



## **Modeling the retreat of the Jakobshavn Glacier from the LIA and into the future**

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Many marine-terminating glaciers on Greenland have experienced rapid retreat and acceleration during the last decades, coinciding with increased air and ocean temperatures. Destabilized marine-terminating glaciers have been capable of discharging vast amounts of ice into the ocean, contributing significantly to sea-level rise. In order to conduct prospective simulations of the glaciers' development and their future contribution to sea-level rise, it is crucial to understand the dynamics and triggers of the past retreat, as well as the relative importance of the external forcing versus fjord geometry.

Using an idealized numerical flowband model<sup>1,2</sup>, we are able to reproduce the documented retreat of the Jakobshavn Glacier, western Greenland, since the Little Ice Age (LIA). Based on the results from the hindcast experiments, we investigate the relative role of climate forcing and fjord geometry on glacier stability and assess the potential for non-linear retreat in the coming 200 years.

References: [1] Nick et al. 2009, Nature Geoscience, doi:10.1038/ngeo394. [2] Nick et al. 2013, Nature, doi:10.1038/nature12068