

CHARACTERIZING REKAVIKURVATN LAKE SEDIMENT: INVESTIGATING THE MIGRATION OF THE LATE-HOLOCENE POLAR FRONT

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Under ever-mounting concerns about effects of climate change, geoscientists often turn to past climates to better understand and predict future conditions. One fairly novel approach is to study the migration of ocean currents in regions of convergence, such as where the cold, low saline, polar East Greenland Current meets the warm, saline, subtropical Irminger Current. The intersection of these currents marks the Polar Front, which plays an important role in North Atlantic climate and global deep-water circulation. The position of this Front has migrated over time. Front migration can be observed in the sediment record of a back-barrier lake, Rekavikurvavn, in northwest Iceland. It is ideally situated for investigating these two currents as a result of frequent marine incursions over the barrier. Each current brings with it very a different climate regime: cold, ice-marginal conditions accompany the East Greenland Current, while warm, temperate conditions accompany the Irminger Current. These different regimes would be identifiable in Rekavikurvavn's sediment record. A lake core with deposits representing over 5000 years of environmental change could thus reveal repeated migrations of the Polar Front across the lake. We propose to use down-core lake sediment and pore water geochemistry (conductivity, major/minor cation proportions), foraminifera species identifications and counts, and ^{210}Pb dates to identify periods when the Polar Water Front was dominantly north versus south of the lake site. An in-depth analysis of the marine influences on lake sediments contributes major insights in our understanding of climate variability in the Northern Hemisphere.