Supporting Information for "Improved Understanding of Multicentury Greenland Ice Sheet Response to Strong Warming in the Coupled CESM2-CISM2 with Regional Grid Refinement"

Ziqi Yin[1], Adam R. Herrington[2], Rajashree Tri Datta[1], Aneesh

Subramanian[1], Jan T. M. Lenaerts[1], and Andrew Gettelman[3]

[1]Department of Atmospheric and Oceanic Sciences, University of Colorado Boulder, Boulder, CO, USA

[2]National Center for Atmospheric Research, Boulder, CO, USA

[3]Pacific Northwest National Laboratory, Richland, WA, USA

Contents of this file

1. Figure S1

2. Figure S2

3. Tables S3

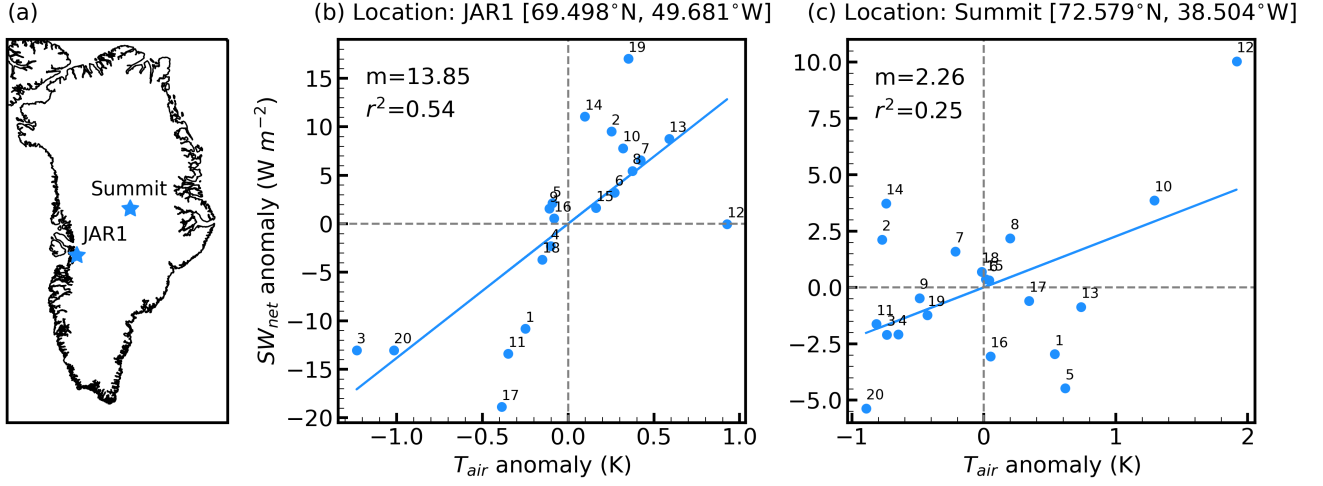———

February 25, 2024, 5:49am

:

Figure S1. Examples of albedo feedback ($W\ m^{-2}\ K^{-1}$) calculated by regression of inter annual anomalies. The locations of the two example GC-Net AWS sites (a), one at the ablation zone (JAR1) and the other at the accumulation zone (Summit). The regression of detrended net shortwave radiation and near-surface air temperature anomalies of the grid cell that contains the JAR1 site (b) and the Summit site (c) during CO_2 stabilization. The slope m represents the albedo feedback value. The numbers over points represent the year number of the 20-year period.
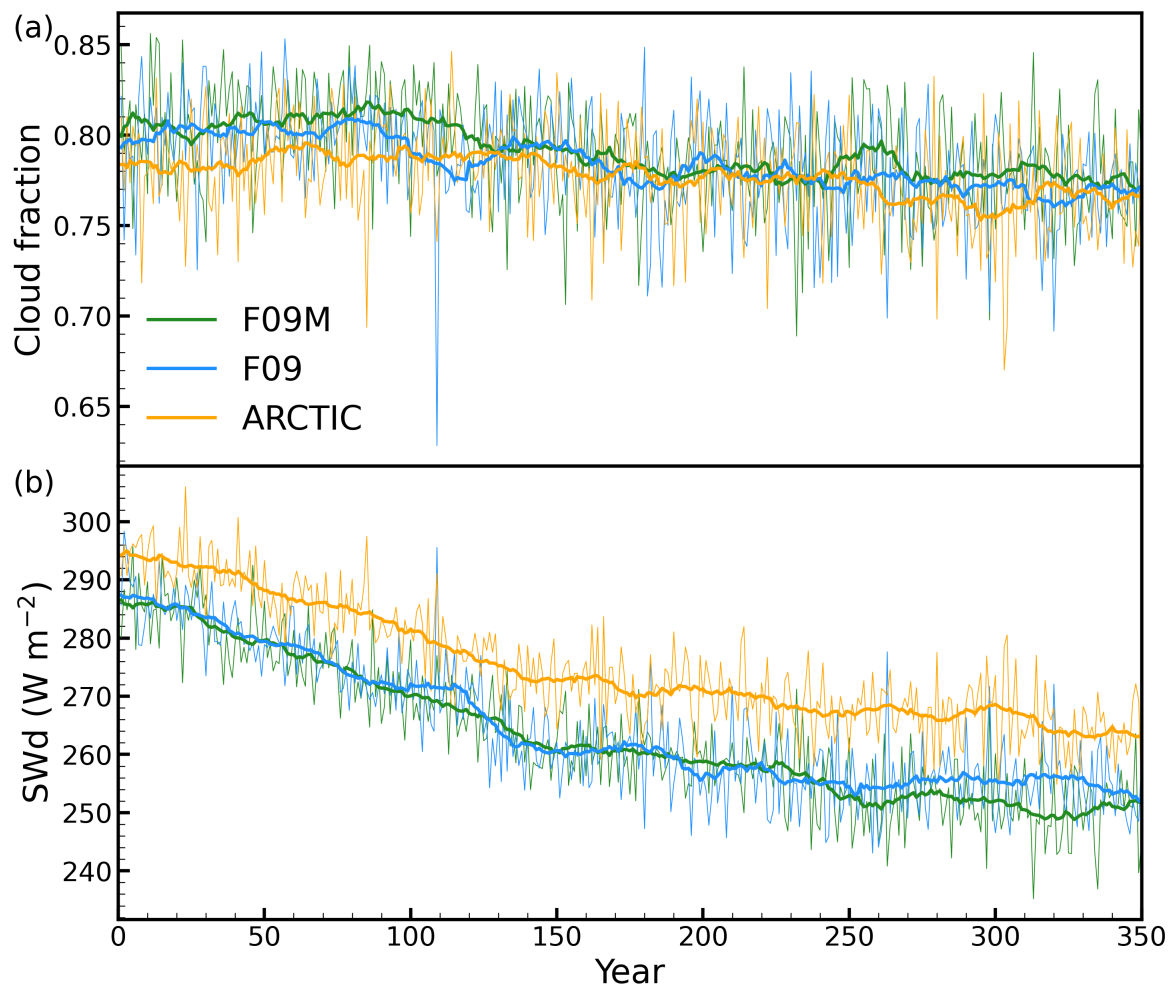
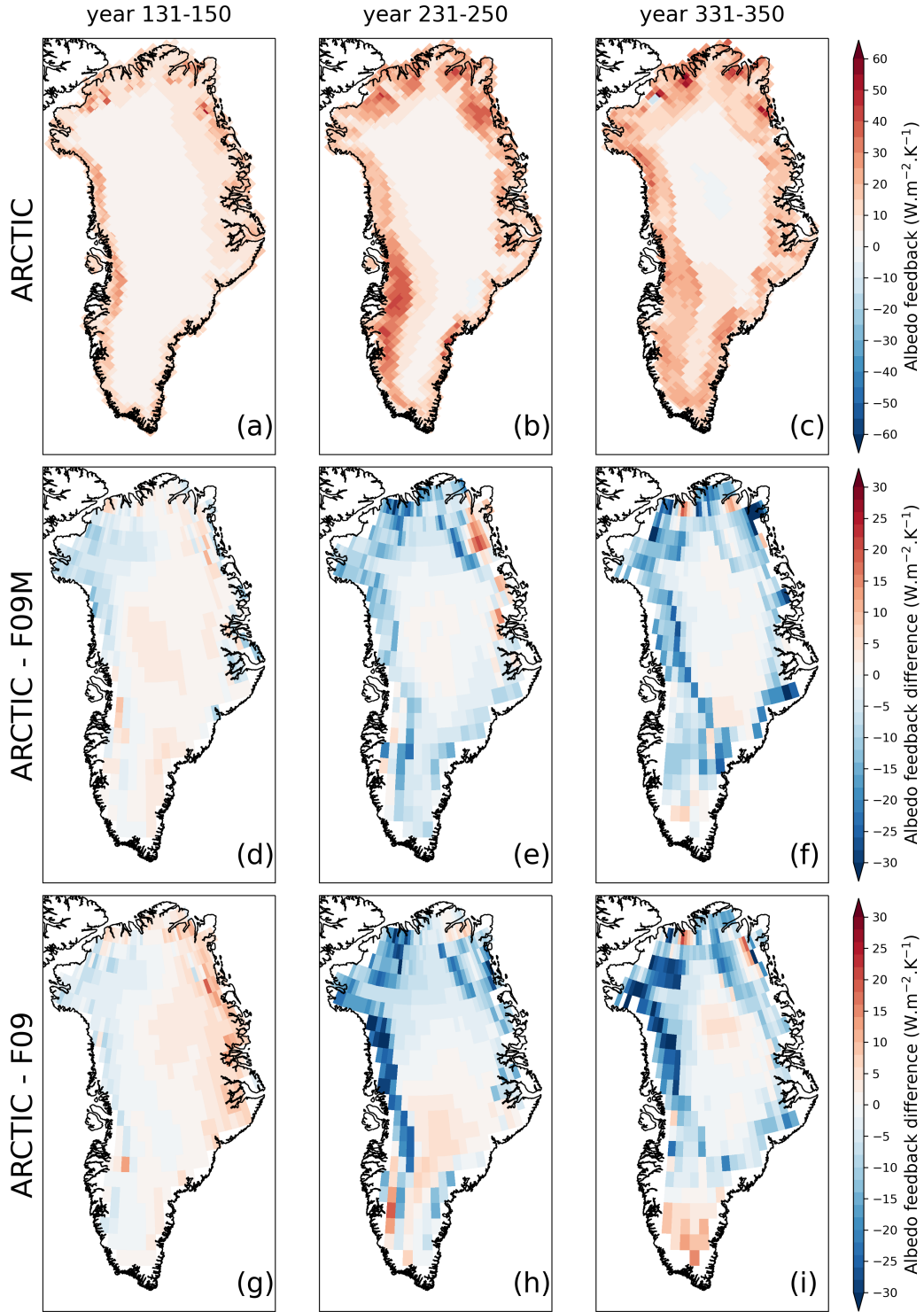**Figure S2.** Evolution of the annual mean GrIS-averaged cloud fraction (a) and downward shortwave radiation (W m^{-2}) (b).

Figure S3. Maps of the albedo feedback (W m^{-2} K^{-1}) defined by $\Delta'SW_n/\Delta'T_{air}$ of `ARCTIC` (a-c), and the difference between `ARCTIC` and `F09M` (d-f), `ARCTIC` and `F09` (g-i). The three columns from left to right represent averaged periods year 131-150, year 231-250, and year 331-350, respectively.