Geophysical Research Abstracts
Vol. 20, EGU2018-13999, 2018
EGU General Assembly 2018

Late Pliocene to early Pleistocene Giant mass transport deposits along Svalbard Continental Margin

Rieka Harders (1), César R. Ranero (1), Angelo Camerlenghi (1), and Michele Rebesco (1)

(1) Universitat de Barcelona, Geologia, Geodinamica i Geofisica, Spain (riekaharders@gmx.de), (2) Barcelona Center for Subsurface Imaging (Barcelona-CSI), ICREA at CSIC, Barcelona, Spain, (3) OGS, Sgonico, TS, Italy

Along North Atlantic margins, high accumulation rates on the slope during the period of full glaciation, or deglaciation, and geological processes related to the associated sea-level-rise, had been linked to higher frequency of large-giant submarine mass wasting phenomena. Most reported large submarine slides from glaciated margins date to times during middle-late Pleistocene and Holocene, and have been often linked to the reasonably well understood timing of the high glaciation or deglaciation there. However, recent statistical analysis of the well dated events have cast doubts on the validity of the assumption that submarine slide frequency depends on processes associated to sea level changes and/ or on high accumulation rates.

To study submarine sediment dynamic processes in the north Atlantic, we re-processed about 1000km of multichannel seismic reflection data from the continental slope offshore south-west Svalbard that extend into the deep water basin bounded by Knipovich ridge. The new seismic images mapped the proximal and distal parts of very large submarine MTDs. Internally these MTDs show complex features such as inclined bedding and faulting. These deep and up to 1km thick MTDs can be correlated 300km along slope by seismic profiles of up to160km length. Comparisons to former findings in the same area indicate that their size needs to be reconsidered at least as twice as large as previous estimations. These giant large mass wasting deposits (MTDs) indicate a Plio- to early Pleistocene age of 2.7 to 2.1Ma, which is well before high glaciation or de-glaciation times. Similar large MTDs reported from offshore Norway in the southern Barents Sea occurred somewhat later but we propose that a similar geological process may have caused all of them, since they appear to share downslope transport mechanism. Our current hypothesis is that they are all associated to a growing ice shield at the beginning of the last Northern Hemisphere glaciation.