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## Multi-decadal tropical-Arctic atmospheric teleconnections and their influences on Greenland Ice Sheet melt

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Despite the contribution of the Greenland Ice Sheet (GrIS) to global sea level rise, the lack of a complete understanding of its driving mechanisms largely constrains future model projections. Brief observational records limit model development efforts, however, the assimilation of paleoclimatic proxy data in climate models provides new opportunities to place recent climate changes in and around the Arctic in the context of long-term high-latitude variability. Building off of previous work, we investigate the relative role of internal atmospheric variability in modulating GrIS surface mass balance (SMB) using the newly available Ensemble Kalman Fitting Paleo-Reanalysis (EKF400) version 2, with monthly resolution for the period 1602-2003 AD, and the Last Millennium Reanalysis (LMR) version 2, which has an annual resolution from 0-2000 AD. We apply maximum covariance and empirical orthogonal function analyses on these two datasets to reveal co-varying patterns of Arctic upper-tropospheric changes and the GrIS SMB over centennial and millennial timescales with a special focus on remote tropical drivers of this local coupling. In light of these tropical-Arctic linkages in shaping GrIS conditions over the past two millennia, the application of proxy-assimilated model experiments provides deeper insights into the formation of such atmospheric dynamical connections that may impact GrIS SMB in the future.

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