

09.24.18 @ 11 AM

HIGH STANDS AND OVERFLOW HISTORY OF GLACIAL LAKE CHICAGO AND DOWNSTREAM IMPACTS ON GULF OF MEXICO $\delta^{18}\text{O}$ VALUES

DR. B. BRANDON CURRY
ILLINOIS STATE GEOLOGICAL SURVEY

Linked and complex relationships between runoff from deglacial sedimentary systems to ocean basins likely contribute to the murky global signals of Heinrich Stadial 1 (also known as the “Mystery Interval”) from ca. 17.5 – 14.5 cal ka. However, precise chronologies linking meltwater sources, transport, and oceanic sinks are lacking for this period. A probability density function of new and published radiocarbon dates shows Lake Chicago, a large, glacial meltwater lake adjacent to the Lake Michigan Lobe of the Laurentide Ice Sheet, had two high stands, the Glenwood and Calumet Phases, which occurred from ca. 17.0 – 15.0 and 14.2 – 12.4 cal ka, respectively. Ages of the highest stands of Lake Chicago and high sediment accumulation rates at 16.5, 16.0, 15.1, 14.1, and 13.4 cal ka temporally correspond to large pulses of meltwater recorded in the $\delta^{18}\text{O}$ values of *G. ruber* (pink and white foraminifera) in sediment cores from the Orca Basin (Gulf of Mexico). Thus, we conclude overflow of meltwater via the Chicago Outlet during high stands produced several large downstream events and coeval stable oxygen isotope decreases in the Gulf of Mexico.

I ILLINOIS

Illinois State Geological Survey

PRAIRIE RESEARCH INSTITUTE