Supporting Information for: Constraining Future Shifts in the Austral Jet Stream by Process-oriented Multiple Diagnostic Regression of CMIP5 Models

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The figures in the Supporting Information show the results for the individual diagnostics listed in Table 1 for all models listed in Table 2. In addition, they show the observations or reanalysis data that are used to constrain the projections. This supporting information thus provides a process-oriented evaluation of the representation of the austral jet stream in the CMIP5 ensemble.
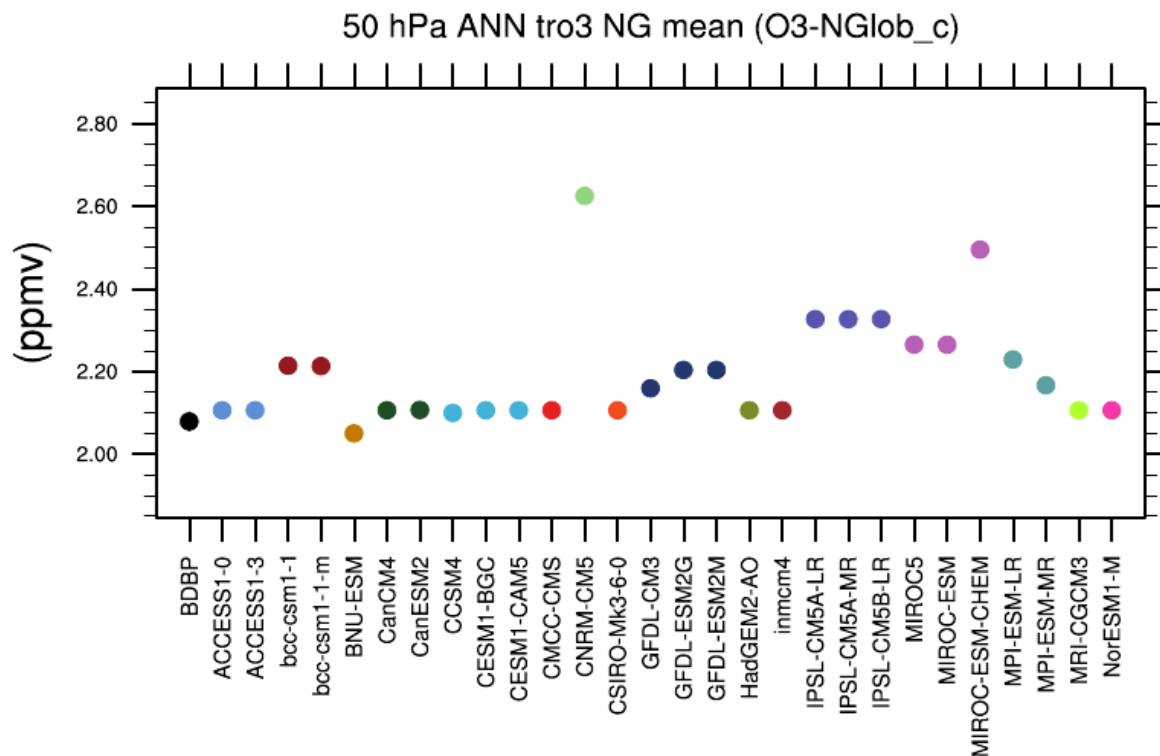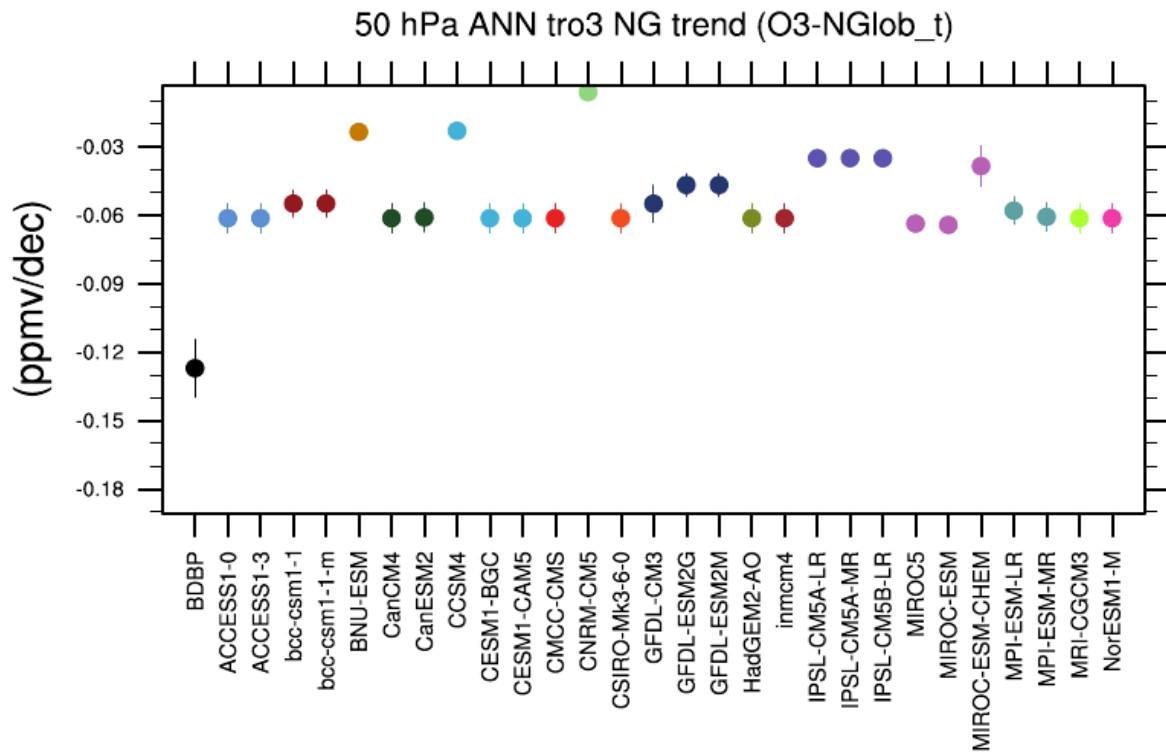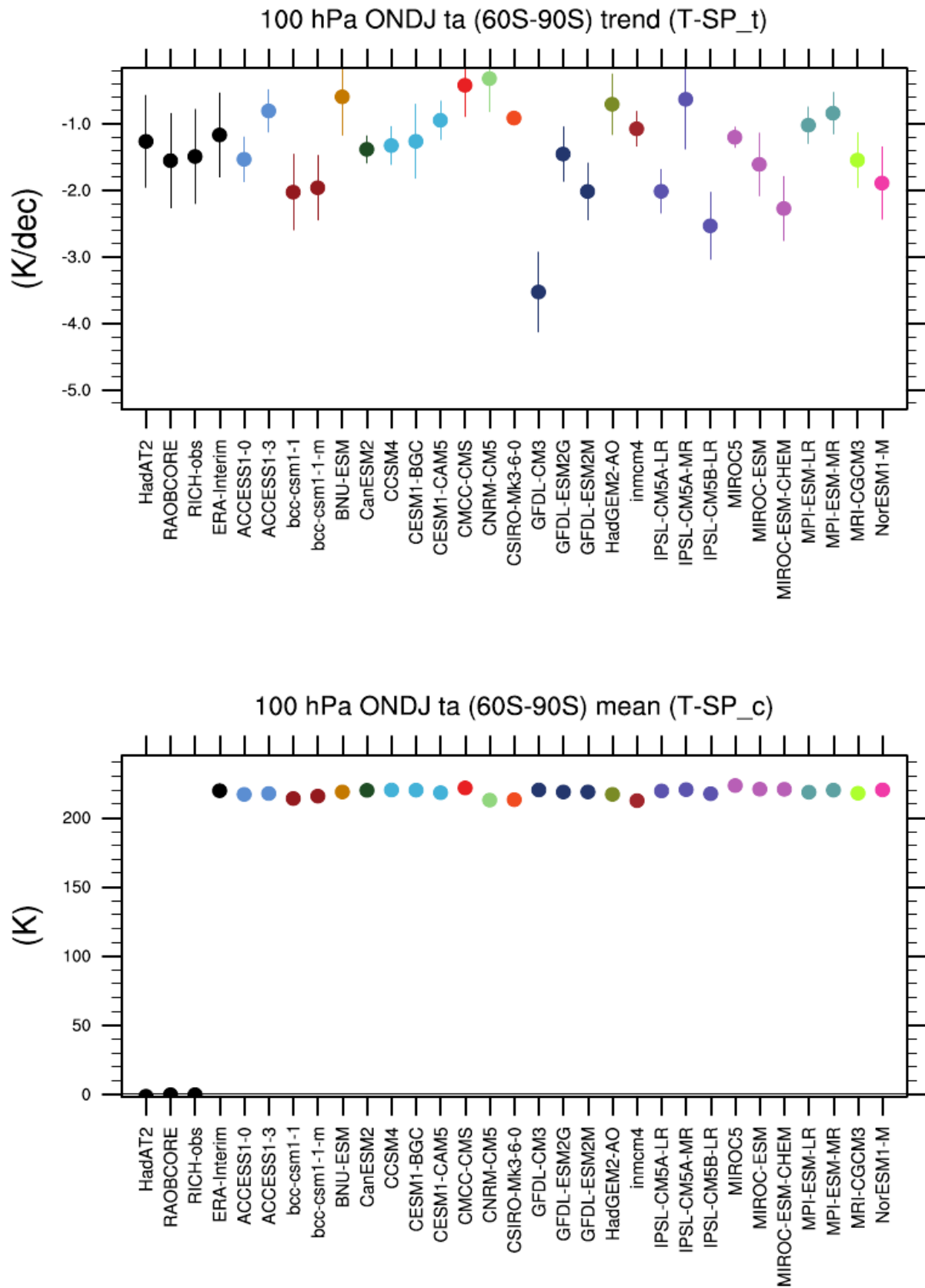
Figure S1: Trends (upper panel) and climatological mean (lower panel) in annual-mean near global (NG, 82.5N-82.5S) ozone (tro3) at 50 hPa. Vertical lines indicate the standard deviation of the mean value.
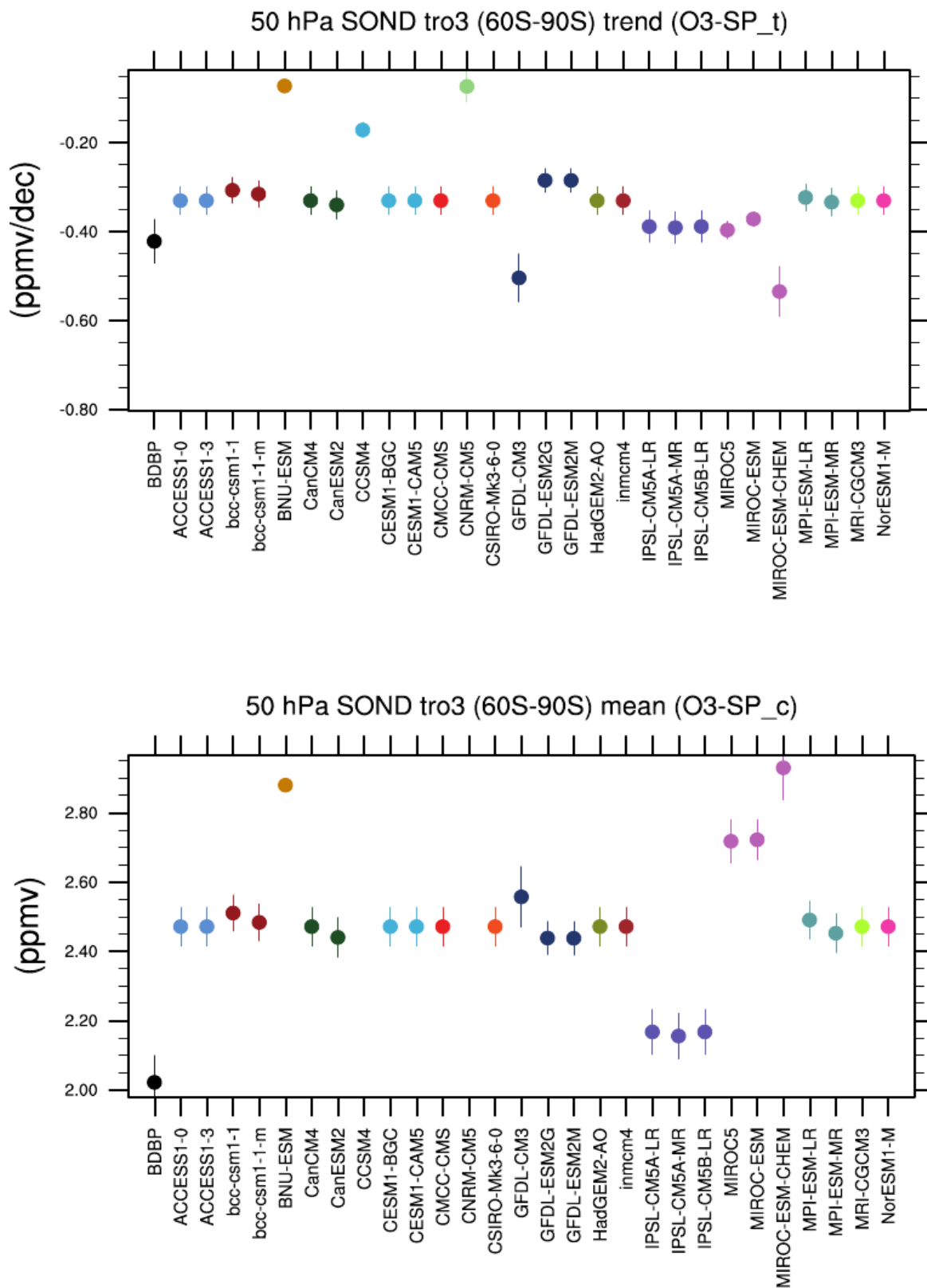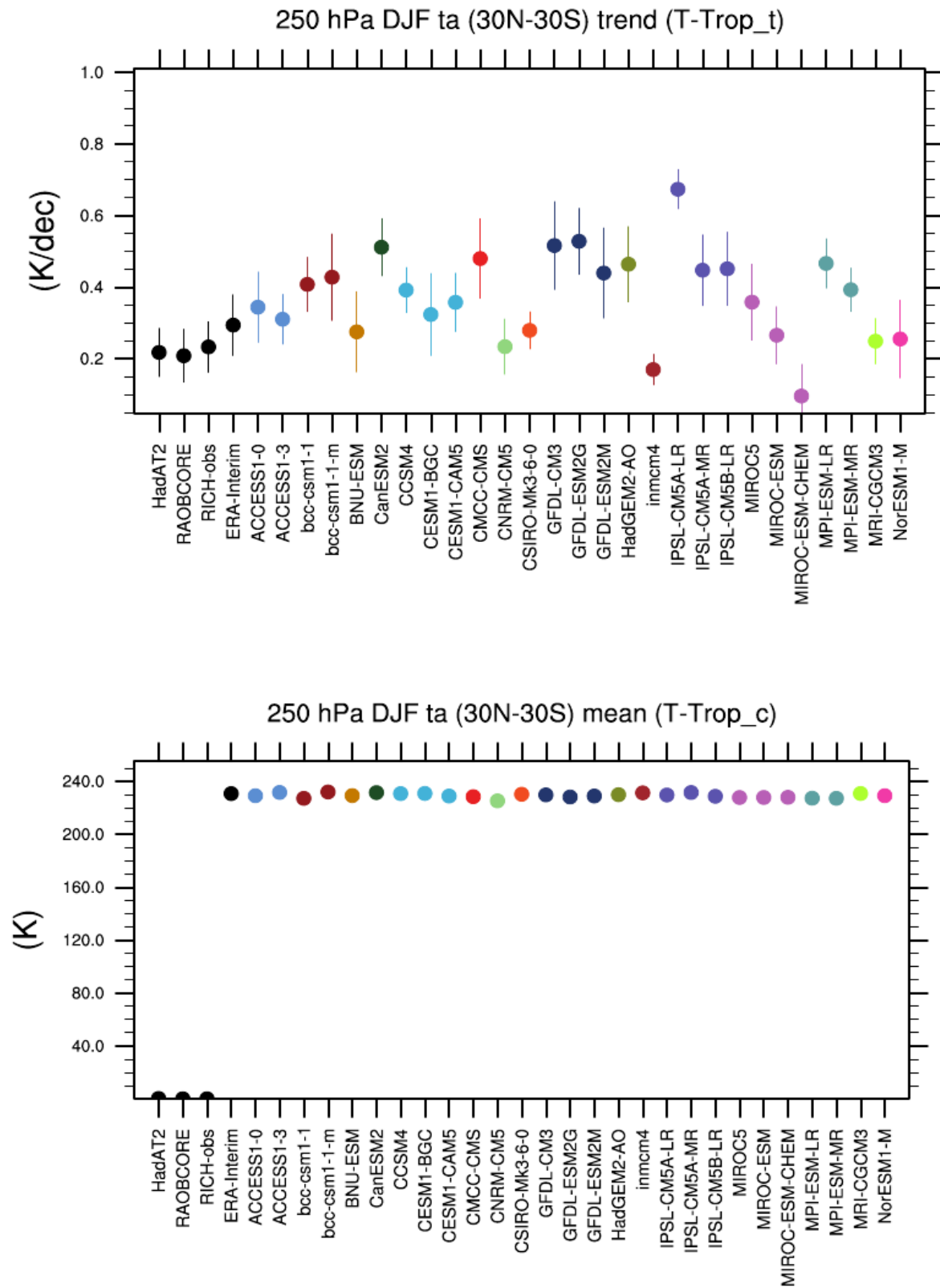
Figure S2: Trends (upper panel) and climatological mean (lower panel) in September-October-November-December (SOND) ozone (tro3) at 50 hPa over Antarctica. Vertical lines indicate the standard deviation of the mean value.
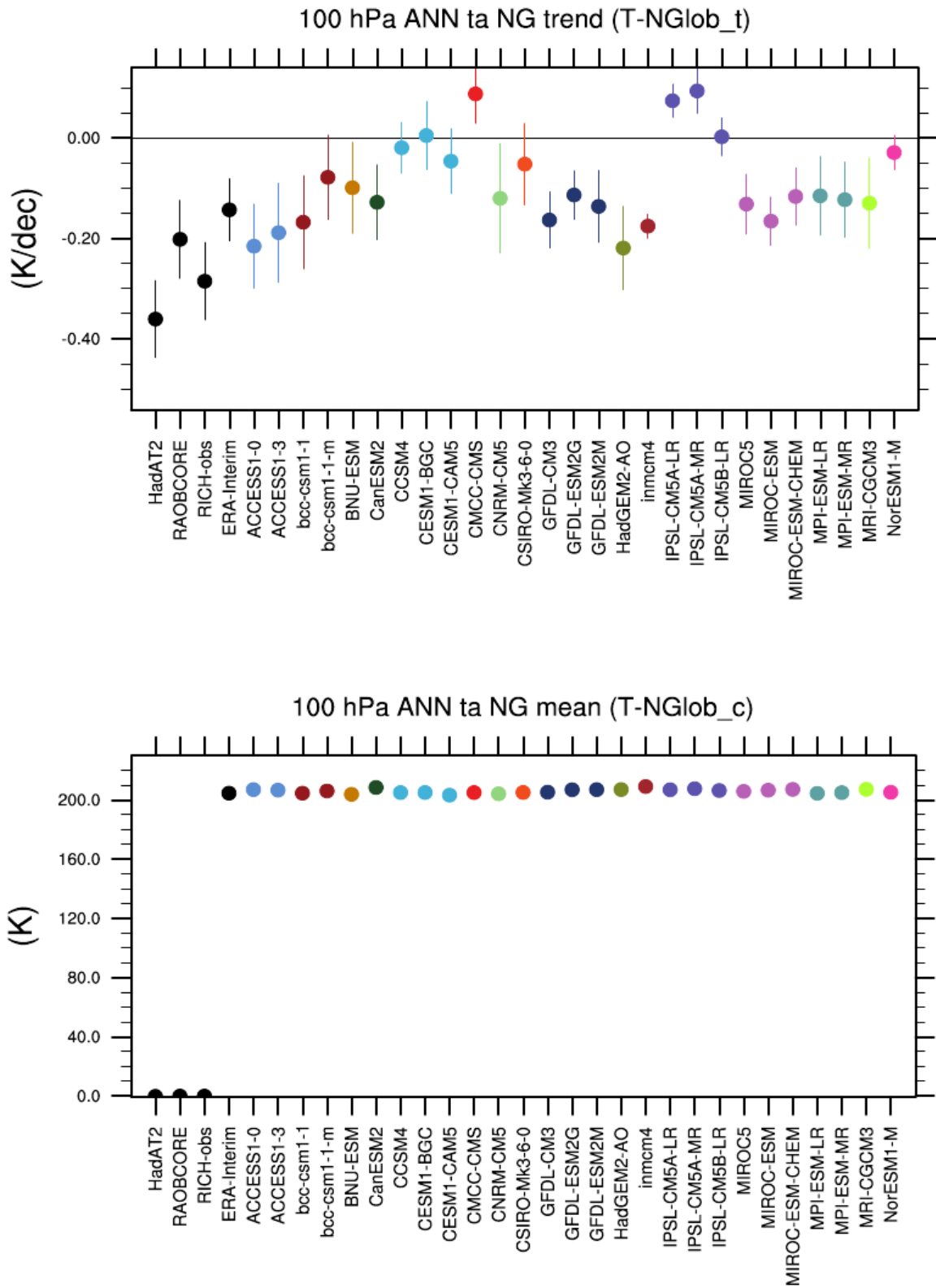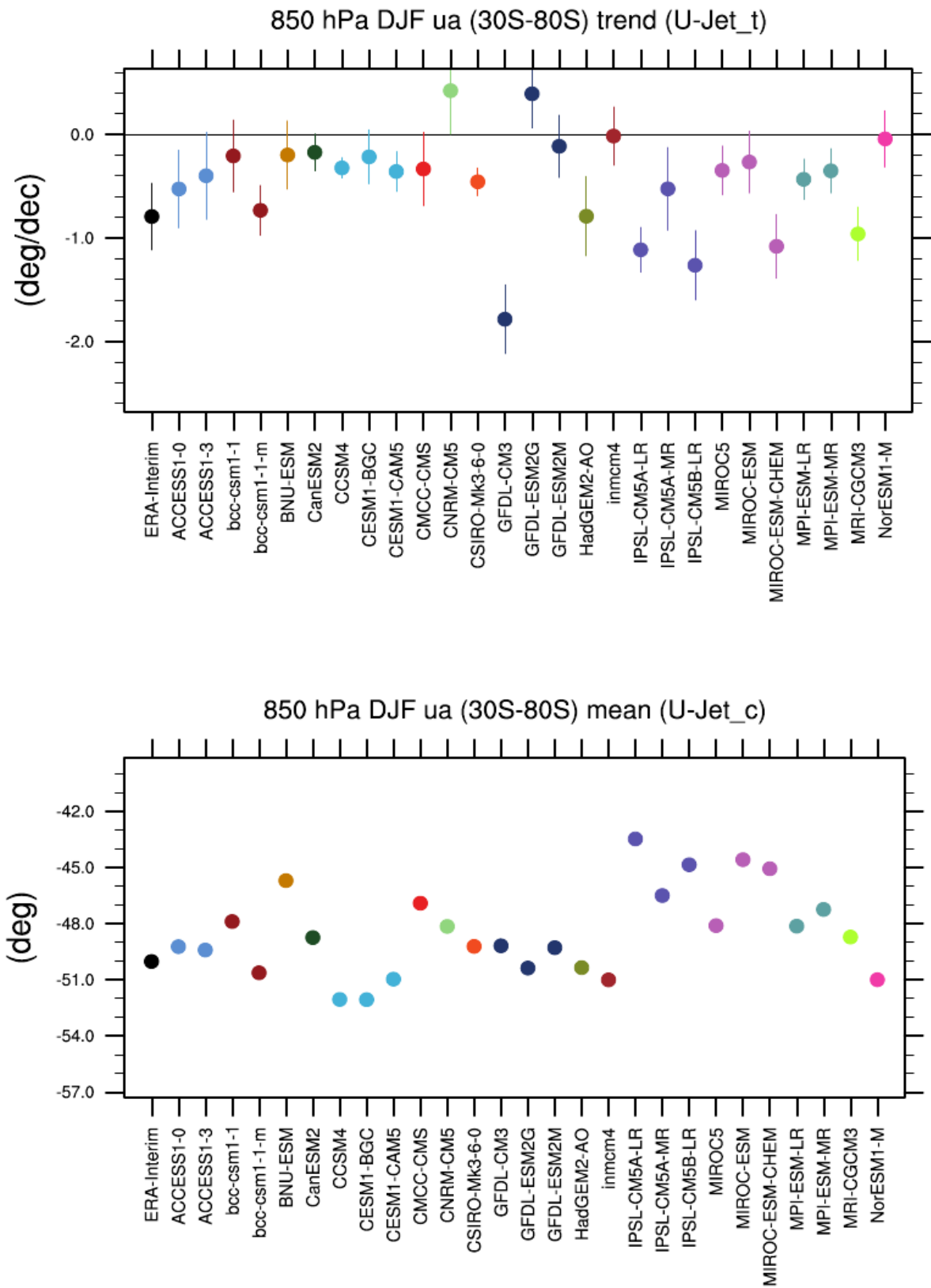
Figure S3: Trends (upper panel) and climatological mean (lower panel) in annual-mean near global (NG, 82.5N-82.5S) temperature anomalies (ta) at 100 hPa. Vertical lines indicate the standard deviation of the mean value.
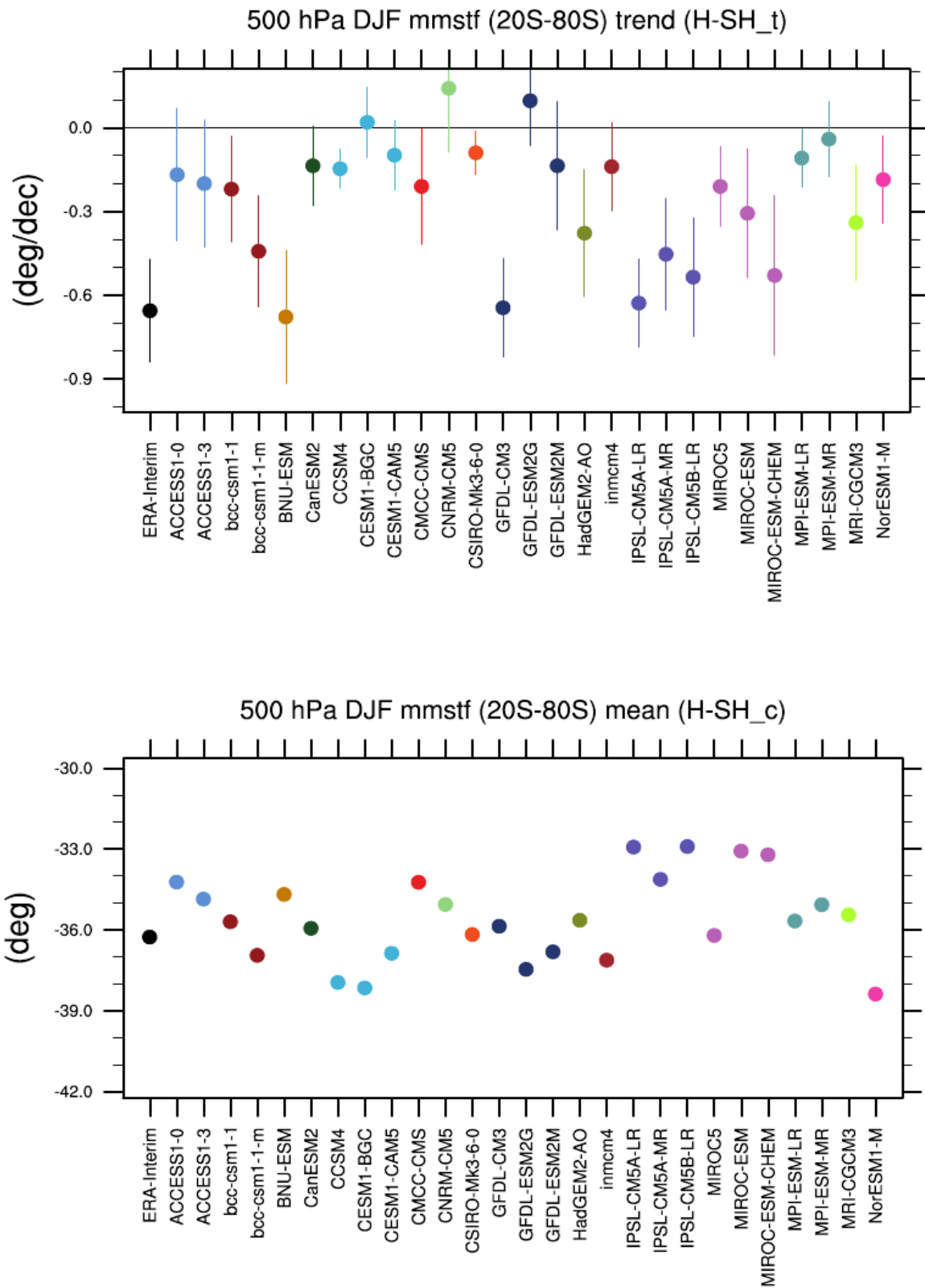
Figure S4: Trends (upper panel) and climatological mean (lower panel) in October-November-December-January (ONDJ) temperature anomalies (ta) at 100 hPa over Antarctica. Vertical lines indicate the standard deviation of the mean value.

Figure S5: Trends (upper panel) and climatological mean (lower panel) in December-January-February (DJF) tropical (30N-30S) temperature anomalies (ta) at 250hPa. Vertical lines indicate the standard deviation of the mean value.
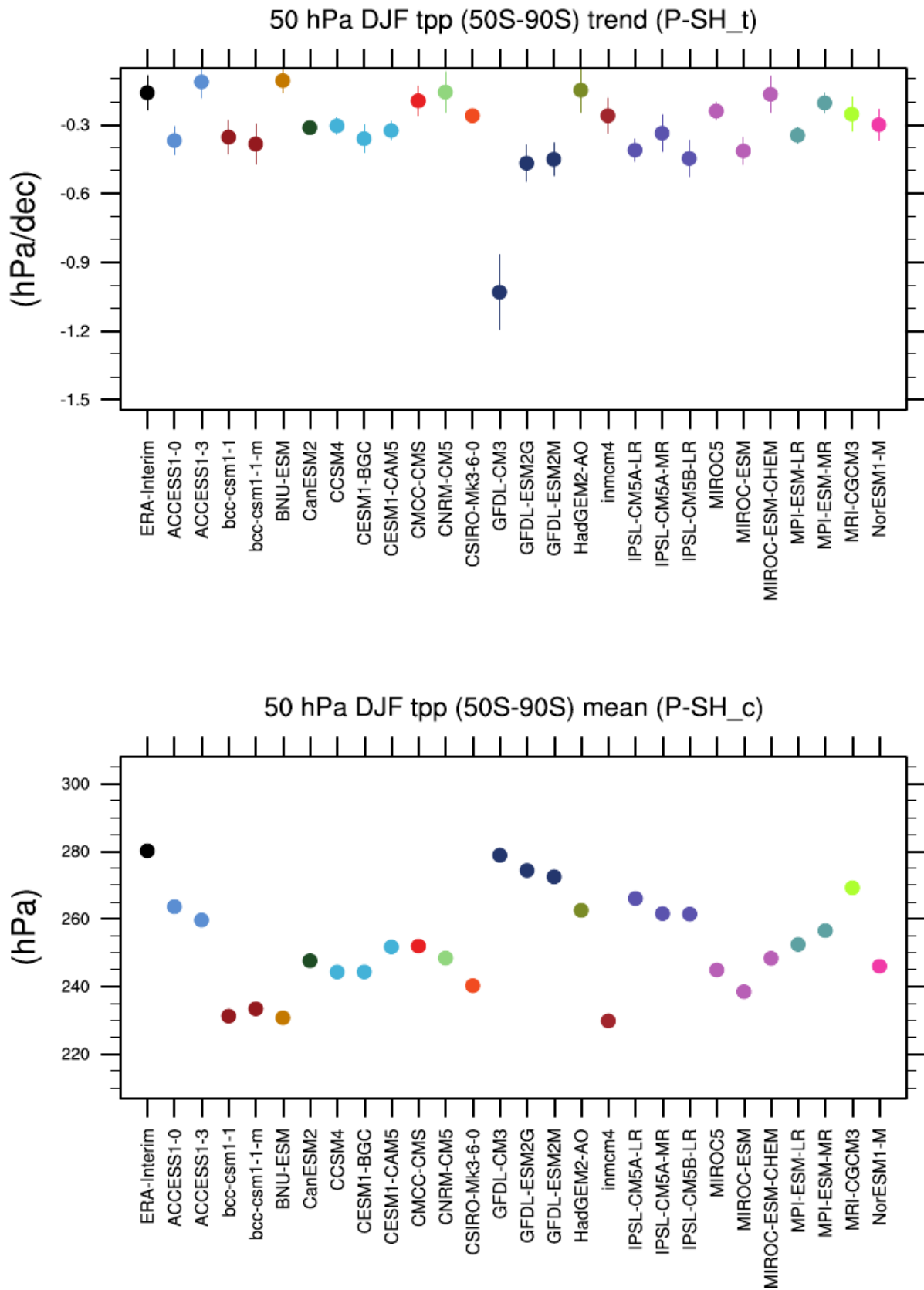
Figure S6: Trends (upper panel) and climatological mean (lower panel) in DJF Jet position at 850hPa. Vertical lines indicate the standard deviation of the mean value.
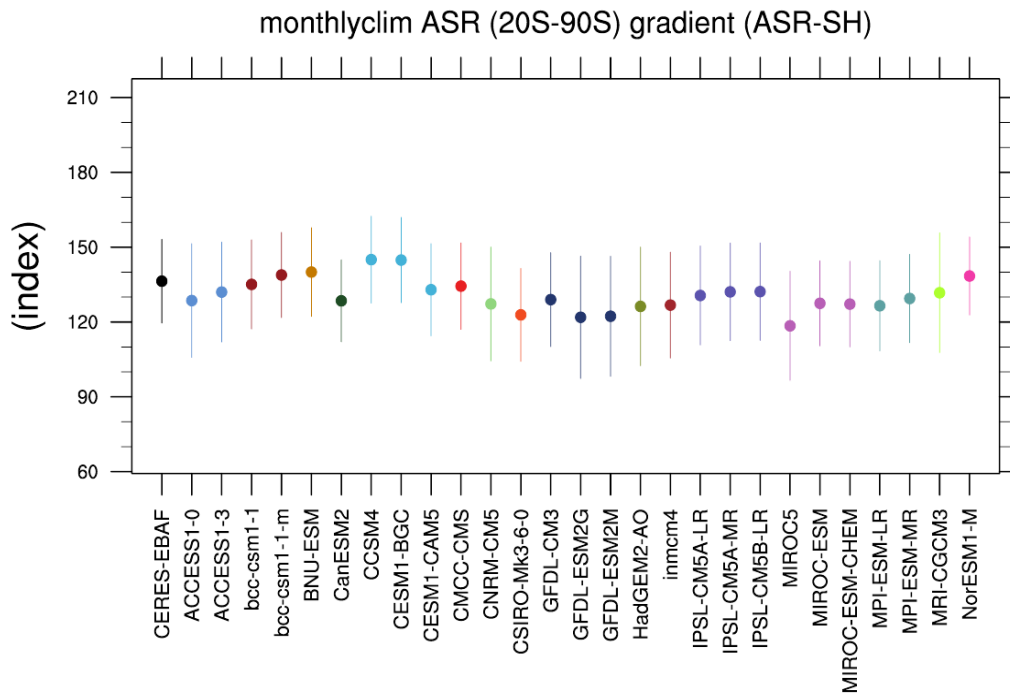
Figure S7: Trends (upper panel) and climatological mean (lower panel) in DJF Hadley cell boundary, defined by zero Ψ (mmstf) at 500 hPa. Vertical lines indicate the standard deviation of the mean value.
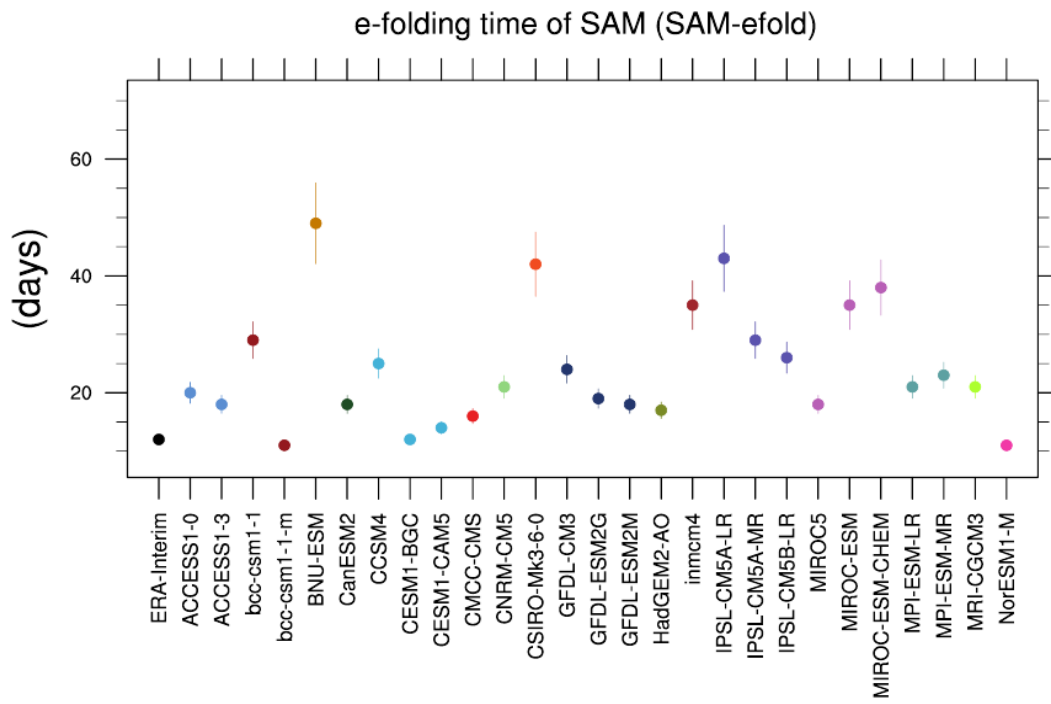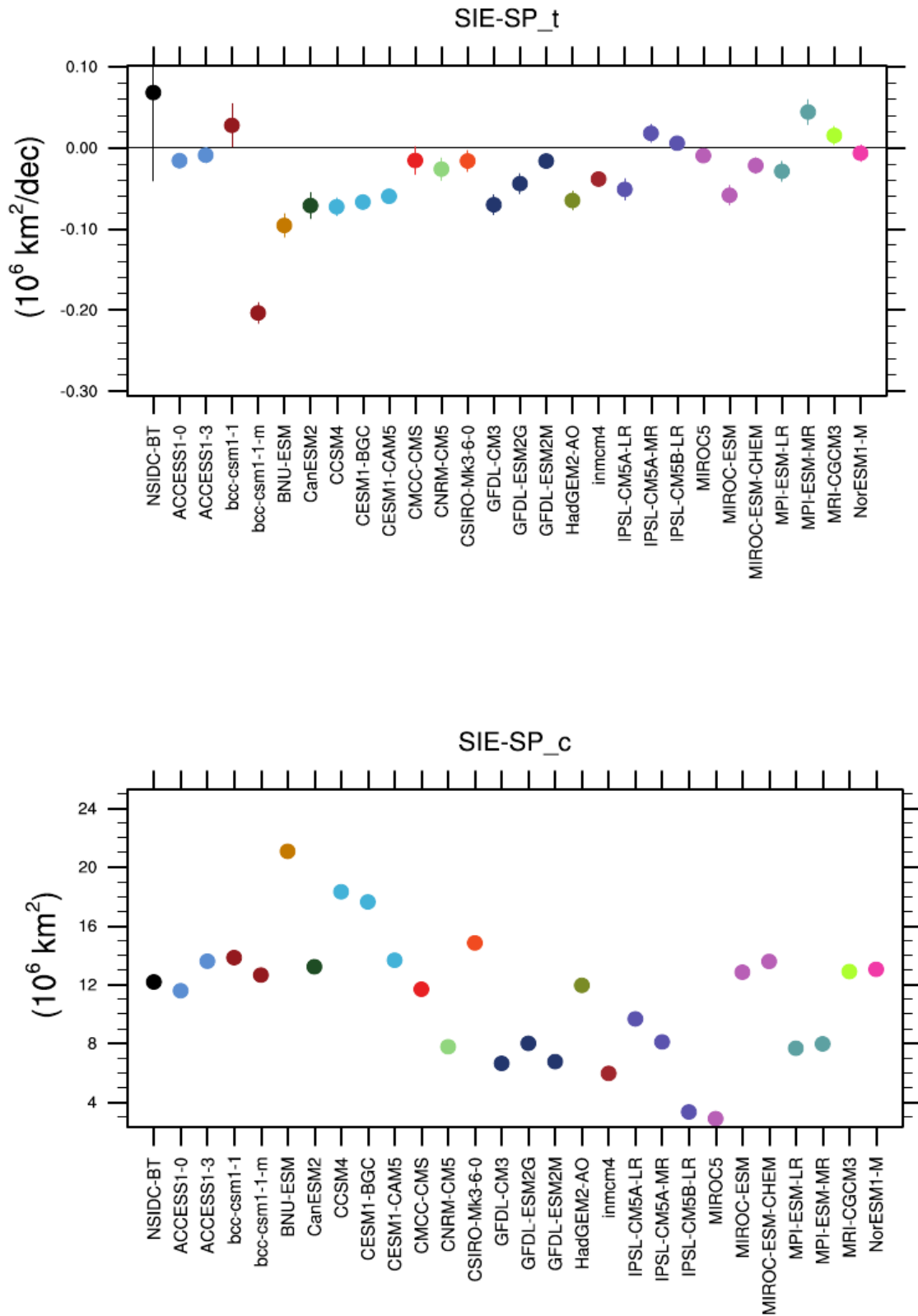
Figure S8: Trends (upper panel) and climatological mean (lower panel) in DJF extra tropical mean tropopause pressure (tpp) integrals south of 50°S. Vertical lines indicate the standard deviation of the mean value.

Figure S9: Mean absorbed short wave radiation (ASR = dowelling short wave radiation − upwelling short wave radiation) gradient (20°S-90°S). Vertical lines indicate the standard deviation of the mean value.

Figure S10: E-folding time of the Southern Annular Mode. Vertical lines indicate the standard deviation of the mean value.

Figure S11: Trends (upper panel) and climatological mean (lower panel) in annual-mean Arctic sea ice extend. Vertical lines indicate the standard deviation of the