

Fluctuations of the Scandinavian Ice Sheet during Bølling-Younger Dryas were very different in Western Norway compared with Sweden-Finland

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Distinct Younger Dryas (YD) moraines are mapped more-or-less continuously around the entire Scandinavian Ice Sheet. In most areas there is no evidence to suggest that a major glacial re-advance took place during the YD. In contrast we here present 90 radiocarbon dates from 35 different sites that were overrun by a major ice sheet advance in the area between Hardangerfjorden and Sognefjorden, SW Norway. The re-growth commenced during the Allerød interstadial and expanded along 600-800 m deep fjords reaching a thickness of up to 2000 m during the YD. We present time-distance diagrams for two lobes; for both the outermost coast became ice free close to 15 cal ka BP, i.e. at the onset of the Bølling. Both lobes reached their most retreated position before re-advancing at 13.5-13.0 ka and obtained their maximum extent at the Herdla-Halsnøy moraines at the very end of the YD, at 11.5 ka. The late culmination of the advance is accurately dated and differs from most of the Scandinavian Ice Sheet margin where the maximum was reached during early or middle YD. The Herdla-Halsnøy moraines are located only shortly inland of Bølling the ice-margin position, again contrasting eastern parts of the ice sheet.