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Sea surface temperature variability of the Labrador Current over the last 2000 years

M.-A. Sicre (1), K. Weckström (2), M.-S. Seidenkrantz (3), A. Kuijpers (4), M. Benetti (5), G. Massé (5), U. Ezat (1), S. Schmidt (6), and I. Bouloubassi (5)

(1) CNRS, Laboratoire des Sciences du Climat et de l'Environnement, Gif-sur-Yvette Cedex, France (marie-alexandrine.sicre@lsce.ipsl.fr, +33-(0)1-69823568), (2) GEUS, Department of Marine Geology and Glaciology, Copenhagen, Denmark, (3) Center for Past Climate Studies, Department of Earth Sciences, Aarhus University, Aarhus, Denmark, (4) Geological Survey of Denmark and Greenland, Copenhagen, Denmark, (5) LOCEAN, Université Pierre et Marie Curie, Paris, France, (6) EPOC, Université de Bordeaux 1, Talence, France

This study presents the first sub-decadal scale sea-surface temperature (SSTs) time-series derived from alkenone paleothermometry, covering the last 2000-year ocean temperature history of the the Labrador Sea region. The records obtained from two sites off Newfoundland document SST variations in a climatically crucial component of the Western North Atlantic circulation system, the southernmost Labrador Current (LC). This boundary current is a major conduit of cold and ice loaded fresh waters originating from the Arctic, which has a major impact on climate in the entire North Atlantic region. Our results demonstrate a clear link between the LC strength and the Northern Annular Mode (NAM), supporting the idea of a more persistent +NAM system and stronger LC during the Medieval Climate Anomaly (MCA). They also suggest enhanced LC activity under future warming with major implications for global thermohaline circulation.