# 06.09: Geomechanics of reservoir-scale sand injectites, Panoche Hills, CA

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ABSTRACT

I made detailed measurements of injectites in the Panoche Giant Injection Complex (PGIC) over ~600 m of true stratigraphic thickness in two locales. Stratigraphic position of injectite styles indicates that the PGIC has a basal sill zone, a sill-dike transition zone, and an upper dike zone. When emplaced, high-angle dikes were oriented predominately northwest-southeast and dipping subvertically, compatible with Farallon Plate subduction. Average and cumulative dike aperture decline with lateral and vertical stratigraphic distance, indicating that strain diminishes away from the injectite source. This behavior is simply modeled with a radially propagating fracture.
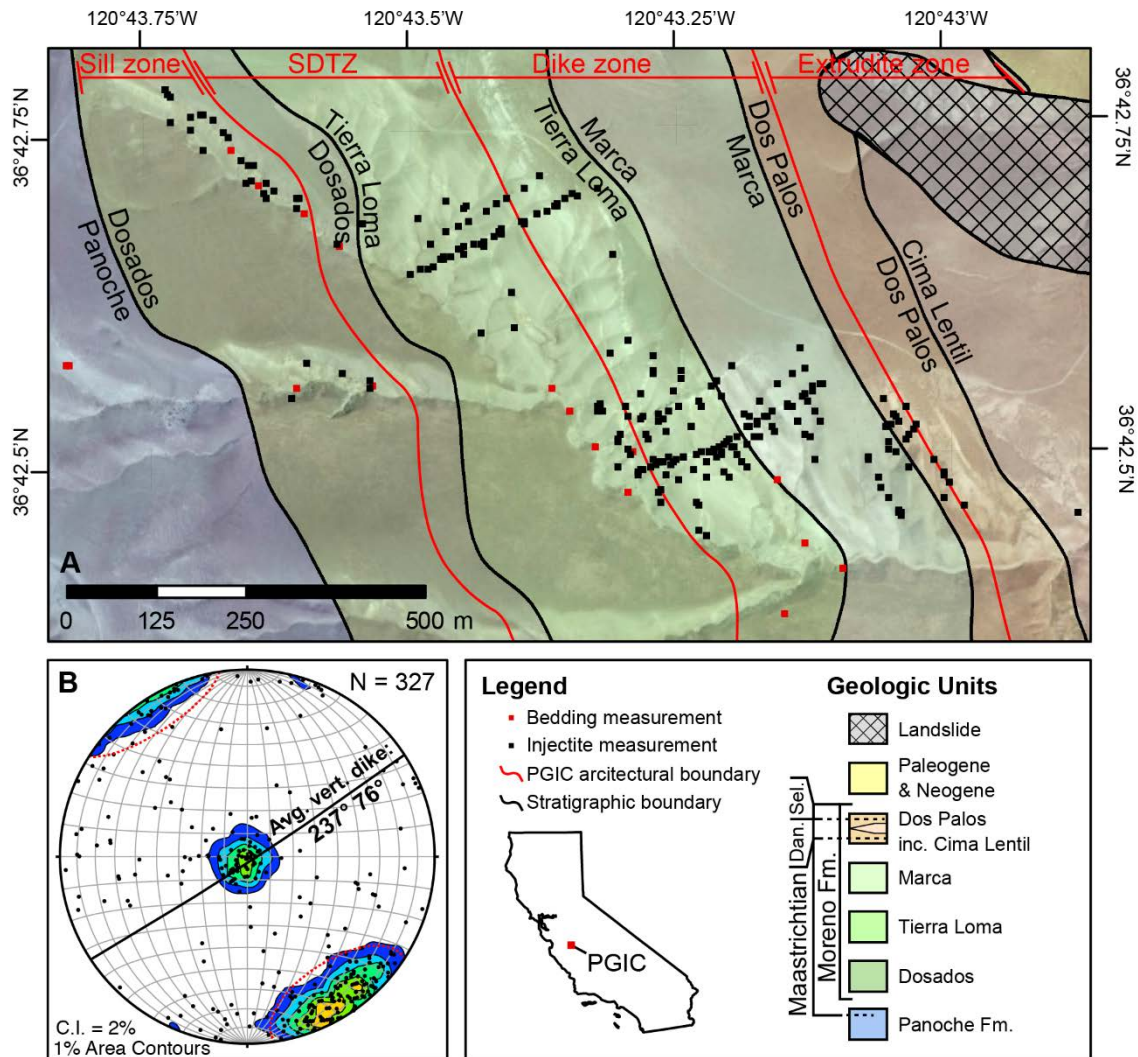
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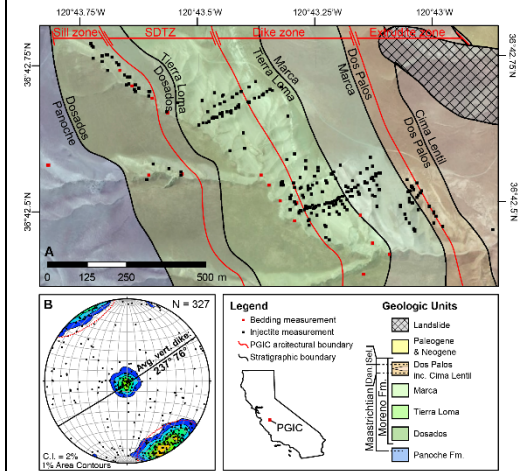
(A) Bedding and injectite measurements made in Marca Canyon, one of two locales studied. **(B)** Injectite paleo-orientation in both locales.
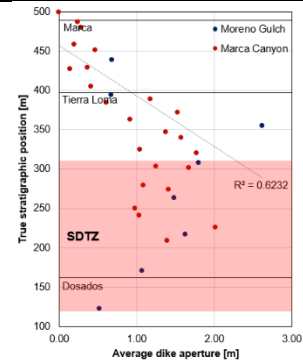
Fig. 2: True stratigraphic position (TSP) vs. average aperture of injectites in two locales of the PGIC.

Fig 1: **(A)** Bedding and injectite measurements made in Marca Canyon, one of two locales studied, with stratigraphic and injectite-architectural boundaries. **(B)** injectite paleo-orientation in both locales. Average bedding orientation is 329° 33° and was used to rectify injectite measurements to paleo-orientation. Injectites were predominately sub-vertical dikes and sub-horizontal sills when emplaced. Average vertical dike paleo-orientation is 237° 76°, indicating a NW-SE minimum horizontal paleostress. Dashed red small circle in **(B)** indicates selection window for vertical dikes. Back
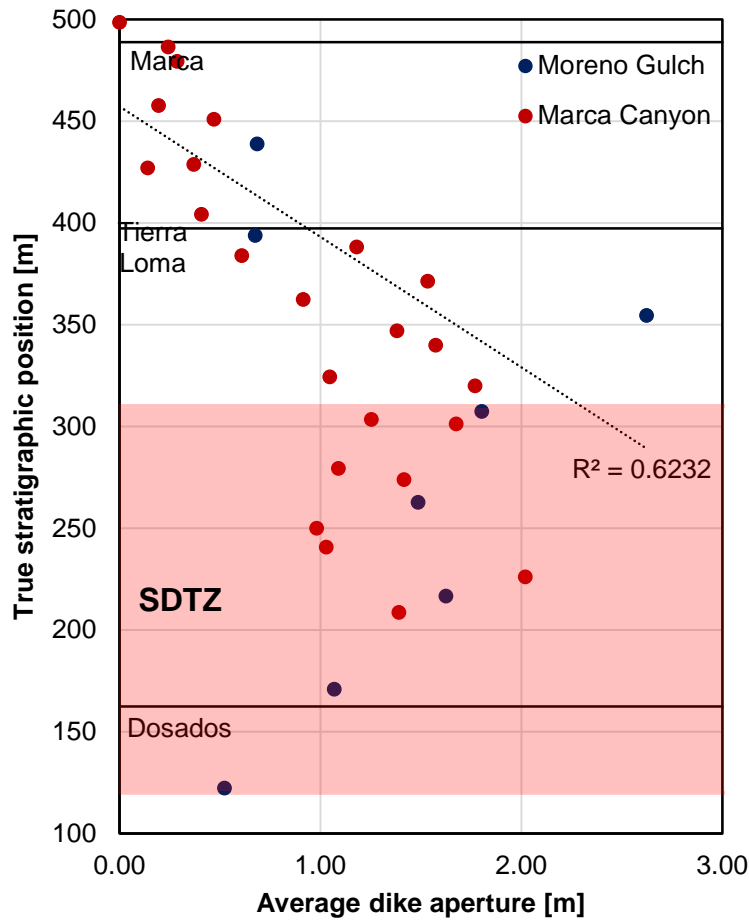
Fig. 2: True stratigraphic position (TSP) vs. average aperture of injectites in two locales of the PGIC. Average aperture and total strain of injectites decreases linearly from the sill-dike–transition zone (SDTZ, above which dikes predominate) to the paleoseafloor. Regression performed above the SDTZ (310 m TSP).

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