

LATE PLEISTOCENE-HOLOCENE CHANGES IN PROVENANCE OF NY-NJ
CONTINENTAL MARGIN SEDIMENTS REVEAL DEGLACIATION HISTORY OF
THE LAURENTIDE ICE SHEET

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Provenance analyses were conducted using the radiogenic isotope, neodymium, from sediments recovered on the New York-New Jersey outer shelf, to understand the history of the deglaciation of the Laurentide Ice Sheet. The sediments were collected from the R/V Endeavor during the summer of 2002. Radiocarbon ages from shallow water mollusk assemblages of intertidal affinity permitted us to develop a chronology, which helped to constrain changes in provenance and drainage systems supplying the continental margin from glacial to interglacial. The study focuses on five locations, the previously determined paleoshoreline (McHugh et al. 2004), lagoons associated with the paleoshoreline, fluvial channel systems, the sediment fill of the head of the Hudson Canyon and the Hudson Shelf Valley at approximately 55m of water depth. Provenance changes from glacial to interglacial were identified based on heavy mineral separations and SEM/EDX analyses. During glacial times, drainage sources were restricted to either high grade metamorphics or basic igneous minerals, dominating each sample. During the deglaciation of the Laurentide Ice Sheet, a mixing of both of these sources was evident in most of the samples. To narrow down the provenance, we are conducting analyses on these locations using neodymium isotopes. Neodymium isotopes were chosen because under most conditions they will not be altered during metamorphism and sediment transport. Our study indicates that the use of the radiogenic isotope neodymium can be used as a stratigraphic tool to understand the deglaciation history of the New York- New Jersey Continental Margin. Future goals are to continue conducting analyses of neodymium isotopes on a broader study area, revealing a more in depth and accurate deglaciation record.

McHugh, C.M.G., Mountain, G.S., Christie-Blick, N., Pekar, S., Gould, H., Gurung, D., and Hartin, C., 2004. Evidence for the Latest Pleistocene-Holocene Shoreline Along the New York- New Jersey, U.S. Continental Margin. 32 IGC, Florence, Italy. T15.01-234-44.