



Two decades of Jakobshavn Isbrae Acceleration and Thinning Interrupted as Ocean Cools

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Jakobshavn Isbrae has been the single largest source of mass loss from the Greenland Ice Sheet over the last 20 years. During that time, it has been retreating, accelerating, and thinning. Here we show that since 2016 Jakobshavn has been re-advancing, slowing and thickening. We link these changes to concurrent cooling of ocean waters in Disko Bay that spill over into Ilulissat Icefjord. Ocean temperatures in the Bay's upper 250 m have cooled to levels not seen since the mid 1980s. Observations and modeling trace the origins of this cooling to anomalous wintertime heat loss in the boundary current that circulates around the southern half of Greenland. Longer time series of ocean temperature, subglacial discharge and glacier variability strongly suggest that ocean-induced melting at the front has continued to influence glacier dynamics after the disintegration of its floating tongue in 2003. We conclude that projections of Jakobshavn's future contribution to sea level rise that are based on glacier geometry are insufficient, and that accounting for external forcing is indispensable.