



Subglacial Deformation of Late Weichselian Fjord Sediments; Evidence from Nordfjord Western Norway

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High-resolution TOPAS profiles from fjord basins on the west coast of Norway reveal the existence of up to 80 metres thick well-laminated sediment units characterised by small-offset faults. The fjord studied is the 100 km long and up to 3 km wide, E-W oriented Nordfjord system that at most is 580 metres deep. Four larger sediment basins have been identified, and the deformation observed is restricted to the two innermost fjord basins inside the Younger Dryas end moraine, identified on land around Nordfjord. The offsets of the faults observed are in the range of 3-5 metres, and the most prominent features are found along the basin edges. In both basins, the faults cut through the entire laminated unit, which were deposited during the last deglaciation of the region; initiated at c. 12.8 ¹⁴C ka BP. We do not observe other deformation features within the fjord system. Above the laminated sediments an almost 10 metres thick transparent sequence are identified, which we associate with the Younger Dryas event; an ice readvance between c. 11 and 10 ¹⁴C ka BP. Thus, the strong relationship between deformed sediments and the Younger Dryas ice advance make us suggest that the grounded Younger Dryas ice sheet, over a rather short period of time, induced stress in the laminated sediments promoting favourable conditions for subglacial deformation to occur.