Project Abstract

We drilled thirteen continuously cored boreholes to depths of 30 to 40 m along a 1.4-km-long, north-south transect across the locus of back limb folding above the Compton blind thrust fault. Core recovery was excellent, averaging greater than 95% for the section. The cores consist of alternating intervals of course-grained sands, gravels, and cohesive, fine-grained silts, clays and organic-rich clays. The main source of these sediments was most likely the San Gabriel River, which is located ~2 km East of the study site, with material possibly coming from the Los Angeles River, ~7 km to the West. In order to corroborate our cross-borehole correlations, which were based on visual comparison, we are using high-resolution records of magnetic susceptibility (Chi) to correlate stratigraphy between four boreholes that appear to span the steepest part of the young fold. Specifically, we are focusing on cores 7, 10, 11 and 13, which are 30 to 100 m apart from one another. We measured the magnetic susceptibility every 2.5cm in all boreholes using a Bartington probe sensor. We have attempted to correlate between pairs of boreholes under a working assumption that the Chi records should be correlatable. Our initial results suggest that this hypothesis is largely correct, but we have also encountered segments of the cores in which the Chi data do not correlate between cores. These results demonstrate that magnetic susceptibility is a useful tool in correlating stratigraphic horizons that might otherwise be difficult to correlate with other methods.