

The Effect of Diagenetic Processes on the Radiochronology of Soft Sediments using ^{210}Pb and ^{137}Cs

John R. Meriwether^{*}, Carey Hardaway[†], Wei-jenq Sheu^{*}
Joseph Sneddon[‡], and James N. Beck[‡]

^{*}Department of Physics, University of Southwestern Louisiana, Lafayette, LA 70504-4210

[†]Department of Chemistry, McNeese State University, Lake Charles, LA 70609-2255

[‡]Department of Physical Sciences, Nicholls State University, Thibodeaux, LA 70310

Abstract

Core samples from the sediments of North Lake, a small, quiet, brackish lake in southern Louisiana, were used to compare radiochronological dating methods for soft sediments. The radionuclides ^{137}Cs and ^{210}Pb were used to determine the ages of the sediments. The depth profile of native lead was determined and its profile is similar to that of radiolead. The upper 10-12 cm of the sediments are oxidizing and reducing below that level. These factors suggest that diagenetic processes must be considered before accurate dates and sedimentation rates can be obtained. The results are a much improved correlation between chronologies obtained using the ^{137}Cs and the ^{210}Pb methods.