

USING GEOCHEMICAL ARCHIVES IN LAKE DEPOSITS AS INDICATORS FOR PALEOLIMNOLOGICAL CHANGE

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Abstract for Advanced Graduate Seminar GLY 6931

Typical lacustrine studies address changes in lake ecosystem health with biological techniques, such as community and habitat studies. The approach suggested here instead involves using geochemical proxies (%TC, %TOC, %TIC, %TN, and C:N ratios) to reconstruct the paleolimnological history of a lake. Because the organic fraction of lake sediments record changes (climate, environment, impact of humans) to lake ecosystems, the indicators listed will provide significant insights into the lake's response to natural (edaphic) as well as unnatural (anthropogenic) disturbances through time.

Measured geochemical anomalies, from both the organic matter (OM) and inorganic matter fraction, of recent lake sediments from a continuous 100-year record from Lake Monroe, a relatively large ($A = 40 \text{ km}^2$), shallow ($z_{max} < 3\text{m}$, $z_{mean} = 2\text{m}$), subtropical, hypereutrophic lake in central Florida, have been analyzed for the purpose of reconstructing paleolimnological conditions within the basin since the onset of human occupation in the mid 1880's. Organic and inorganic sediment recovered from 20 piston-cores retrieved in October 2003, have been sub-sampled and analyzed for the appropriate geochemical parameters. Furthermore, radiometrically dated profiles were used to establish a chronology to aid in evaluating both spatial and temporal patterns of bulk sediment and nutrient accumulation. Results from all cores show an increasing trend in nutrient and sediment accumulation, and it is believed that this has had a direct impact on lake production and ultimately historic water quality.