Project Abstract

Paleomagnetic data gathered from boreholes drilled across the locus of most recent folding above the Compton blind-thrust fault have proven useful in correlating stratigraphy between boreholes and in determining chronostratigraphy. We drilled 13 continuously cored boreholes, each with better than 95% recovery along a 1.4-km-long, north-south transect across the locus of back limb folding above the southern segment of the Compton thrust fault in Lakewood, CA. Our cores unearthed alternating intervals of course- grained sands, gravels, fine-grained silts, clays, and organic-rich clays down to a depth of ~40m. The main source of these sediments was most likely the San Gabriel river ~2 km East of the study site, with material possibly also coming from the Los Angeles river, ~7 km to the West. Correlations based on visual core descriptions provide one method of determining the timing and rate of uplift along the Compton blind-thrust, but in some structurally key locations, these correlations remain uncertain. Paleomagnetic inclination and relative paleointensity data are being tested as an alternative means of correlating and dating selected boreholes. Initially, we took ~70 samples every 125 cm along the entire downhole length of holes 10 and 11. Subsequently, we took ~230 samples spaced every 2.5 cm over an 8-m-thick clay interval near the base of holes 10, 11, and 12. Our initial results indicate that inclination and relative paleointensity can be correlated among holes. We may have also found evidence for the Mono Lake excursion at ~33ka, which would be consistent with 14C dates recovered from the cores. Recognition of this excursion and related paleomagnetic field variability, if confirmed by our ongoing work, will provide a useful means of stratigraphic correlation for late Pleistocene growth strata.