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Slope Instability following the Hinlopen/Yermak Megaslide north of Svalbard, Arctic Ocean

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Pre-slide slope configuration is a heavily discussed topic for the evaluation of future slope failures. Post-slide slope stability has been investigated on slopes with slide complexes to assess recurrence times of failure elsewhere, meaning 'after the slide is before the slide'. However, the identification of potential pre-slide indications of future slope failure remains highly interesting.
An enormous slope failure (2.400 km^3) occurred north of Svalbard 30.000 years ago and removed most of the Hinlopen Trough Mouth Fan (TMF). Following this Hinlopen/Yermak Megaslide, the adjacent slopes developed several failure types as consequence of the partial removal of the Hinlopen TMF. The eastern slope is characterised by a number of decollements that facilitate large-scale gravity-driven mass displacement. The processes involved include deformation along defined horizons (detachments) at apparent slow speed and creeping within less consolidated sediments. This soft sediment deformation generated turbulent structures like folds. The creeping sediments cover partly the eastern main slide debris of the megaslide within Sophia Basin. The speed of this gravity-driven mass transport can roughly be assessed by the time interval between megaslide and today. Tentative acoustic correlation of the underlain sedimentary sequence points to post-LGM age. The absence of younger undeformed sediments ontop may indicate a recent process. These slow slope failures may switch into fast ones like slides (e.g. following seismic excitation) as documented along the eastern slope and headwalls.