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Supplementary Materials for

Decreasing cloud cover drives the recent mass loss on the Greenland Ice Sheet

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This PDF file includes:

Supplementary Materials

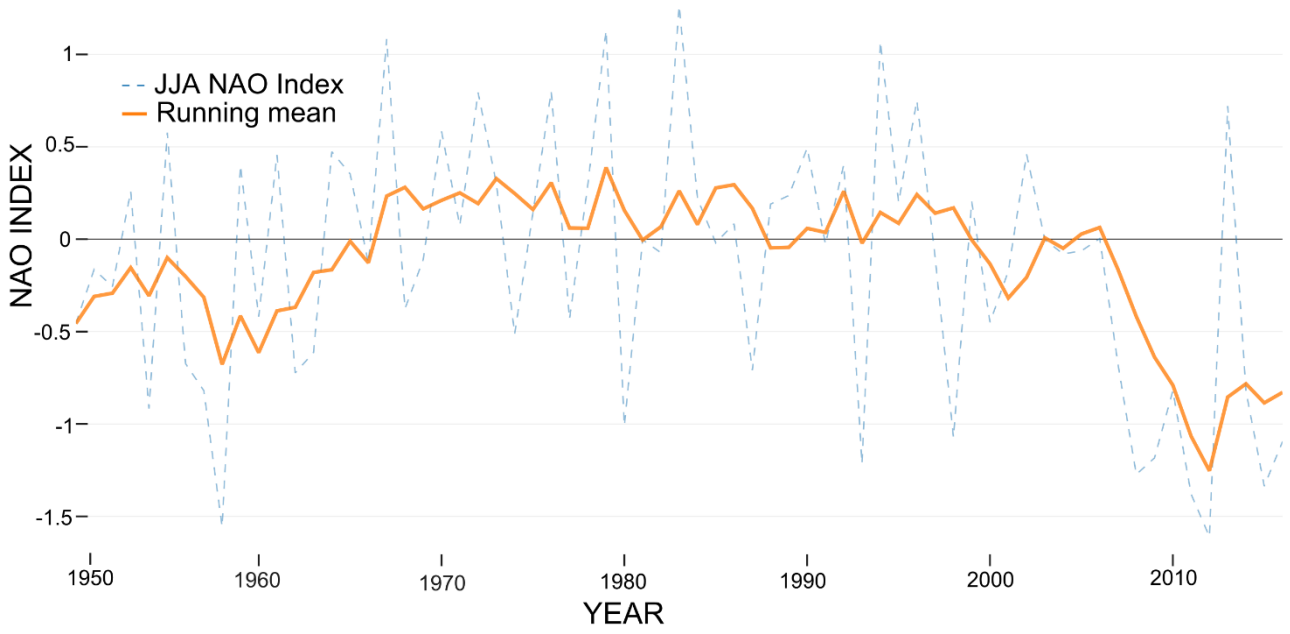

fig. S1. Long-term NAO index from observations on Iceland and the Azores (1950–2016) (*19*). Average JJA NAO index (blue) and 5 year running average (orange) retrieved from observations from the Azores (Ponta Delgada) and Iceland (Reykjavik).

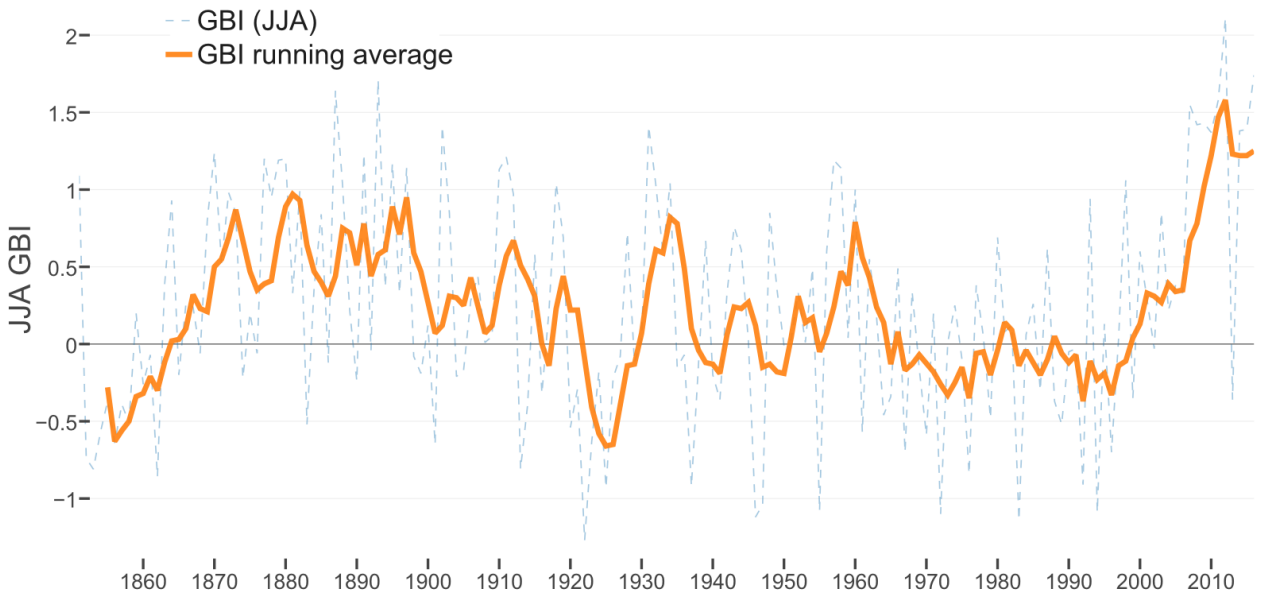

fig. S2. Extended GBI (1850–2016) (*14*). Average JJA GBI from mean 500 hPa geopotential height between 60-80°N and 20-80°W (blue) and 5 year running average GBI (orange).

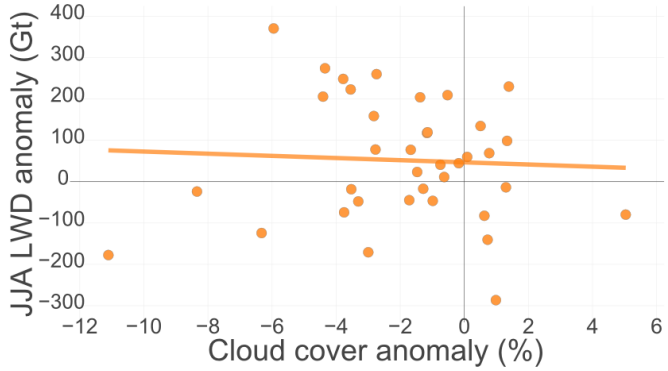

fig. S3. Correlation between JJA cloud cover and LWD anomalies. Scatterplot and linear regression line of JJA cloud cover anomalies (%) and JJA longwave downward anomalies (Gt) (R^2 = 0.003, p = 0.1).

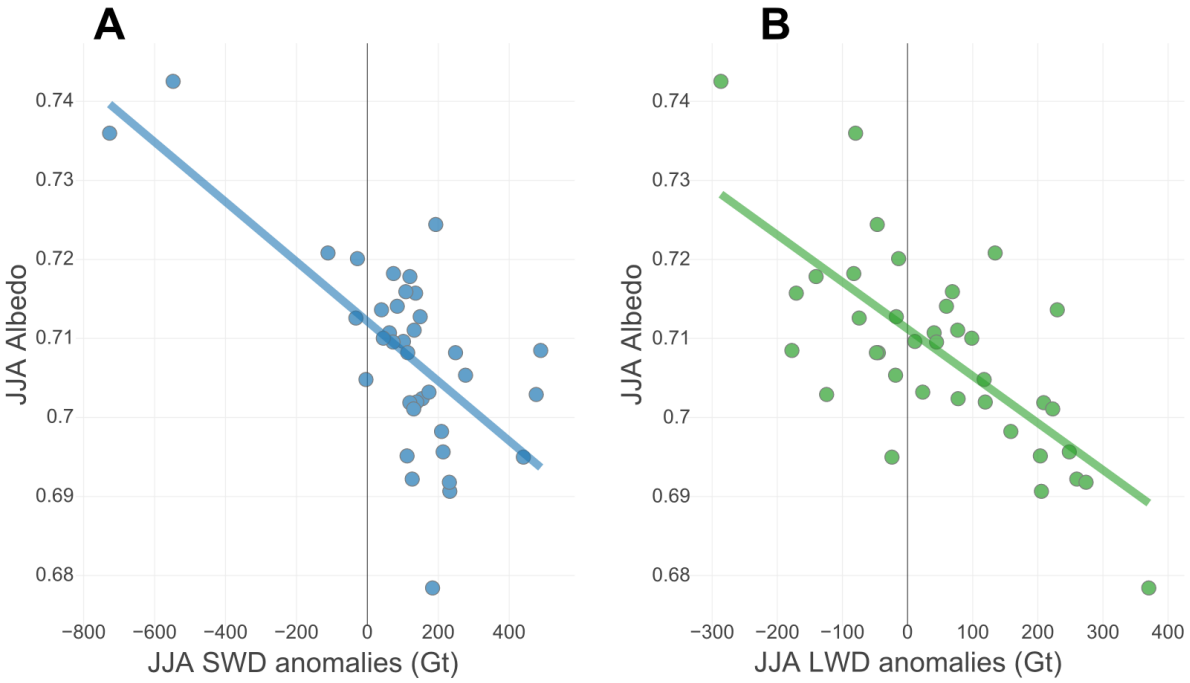

fig. S4. Correlation between summer radiation anomalies and albedo. (**A**), correlation between JJA SWD anomalies since 1979 and GrIS summertime albedo (R^2 = 0.46, p < 0.001), based on the 1970-1995 climatological mean of MAR, (**B**), same as **A**) but showing JJA LWD anomalies and summertime albedo correlation (R^2 = 0.50, p < 0.001).

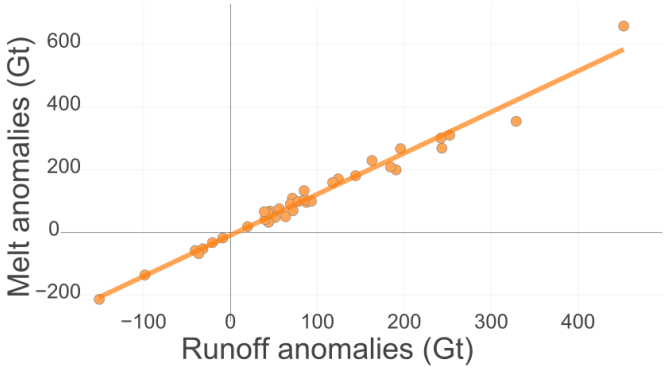

fig. S5. Correlation between annual melt and runoff anomalies. Scatterplot of annual melt anomalies against annual runoff anomalies, based on the 1970-1995 average of MAR (R^2 = 0.98, $p < 0.001$).