



## **Slow retreat of a land based sector of the West Greenland Ice Sheet during the Holocene Thermal Maximum: evidence from threshold lakes at Paakitsoq**

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The Holocene Thermal Maximum (HTM) is the most recent analogue for future warming in the Arctic and therefore it is of particular interest to investigate how the Greenland Ice Sheet responded during this period. The primary objective of this study is to elucidate the sensitivity of the western Greenland Ice Sheet to climate change by testing if the Paakitsoq land-terminating margin responded synchronously with nearby Jakobshavn Isbræ during the Holocene. Records from two proglacial-threshold lakes fed by the Paakitsoq ice margin (Lake Lo and Lake 187) provide information regarding ice margin position and paleoclimate conditions. The radiocarbon-dated sediment cores indicate that the lakes became non-glacial after 5.4 cal ka BP, which suggests that the Paakitsoq ice margin retreated inland approximately two thousand years after Jakobshavn Isbræ (Young et al., 2011) and after initial deglaciation of these two lake basins. Finally, the Paakitsoq ice margin remained inland until  $240 \pm 23$  cal yrs BP, when both Paakitsoq and Jakobshavn reached late Holocene maxima late during the Little Ice Age. Our results suggest that the present ice margin position at Paakitsoq is relatively stable in a warming climate but after a total retreat of  $\sim 1.5$  km behind the present marginal position it may become marine based and more unstable due to submarine melting and calving processes.