

Rutgers' Role in the NJ Sea Level Transect: Probing 40 myrs of Earth history

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The soils and rocks of New Jersey contain a valuable archive of climate history and land-sea interaction extending back 230 myrs, and Rutgers scientists have been instrumental in bringing this record to light. Until recently the adjacent offshore record, understandably more complete but much more difficult to recover, has been unavailable. This changed due to the Integrated Ocean Drilling Program (IODP), an international consortium of research institutions that investigate topics requiring seafloor drill holes. The IODP sponsored Expedition 313 in Spring-Summer 2009 to drill into the New Jersey shelf, and several Rutgers faculty and associates were among the 29-member team of scientists conducting the investigation.

Expedition 313 drilled and logged 3 sites in 35 m of water 45-65 km off Barnegat Inlet. The data constitute a long-awaited 'missing link' in a transect of sites from the coastal plain to the continental slope begun in 1993 to (1) determine the factors that imprint shallow water sedimentation (changes in sediment supply, global sea level and climate, among others), and (2) extract global sea-level history during times of known glaciation from as far back as 40 Ma. 1311 m of very good to excellent quality cores were collected with 80% recovery. The deepest was 757 mbsf; the oldest was upper Eocene. Each hole was tied to a grid of high-resolution 2D seismic profiles and located to intersect top-, fore- and/or toeset strata of several clinoforms where the factors controlling the stratigraphic record would be most clearly expressed. Slim-line logs in each hole gathered spectral gamma ray, resistivity, magnetic susceptibility, sonic and acoustic televiwer measurements.