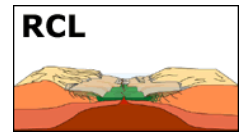


Pliocene Kinematic History of the Northern Gulf of California



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We conducted field work on Isla Angel de la Guarda to map the volcanic rocks in reconnaissance and collect samples for geochemical, geochronological, and paleomagnetic analysis. Field work was conducted in the adjacent part of the Baja California peninsula to look for possible correlative units. One high-silica rhyolite ignimbrite was identified from the central part of Isla Angel de la Guarda that may correlate to a similar unit exposed on the Baja California peninsula north of Catavina. If we can confirm this correlation, it will provide us with an estimate of the net amount of strike-slip motion that took place across the Ballenas transform fault (between Isla Angel de la Guarda and the Baja California peninsula) during the development of the Gulf of California Rift. Laboratory analyses to test this correlation are ongoing.



Figure: Selected locations of rock samples from Isla Angel de La Guarda, collected during 2007 reconnaissance mapping to establish the volcanic stratigraphy and look for correlations of units with rocks of Baja California. Samples IAG-07-04 through IAG-07-44 were collected for studies in geochemistry, geochronology, and paleomagnetism (Martin-Barajas et al., 2008). The most promising match thus far appears to be a 12.3 Ma peralkaline rhyolite ignimbrite at IAG-07-44 (at the southern end of the reconnaissance study area) which may correlate with an ignimbrite exposed on the Baja California peninsula in the region of points JUN-08-06, POR-08-02 and POR-08-05. These latter samples were collected for geochemistry, geochronology and paleomagnetism in Feb. 2008 in

order to test the correlation, and measurements are in progress. Results thus far are consistent with the hypothesis that it is the same ignimbrite in these two locations. We are using the SE end of its outcrop in each of the locations as a marker for the amount of offset. This suggests an offset similar to the white line shown -- approximately 130 km of strike-slip displacement between Isla Angel de la Guarda and the Baja California peninsula. This would constrain the net slip of the Ballenas transform fault (the currently active segment of the Pacific-North America plate boundary in this vicinity).

Martin-Barajas, A., J. M. Stock, M. Lopez-Martinez and A. Chapman, 2008, Estratigrafía volcánica del Neogeno en la mitad norte de Isla Angel de la Guarda (abstract), 1er congreso sobre la evolucion geologica y ecologica del noroeste de Mexico: Hermosillo, Sonora, abril 21-23.

