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High resolution alkenone sea surface temperature variability on the north Icelandic shelf: implications for Nordic Seas paleoclimatic development during the Holocene

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The palaeoceanography of the Icelandic shelf for the Holocene period was reconstructed from alkenone indices measured in core JR51-GC35 collected north of Iceland. This contains a continuous record of Holocene sedimentation spanning 0 - 10.2 cal kyr BP with a resolution of ˜ 48 cm/kyr. Superimposed on a general Holocene cooling trend millennial scale oscillations of $>2°C$ were identified. The timing of the oscillations was in close agreement with the timing of glacier advances in northern Iceland. There is a correlation for the later half of the Holocene between the UK37-SST record from JR51-GC35 and proxy data for the strength of North Atlantic deep water formation recorded in cores NEAP 15K (56ž21.92'N, 27ž48.68'W) and ODP 980 (55žN, 15žW) which suggests a close connection between N. Icelandic sea surface temperatures and North Atlantic meridonal overturning circulation in the late Holocene. A comparison of the UK37-SST records from JR51-GC35 and a published core from the eastern Nordic Seas (MD952011) shows antiphasing (superimposed on the general trend) in the timing of millennial scale climate events. This confirms that Holocene climate evolution in the Nordic Seas was complex, with significant climatic differences between the eastern and western Nordic Seas including millennial scale differential variability of the Irminger and Norwegian Currents.