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The Eurasian Ice Sheet and the deglaciation of western Norway

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New time-slice reconstructions of the Eurasian Ice Sheet limits reveal that the timing of both the maximum ice sheet extent and the subsequent retreat were spatially variable. This variability most likely reflects regional contrasts in geographic setting, internal ice sheet dynamics and the forcing mechanisms. Here we report fresh results from an ongoing field campaign in southern Norway. The inferred ice sheet history is based on a number of radiocarbon dates from various geological contexts as well cosmogenic nuclide (CN) dating of glacially transported boulders. We discuss the ice-recession along the western flank of the Scandinavian Ice Sheet since the Last Glacial Maximum (LGM) and until the final deglaciation of the fjords. One important conclusion is that the ice stream that occupied the Norwegian Trough, and that was active during the LGM, broke up extremely rapid at around 20 ka leaving the islands Utsira and Karmøy permanently ice free. The adjacent areas of the Norwegian mainland remained ice covered for another 4 thousand years until about 16 ka when the ice margin along the coast gradually started to retreat eastwards. However, this second stage of ice sheet retreat was interrupted by several re-advances. The largest advance probably peaked at the very end of the Younger Dryas stadial (11.6 ka) forming a system of prominent end moraines along the coast. The outlet glaciers that filled the main fjord troughs during this event started to break up very rapidly by means of calving at the onset of the Holocene warming, evidently a climatic response. The main fjords became totally ice free not later than 500 years into the Holocene, and a thousand years later the remaining part of the ice sheet was gone. It is calculated that the melting during the early Holocene (11.6-10.0 ka) was more than ten times faster than at Greenland today.