



## **The Climate and Evolution of the Greenland Ice Sheet during the Holocene**

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By comparing water stable isotope data ( $\delta^{18}\text{O}$ ) from ice cores drilled on the Greenland ice sheet (GIS), to ice core data from cores drilled on small ice caps near the margins of GIS, it is possible to extract both the Holocene Greenland temperature history and the evolution of GIS surface elevation at four GIS locations. The results are corroborated by ice core air content, a proxy for surface elevation. Contrary to existing temperature estimates derived from GIS ice core stable isotope records only, the new temperature history reveals a pronounced Greenland Holocene climatic optimum coinciding with maximum thinning near the GIS margins. State of the art ice sheet models are generally found to be lacking in their ability to reproduce GIS response to the Holocene climate.

### Reference:

Vinther, B.M, Buchardt, S.L., Clausen, H.B., Dahl-Jensen, D., Johnsen, S.J., Fisher, D.A., Koerner, R.M., Raynaud, D., Lipenkov, V., Andersen, K.K, Blunier, T., Rasmussen, S.O., Steffensen, J.P., Svensson, A.M., Holocene thinning of the Greenland ice sheet, *Nature*, 461, 385-388, 2009.