

## Arc-Parallel Translation of a Forearc Sliver Without Arc-Normal Strain Accumulation: GPS Geodesy in Western Nicaragua

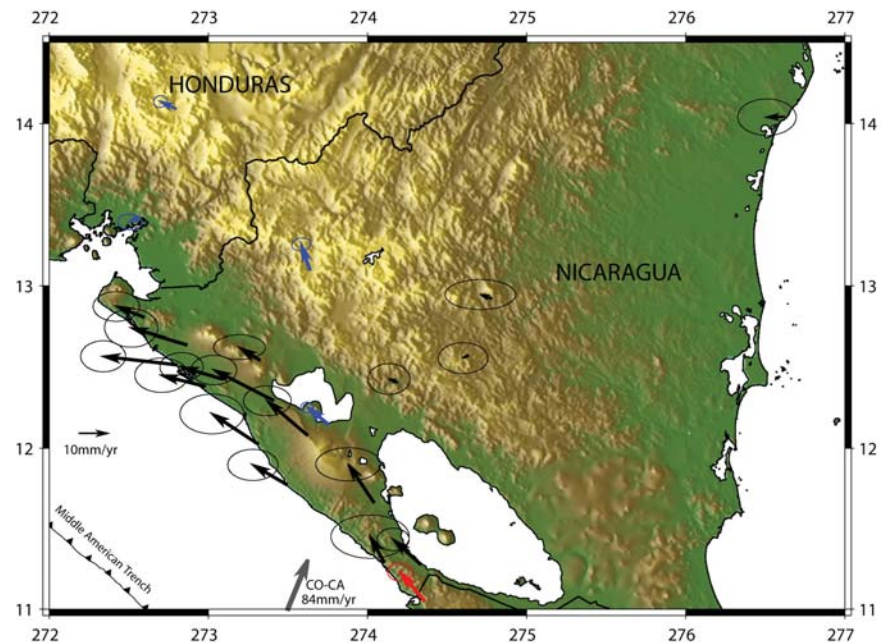
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Campaign GPS measurements of our geodetic network in western Nicaragua have been made over the last seven years to investigate the kinematics of the forearc and the dynamics of this portion of the Middle America Subduction Zone (Turner et al., 2007). We currently have interseismic velocities for 18 campaign sites and have installed 10 additional sites in the backarc to investigate the nature of the transition from forearc sliver motion to stable Caribbean Plate motion (Figure 1). Corrections for modeled coseismic offsets from the 13 January 2001 Mw7.7 earthquake off the coast of El Salvador have been applied to our campaign site velocities. We have also derived interseismic velocities for five continuous GPS sites in the region.

Our GPS results confirm predictions of northwest transport of a forearc sliver (DeMets, 2001), but show little evidence for an arc-normal component of strain accumulation associated with locking on the subduction interface. Because strain/slip-partitioning and development of translating forearc slivers in obliquely convergent margins is thought to require strong coupling between the downgoing slab and the overriding plate, the lack of this arc-normal signal is perplexing and leads to the question—If oblique subduction isn't driving the forearc translation, then what is? One possibility is that the motion of the forearc is being driven by a more strongly coupled region to the south in Costa Rica. Some other possibilities are that the locked zone is too shallow and too far off shore for the arc-normal component to show up in our network, or that the signal is masked by post-seismic effects from the 1992 offshore earthquake. We are currently developing finite element models of the regional seismogenic zone to distinguish between these possibilities.



**Figure 1.** GPS velocity map of Nicaragua. Velocities are relative to the stable Caribbean Plate. Blue arrows are continuous sites. Gray arrow shows the convergence direction of the Cocos and Caribbean Plate from DeMets (2001). Red arrow is from Norabuena et al. (2004). Figure modified from Turner et al. (2007).

### References

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