microplate is not univocally identified. Using a compilation of geodetic measurement, we utilize a kinematics analysis to search for the boundary of the SNGV microplate to quantify to which extent the SNGV can be considered an independent rigid block with respect to the North American Plate. We then address the dynamic implications for partial coupling of the northern extent of SNGV with North America.