



3D Seismic geomorphology of ice stream imprints the Northern North Sea since 1.1 Ma

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This project used a regionally merged (c. 30,000 km², 50 m bin spacing) 'megasurvey' 3D seismic dataset to investigate the spatial and temporal dynamics of ice streaming within the Northern North Sea during the Quaternary. The study area includes the Norwegian Channel, a large cross-shelf trough stretching 800 km along the western coast of Norway. The base of the trough is marked by a major regional unconformity known as the 'URU'. The origins of this enigmatic feature are still debated. The stratigraphic succession resting above the URU and making up the fill of the cross-shelf trough consist of relatively flat-lying alternating, glacial and glacio-marine units of Quaternary age. The Norwegian Channel fill offers some of the best preserved records of Quaternary glaciations in the North Sea. 3D seismic mapping of the major glacial erosion surfaces within the Norwegian Channel has provided evidence for repeated episodes of ice stream activity within the channel since 1.1 Ma. The study offers an insight into the spatio-temporal variability in ice stream dynamics reflected in the diverse range of orientations of mega-scale glacial lineations and morphologies preserved in tills interpreted to record the Fedje (1.1 Ma), Elsterian (MIS 12-10), Saalian (MIS 8-6) and Weichselian (MIS 3-2) glaciations. Seismic images also reveal an extensive system of braided channels eroded into the URU which may provide evidence for the 'unzipping' of an ice sheet during a glacial retreat prior to 1.1 Ma.