



The climate of North America during the past 2,000 years reconstructed from pollen data

Matthew Ladd, Andre Viau, and Konrad Gajewski

University of Ottawa, Geography, Ottawa, Canada (mladd036@uottawa.ca, 613-562-5145)

The temperature of the warmest month was reconstructed for the past 2,000 years using almost 750 pollen sites from the North American Pollen Database. The modern analogue technique (MAT) implemented using MAT-TOOLS was used to quantify paleoclimates using a modern pollen database with over 4,800 calibration sites from across North America. Across North America, both the Medieval Warm Period (MWP) and Little Ice Age (LIA) were cooler than the present (1961-1990 AD, and the MWP was warmer than the LIA over at least three ecoregions in North America. Regional time series from the forest-tundra, boreal, conifer-hardwood forest show positive anomalies up to 0.6 °C during the MWP and up to -0.3 °C during the LIA. The reconstructions from the Southwestern United States, arctic, prairie and mountain vegetation ecoregions are less reliable due to fewer available data. These reconstructed anomalies during the MWP and LIA are significant deviations from the long-term neoglacial cooling. There is evidence for a poleward shift of the summer Subtropical High Pressure system in the North Atlantic during the MWP. This reconstruction provides important insight into the climate for large regions of North America during the MWP which is precisely where data and reconstructions are needed to better understand the geographical extent of the climate anomalies of this time period. These pollen-based reconstructions are comparable to those based on tree-rings.