Interactive comment on "Brief communication: CMIP6 does not suggest any circulation change over Greenland in summer by 2100" *by* Alison Delhasse et al.

Anonymous Referee #1

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major comments Figure 1 illustrates an important result featured in this study.

Do any individual models capture more realistic Greenland blocking temporal patterns, i.e. persistence in extreme Greenland blocking? I see page 4 line 19 "NESM3" is referred to in this regard.

I am of the position that using GCM ensembles is a poor strategy because of destructive interference among models. Rather, one should identify which models among the ensemble simulate the phenomenon in question and then gain insight by focusing on why the more skilfull models contrast with the others. To average all models then drive a message that no models capture observations is therefore disingenuous and misled,

especially when individual models e.g. NESM3 referred to in the study may capture the phenomenon in question?

For robust climatological inferences, 30 year periods are expected. Yet, here presented are 21 year (running) periods. 21 years need be justified.

Why should we expect Greenland blocking index (GBI) to continue trending positive?

Problematic statement. "The Greenland blocking index (GBI), an indicator of the synoptic-scale circulation over Greenland, has been anomalously positive during summers since the late 1990s." Fig 2 does not support that statement. Then there are annual exceptions: 2013, 2018, 2017

How does the study reaches the conclusion "free atmosphere temperature variability fully drives the GB2 changes"?

minor comments io == instead of

Figs 2, 3 "21-year" io "21-years"

page line number

1 9 delete "this" 1 22 define "This" 2 6 "advanced" io "improved" 2 7 "advancements" io "enhancements" 3 1 "Greenland" io "such" 3 3 "CMPIP6" io "these" 3 2 delete "such" 3 3 "until year 2100." 5 10 define "This" 5 18 "more frequent" io "higher" 5 21 "no significant difference between CMIP5 and CMIP6 ensembles." 5 25 rather than the vague "often", state a frequency of melt cases above say 1 standard deviation of a 30 year period 5 10 define "This" 5 31 define "This" 5 30 "by the CMIP6 model ensemble," 6 2 "doubling of the surface melt increase of the Greenland ice sheet." by 2100? 6 3 delete "distinct" 6 5 define "these" 6 6 "global climate models" 6 7 define "these changes"