POSTER PRESENTATION

RECONSTRUCTION OF PALEOLIMNOLOGICAL CHANGES THROUGH THE HOLOCENE: DIATOM BIOSTRATIGRAPHY OF GREYLING LAKE, CHUGACH RANGE, SOUTH-CENTRAL ALASKA

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Reconstructing the temporal and spatial variability of Holocene climate change in southern Alaska has been the goal of a series of multi-proxy lacustrine investigations along the southern coast of Alaska. In collaboration with a recent study published by McKay and Kaufman (2009), analysis is underway of diatom assemblages preserved in a 3.5 m long sediment core dating to approximately 15ka before present. The core was recovered from Greyling Lake (61.38°N, 145.74°W): a hydrologically isolated proglacial lake in the central Chugach Mountains of south-central Alaska. Diatoms are known to be sensitive indicators of environmental change in lakes – responding quickly to factors such as light and nutrient availability. Preliminary results show large variations in the community dynamics of diatom species indicating significant limnological changes during the Holocene and Holocene-Pleistocene boundary. Early Holocene sediments (13-11ka) are dominated by the planktonic diatoms *Cyclotella tripartita* and *C. rossii*. The biodiversity of the diatom assemblages increase markedly during the period identified in this lake by McKay and Kaufman (2009) as the Holocene Thermal Maximum (9-5ka), and include many planktonic (*Cyclotella spp.*), tychoplanktonic (*Achnanthes spp., Navicula spp.*) and benthic (*Fragilaria pinnata,, F. pseudoconstruens, F. construens var. venter*) species. The dominance of littoral benthic genera such as *Fragilaria spp.* are present in sediments corresponding with the onset of Neoglaciation (4ka). These preliminary patterns corroborate with biogenic silica and organic matter analyses from nearby Hallet Lake (McKay et al., 2008). Higher resolution diatom counts are planned for the future with the goal of reconstructing detailed environmental changes in Greyling Lake. Further plans also include quantitatively inferring changes past the aquatic conditions by utilizing diatom-based transfer functions of Alaskan lakes (Gregory-Eaves et al., 1999) with implications for southern Alaskan climate change.

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