



Deuterium excess in the Lomonosovfonna ice core, Svalbard: a proxy for past temperature changes in the North Atlantic

D. Divine (1,2), E. Isaksson (1), H. Meijer (3), R. S. W. van de Wal (4), T. Martma (5), V. Pohjola (6), B. Sjogren(6) and F. Godtliebsen (1,2)

(1) Norwegian Polar Institute, Tromsø, Norway, (dmitry.divine@npolar.no / +47-77750557)

(2) University of Tromsø, Tromsø, Norway,

(3) Centre for Isotope Research, Groningen, The Netherland,

(4) Institute for Marine and Atmospheric Research, Utrecht, The Netherlands,

(5) Institute of Geology at Tallinn Technical University, Tallinn, Estonia,

(6) Department of Earth Sciences, Uppsala University, Uppsala, Sweden

In this paper we will present a deuterium excess record from an ice core drilled on a small Arctic ice cap in Svalbard in 1997. The core site is located at Lomonosovfonna at 1250 m asl and the analyzed time-series spans the period 1400-1990. The record shows pronounced multidecadal to centennial scale variations coherent with sea surface temperature changes registered in the middle latitude North Atlantic during the instrumental period. Comparison of deuterium excess variations with past climate reconstructions for the North Atlantic and Europe and with Lomonosovfonna chemistry data shows that the record captures major climate transitions of the past 600 years. It is argued that in spite of the overall oceanic warming and retreating sea ice in the Nordic Seas, a contribution of isotopically cold local moisture sources to Lomonosovfonna precipitation budget is still insufficient to interfere with isotopic signal from the primary moisture region in the North Atlantic.