Quantitative reconstructions of Arctic and Boreal Holocene environments in North America

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ABSTRACT

High-resolution Holocene cores from the Canadian Arctic

Many new lake sediment sequences have been studied as part of the ACVAST Project. (a) Pollen (Peros & Gajewski, 2008) and diatom (Podritske & Gajewski 2007) influx, indicative of primary production from western Victoria Island (2R2) are compared to the Agassiz ice core melt% data. (b) New July temperature reconstructions from Melville Island are compared to those from Victoria Island.

Pollen records from several regions, including the central Arctic (Gajewski 1995; Gajewski & Frappier 2001; Zabanske & Gajewski 2007) and western Arctic (Gajewski et al. 2000), including these two records from the northwestern Arctic (Gajewski et al. 2008; Peros et al subm) show long-term decreases in

Pollen data from the Canadian Arctic and Greenland were used to estimate July temperatures for the past 10 ka. Reconstructions from each site were interpolated to 200-yr intervals and regional averages computed (see map). Warmest temperatures occurred between 7-9ka in the west, and between 5-7ka in the east. In SW Greenland, however, warmest temperatures occurred later.

Paleoclimate time-series of Beringia

Full and late-Glacial: Temperatures were colder than present during the Full Glacial, and drier during some time periods. Analogs could be found for most levels during the Full glacial, but some analogs were found in the late-glacial (not shown).

Using 5 analogues produces a warm bias in the reconstructions, especially during the Full Glacial, so using the average of several analogs is not a good strategy in paleoclimatic reconstructions. Mapping analogous chosen for the fossil spectra is a useful strategy for analysis of the climate reconstructions, see Viau et al., 2008

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LPC papers on Arctic paleoenvironments

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