



Thin-skinned and giant submarine landslides on the southern Storfjorden Trough Mouth Fan (western Barents Sea)

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Several submarine landslides were identified on the Storfjorden Trough Mouth Fan (TMF) southwest of Svalbard archipelago during two recent research cruises carried out within the International Polar Year (IPY). The Spanish SVAIS and the Italian EGLACOM cruises, respectively in the summer of 2007 and of 2008, both contributed to IPY Activity 367 NICE-STREAMS (Neogene ice streams and sedimentary processes on high-latitude continental margins) aimed at understanding erosion and depositional systems associated with ice streams.

Thin-skinned, shallow (relatively recent) landslides, visible on both swath bathymetry data and on sub-bottom and multichannel seismic reflection profiles, are made up by elongated, more or less sharp-edged, depressions developed downslope of the head scars, which lie on the upper-middle continental slope.

Giant paleo-landslides, detected only on multichannel seismic reflection profiles, are characterized by thick (up to over 200 ms thick) chaotic deposits on the lower part of the continental slope.

Both modern and paleo landslides are mainly found in the southern part of the Storfjorden TMF, towards the northern border of the Kveithola TMF. This area is characterized by the presence of the large INBIS deep-sea channel system. Channels are very rare along the Svalbard-Norwegian margin and limited to just two areas (INBIS and Lofoten Basin channels) within over 2,000 km of the margin's length. In addition this area is located at the boundary between two adjacent paleo-ice-streams (Storfjorden and Kveithola). The coincident presence of landslides, channels and ice-stream boundary suggests to us a common controlling factor, which may be associated to the abundance of basal meltwater beneath the ice-sheet. This is also a known key factor that controls ice-streams flowing velocity and for the inception of mass-movements and/or genesis of landslides.