

Figures and Tables for Reply on RC2 for EGUSPHERE-2023-2741

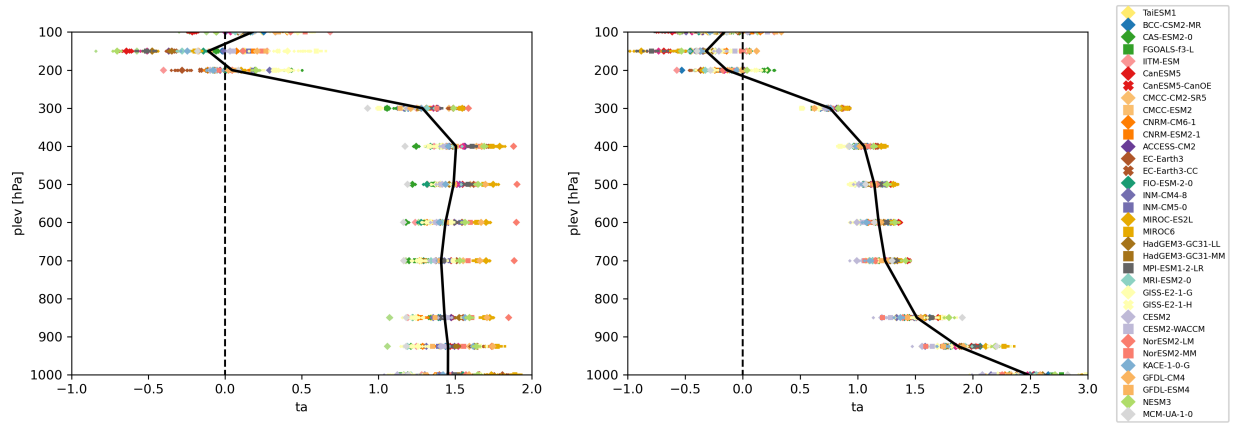


Figure 1: (left) summer (May to October) and (right) winter (November to April) temperature change, averaged over the Arctic region (poleward of 55°N) and normalized by the global and annual-mean 2-m temperature change, for a large ensemble of CMIP6 models (unit: [K K⁻¹]). Both panels compare the climatology of the 2070-2099 period in the SSP5-8.5 scenario with the 1985-2014 period in the historical experiment. The solid black line shows the multi-model mean values.

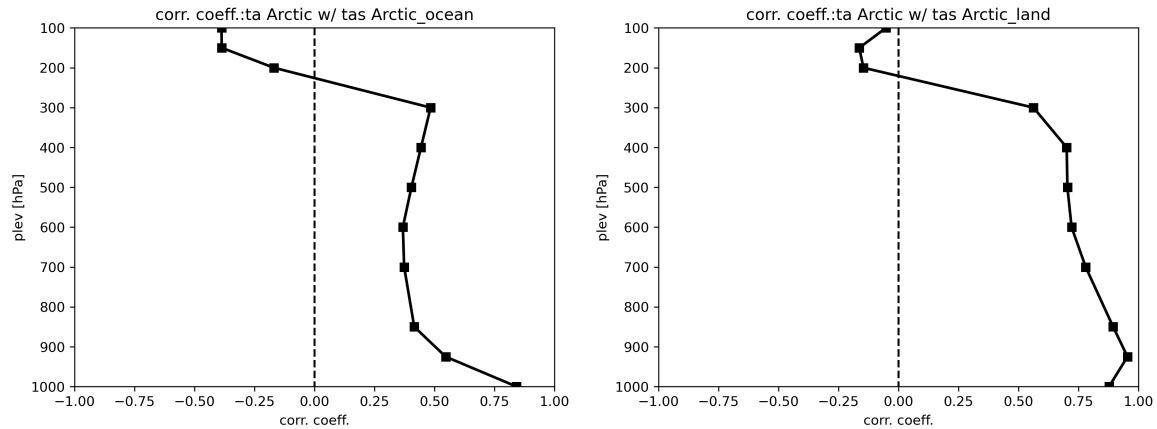


Figure 2: Correlation coefficient of temperature averaged over the Arctic with Arctic 2-m temperature over (left) ocean regions only and (right) land regions only.

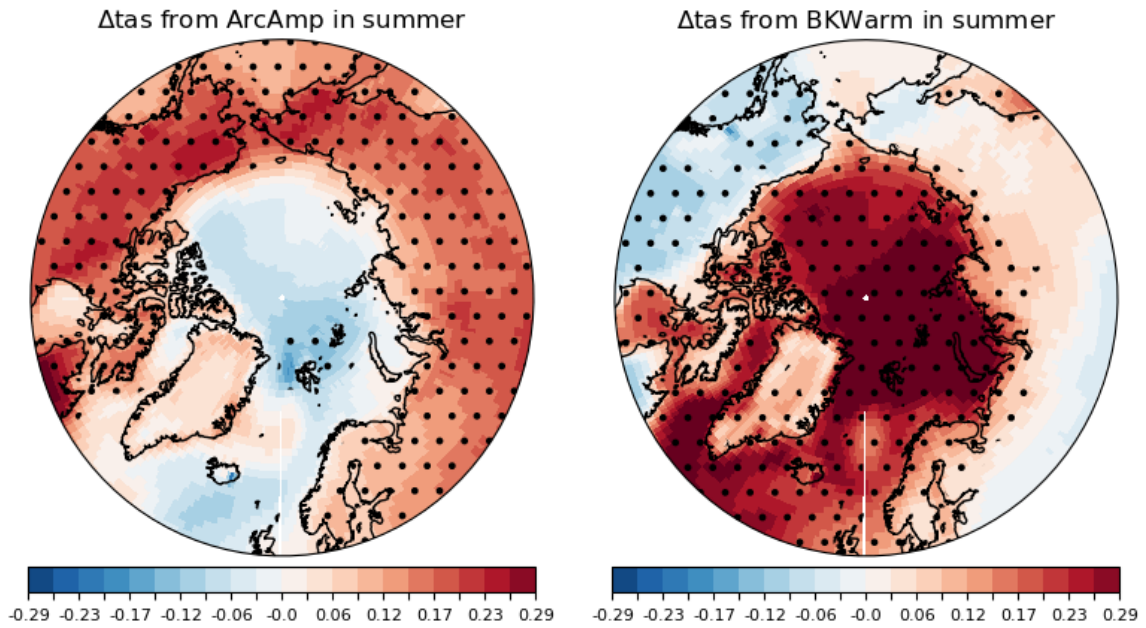


Figure 3: Response coefficient of 2-m temperature to (left) Arctic atmospheric warming and (right) BK seas warming, in summer. Note the lack of overlap in the climate response between land and ocean regions in their response to both predictors.

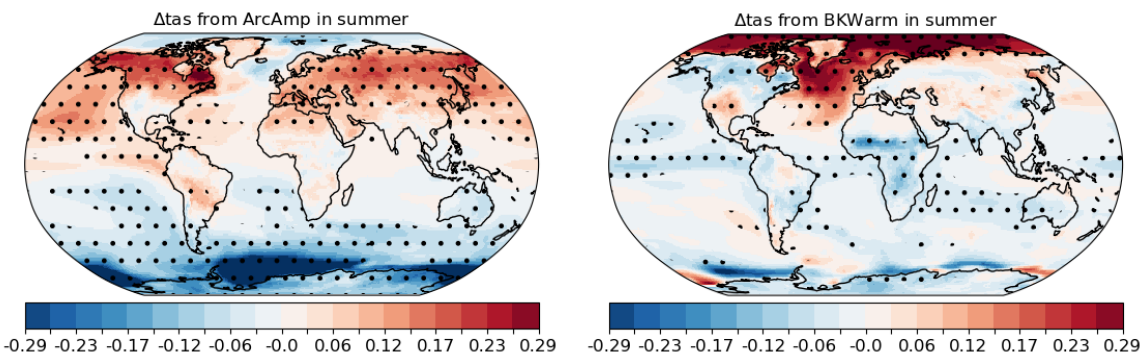


Figure 4: Response coefficient of 2-m temperature to (left) Barents-Kara seas warming (BKWarm) and (right) Arctic atmospheric warming (ArcAmp), in the summer season (May to October) (units: $K K^{-1}$).

	1000 hPa	925 hPa	850 hPa	700 hPa	600 hPa	500 hPa
Explained variance	0.50	0.58	0.56	0.50	0.48	0.48
Predictors Correlation	0.55	0.29	0.16	0.14	0.16	0.22

Table 1: (top row) Explained variance for the 2-m air temperature over the Arctic by the multivariate linear regression model, using BKWarm and ArcAmp as predictors, for various evaluation levels of ArcAmp. (bottom row) Correlation R^2 of BKWarm with ArcAmp, for various levels of evaluation of ArcAmp (columns) ranging from the lowest model level (1000 hPa; leftmost column) to the mid-troposphere (500 hPa; rightmost column).

	Barents-Kara	Central Arctic	North Atlantic
Explained variance	0.56	0.51	0.52
Predictors Correlation	0.16	0.13	0.12

Table 2: same as Table 1 but using various oceanic regions for our 'BKWarm' predictor: Barents-Kara sea (left column; [65°N, 80°N, 26°E, 95°E]; ocean only), Central Arctic ocean (middle column; [70°N, 90°N, 180°W, 180°E]; ocean only), North Atlantic ocean (right column; [45°N, 60°N, 70°W, 0°]; ocean only).