



Rapid glacial sedimentation on the North Sea Fan - an important factor for explaining a long slide history

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In the last 0.5 Ma the North Sea Fan (NSF) experienced megaslides after several of the major glacial stages. Megaslides are a common feature on formerly glaciated continental margins (e.g. the Storegga Slide on the Norwegian margin), and it has been suggested that one of the main factors behind such megaslides has been rapid deposition of glacial material on the continental slope, causing oversteepening and excess pore pressures. We have used high-resolution seismic and core data to study the NSF located on the continental slope at the outlet of the Norwegian Channel, northern North Sea. By mapping the volume of material deposited on the NSF (800 km³) during a well-constrained period of time (1000 yrs) at the end of the last glacial maximum, we find that the fan received 1.1 Gt of glacial material per year. This material was shifted across the shelf break along the approximately 100 km wide front of the Norwegian Channel Ice Stream, and the flux is comparable to the present sediment flux from the world's largest rivers. The output during this last depositional episode was maintained for approximately 1000 years (20-19 ka cal. BP). The high flux suggests that pore pressure was significantly raised in the sediment and peaked at the end of the depositional episode, which is compatible with the general picture of megaslides occurring after major glacial stages.