For Polar Climates, Orography Matters

How does the orography of the Antarctic and Greenland ice sheets contribute to their general resistance to greenhouse warming?

Over these high-elevation polar regions, the lapse rate feedback is significantly weaker than over lower-elevation land and ocean at similar latitudes. Furthermore, lowering Antarctic orography increases the lapse rate feedback over the continent.

Ice sheet surface height alters atmospheric vertical structure, coupling to the surrounding ocean and sea ice surface, and overall polar climate sensitivity. And we haven’t even mentioned the effects of meltwater and albedo yet!

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