

THE UTILITY OF PALEOLIMNOLOGY FOR DEFINING THE ANTHROPOCENE

Mark Brenner
Department of Geological Sciences
University of Florida
Gainesville, Florida USA 32611

Some earth scientists advocate identification of a new epoch, the Anthropocene, which will be defined by recent global impact of humans on the environment. There is debate, however, about what distinctive stratigraphic signature will be used to define the epoch, or how a Global Stratigraphic Section and Point (GSSP) will be selected. Lake sediments are valuable archives of past environmental change and several factors make lacustrine deposits ideal for identifying and dating world-wide anthropogenic impacts: 1) lakes are common features on landscapes, 2) sediment cores are easily obtained, 3) lake sediment accumulates rapidly (~1-10 mm/a), enabling high-resolution sampling, 4) lake sediments preserve physical, chemical and biological evidence of human activities that affects airsheds and watersheds, and 5) Holocene lake sequences can be dated reliably using radiocarbon (^{14}C), ^{210}Pb , and in some cases, annual laminations. Paleolimnological studies have been used to document various human impacts on the environment, including among others, land clearance and enhanced soil erosion, early metal smelting, effects of acid precipitation, lake trophic state shifts, invasion of exotic biota, heavy metal pollution, and climate change. I will use case studies to explore how paleolimnology has contributed to our understanding of human impact on the environment, and make the case that lake sediment cores have unique potential for defining the Anthropocene.