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Supplement of

Global climate simulations at 3000 year intervals for the last 21 000 years with the GENMOM coupled atmosphere–ocean model

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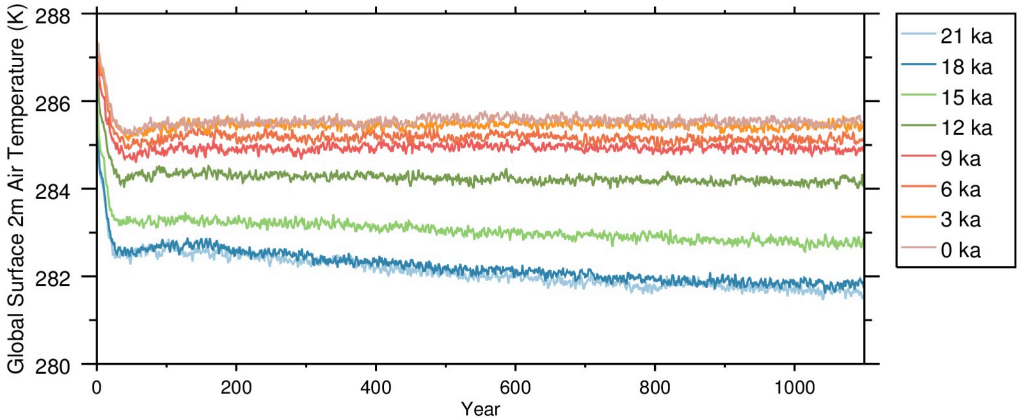
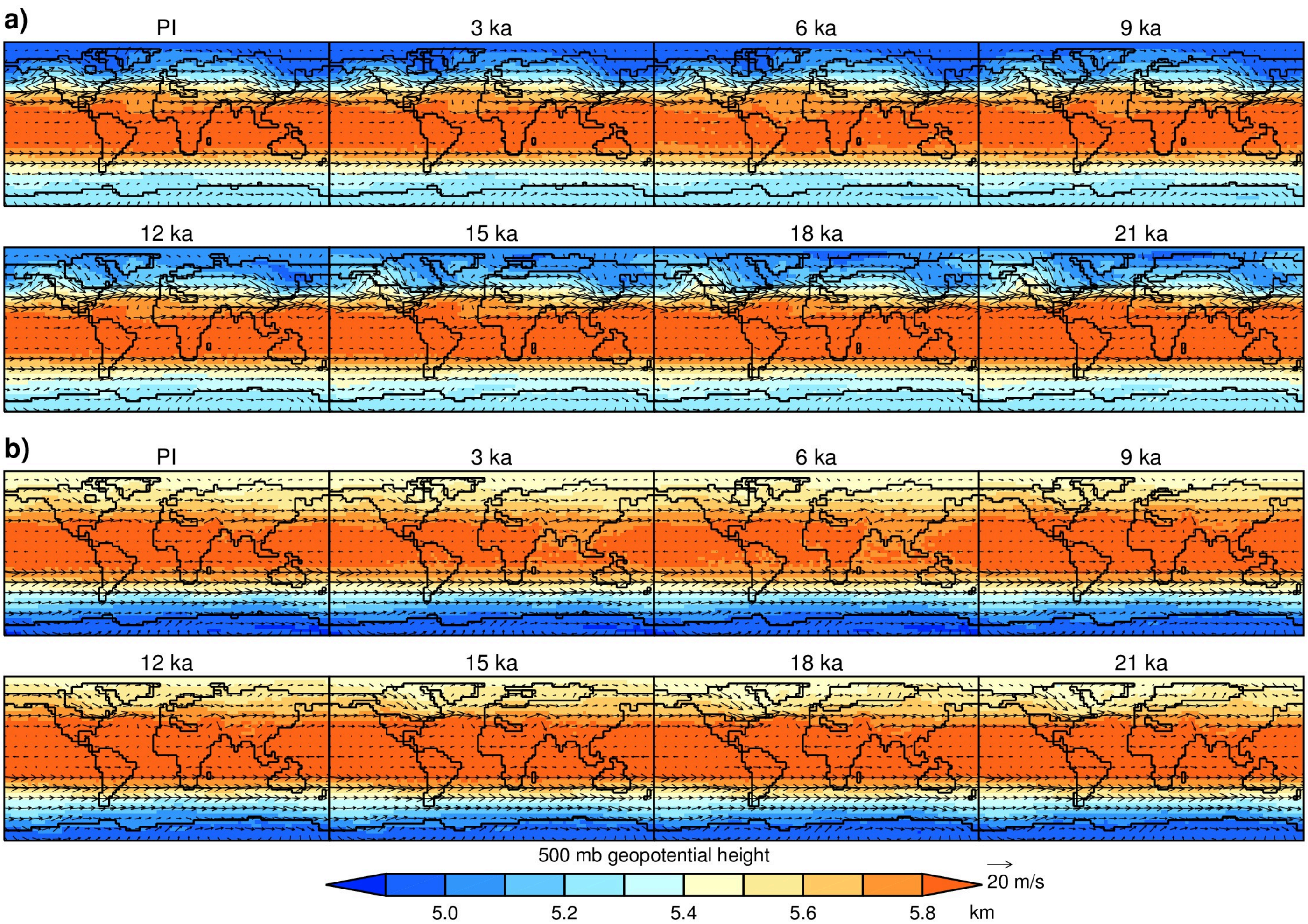
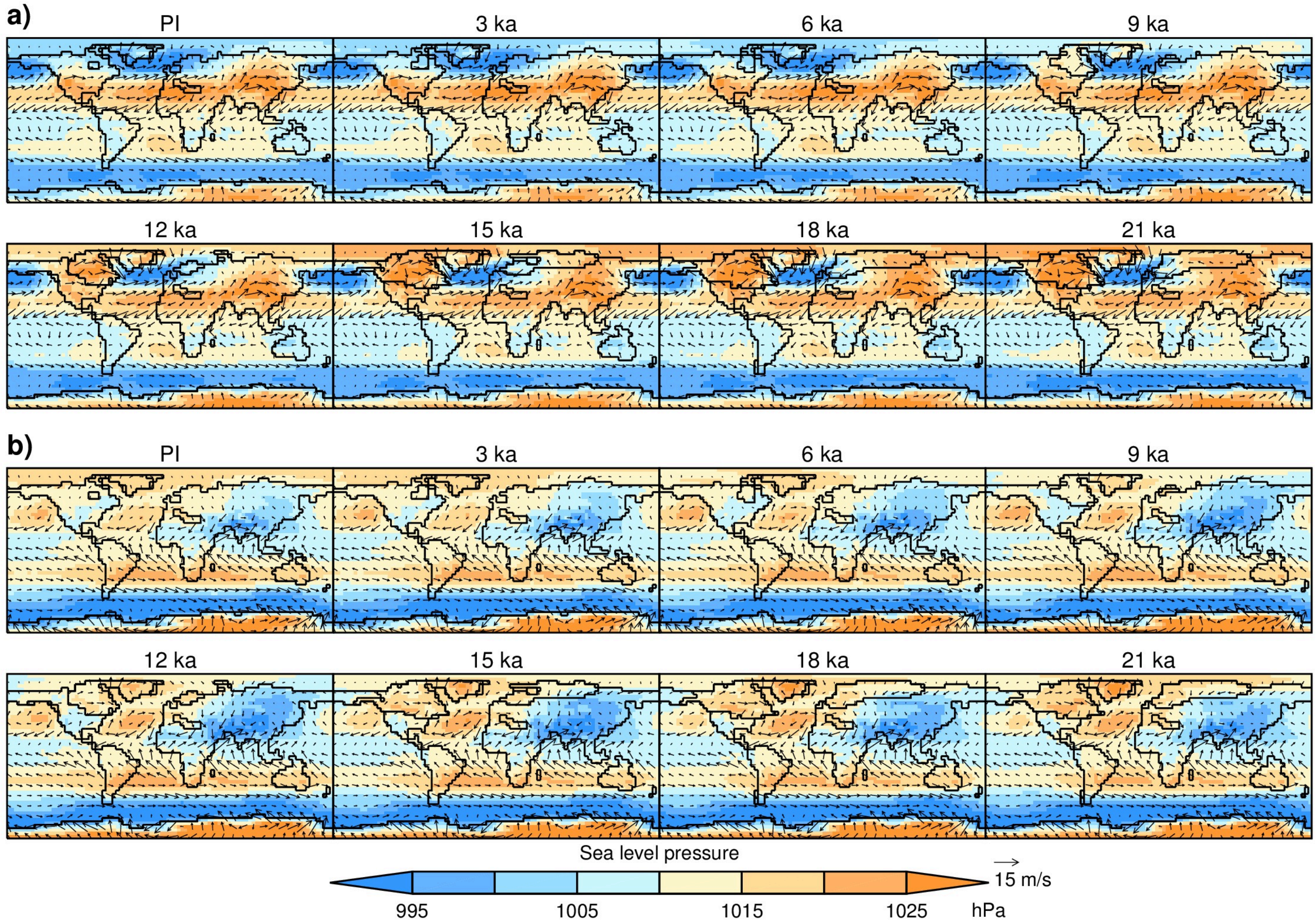


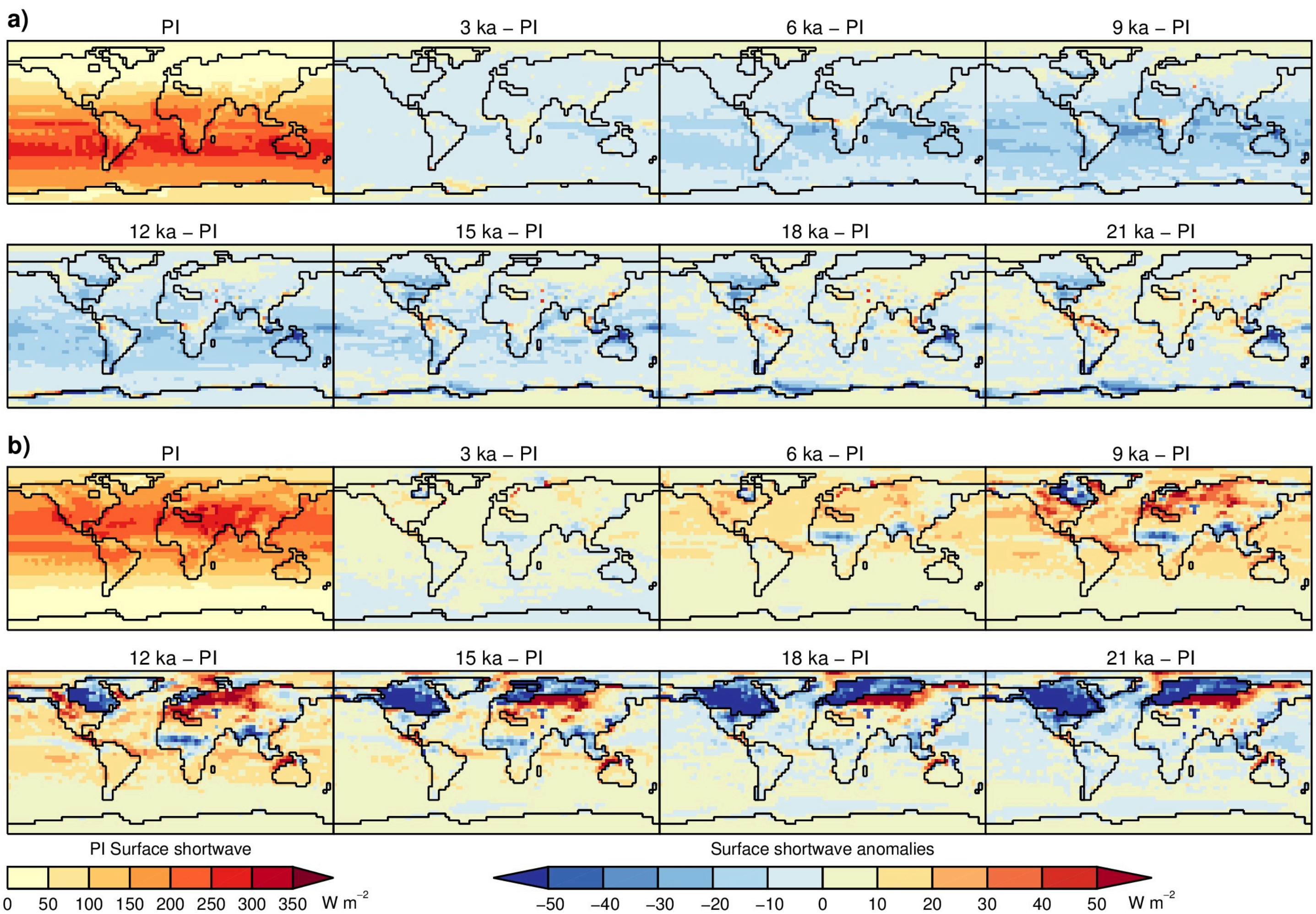
SFig. 1. Annual time series of global average 2-m surface air temperature displaying the approach to equilibrium from initializing the time-slice simulations with an isothermal atmosphere and ocean at rest.



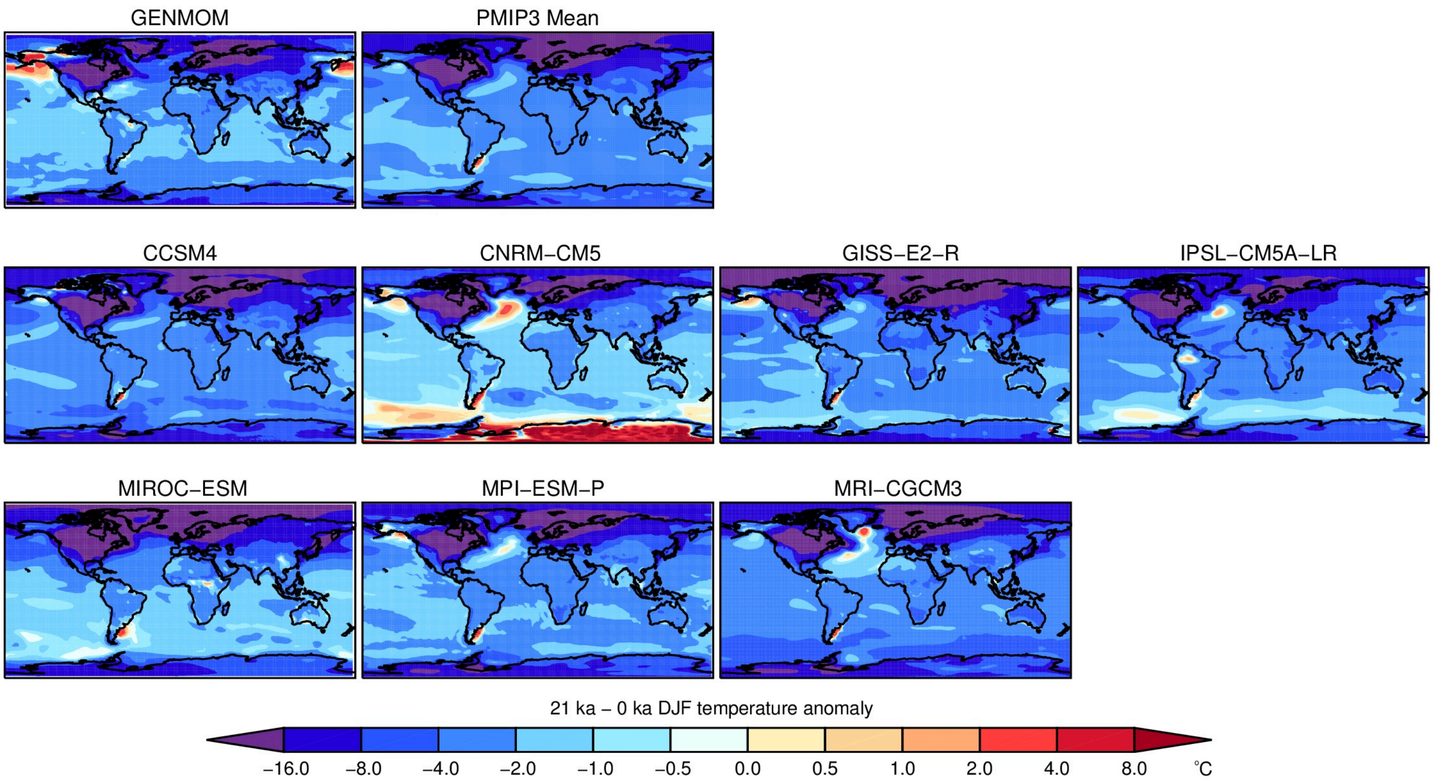
SFig. 2. Simulated seasonal average 500 hPa geopotential height and wind for the time segments. a) December, January and February and b) June, July and August.



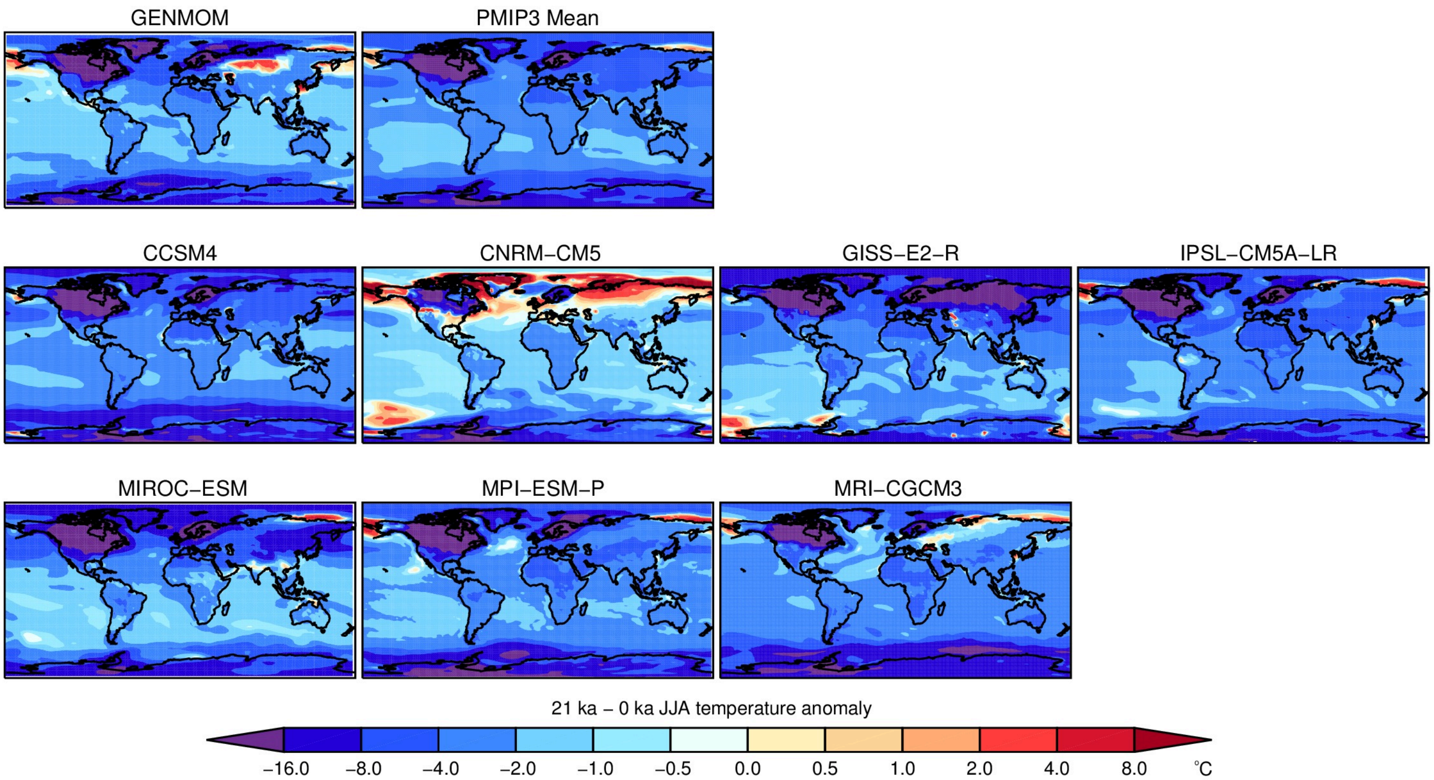
SFig. 3. Simulated seasonal average anomalies of sea level pressure and 2-m wind for the time segments. a) December, January and February and b) June, July and August.



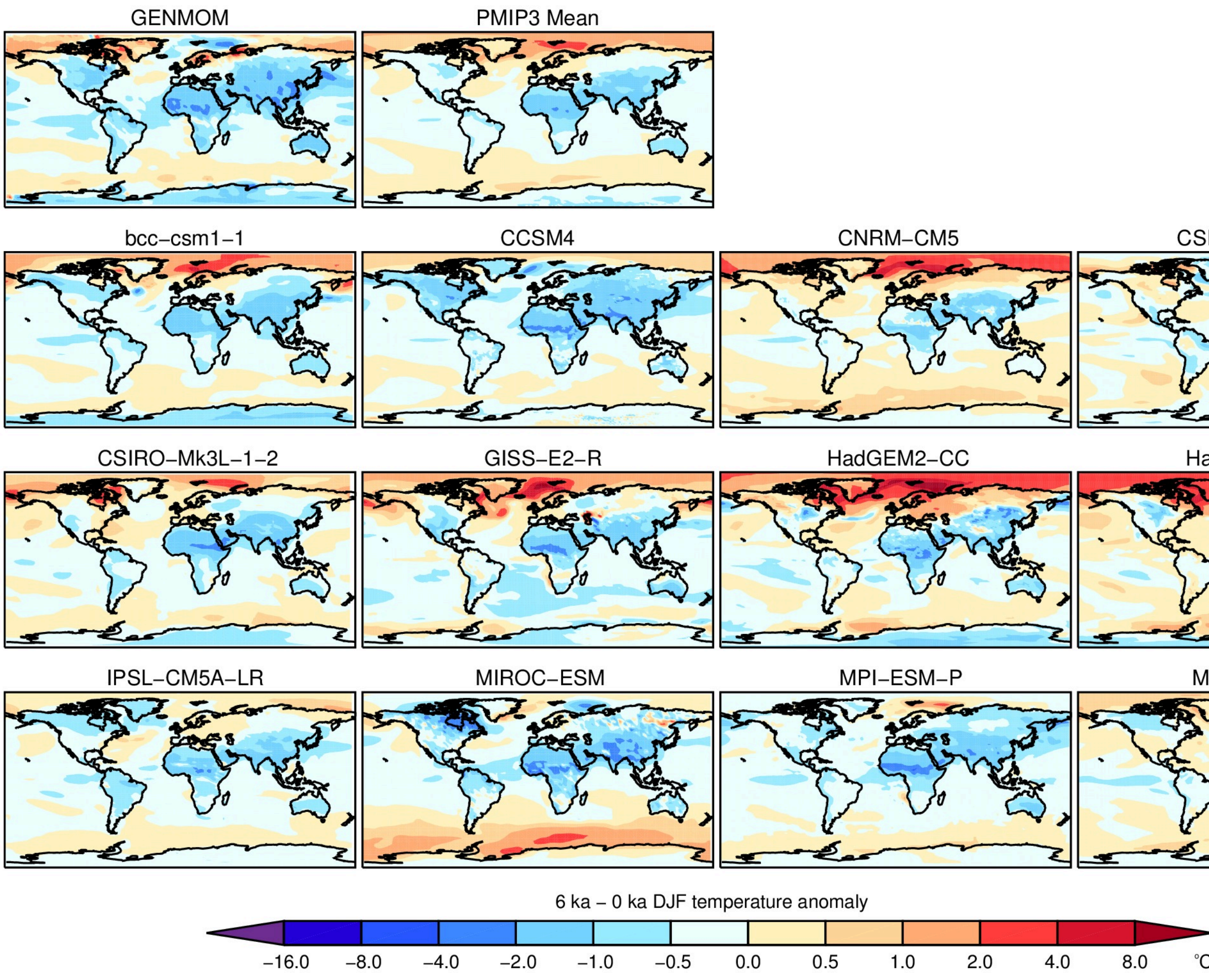
SFig. 4. Simulated seasonal average anomalies of shortwave radiation at the surface for the time segments relative to PI. a) December, January and February and b) June, July and August.



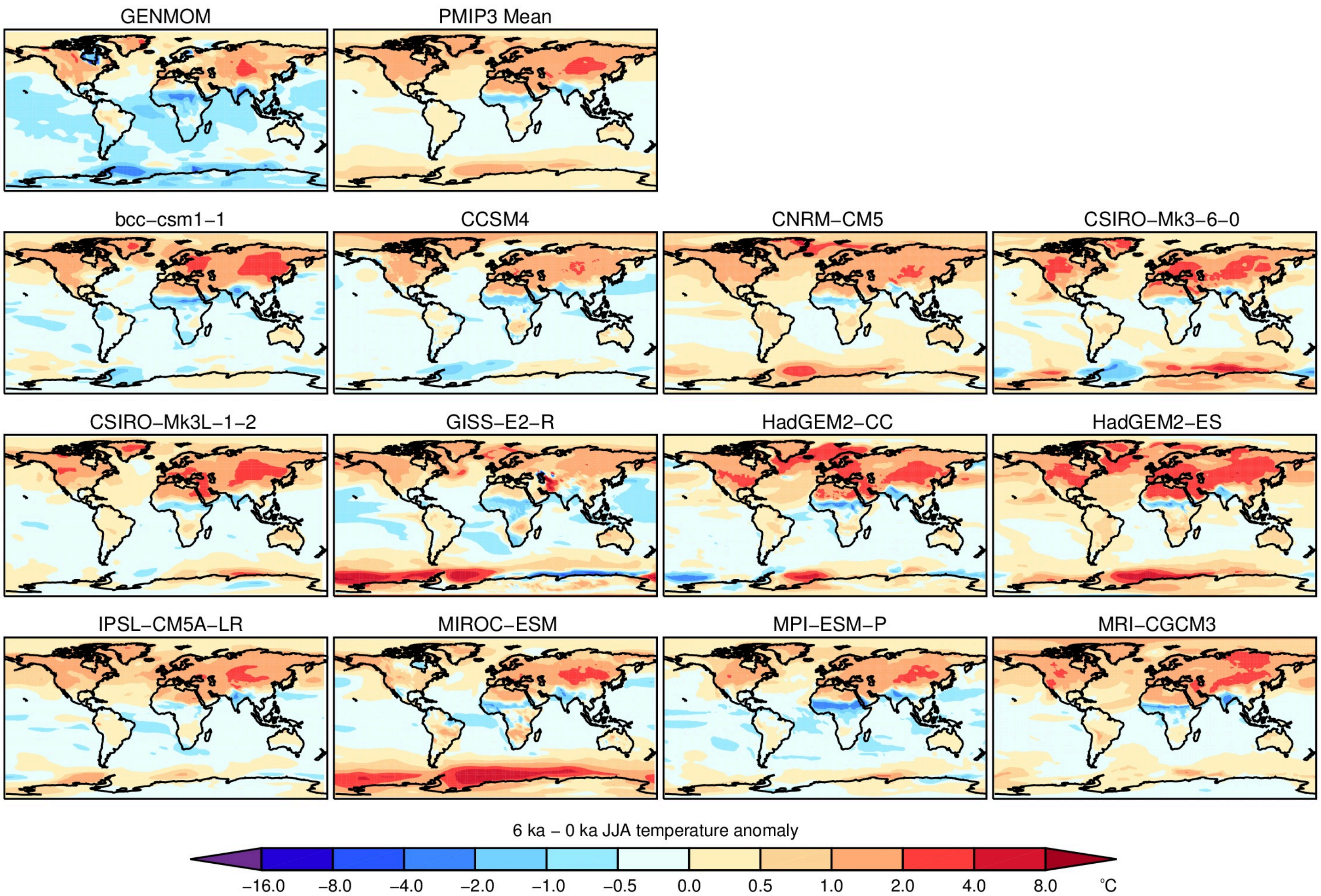
SFig. 5. 21 ka December, January and February average 2-m surface air temperature anomalies relative to the PI for GENMOM and the PMIP3.



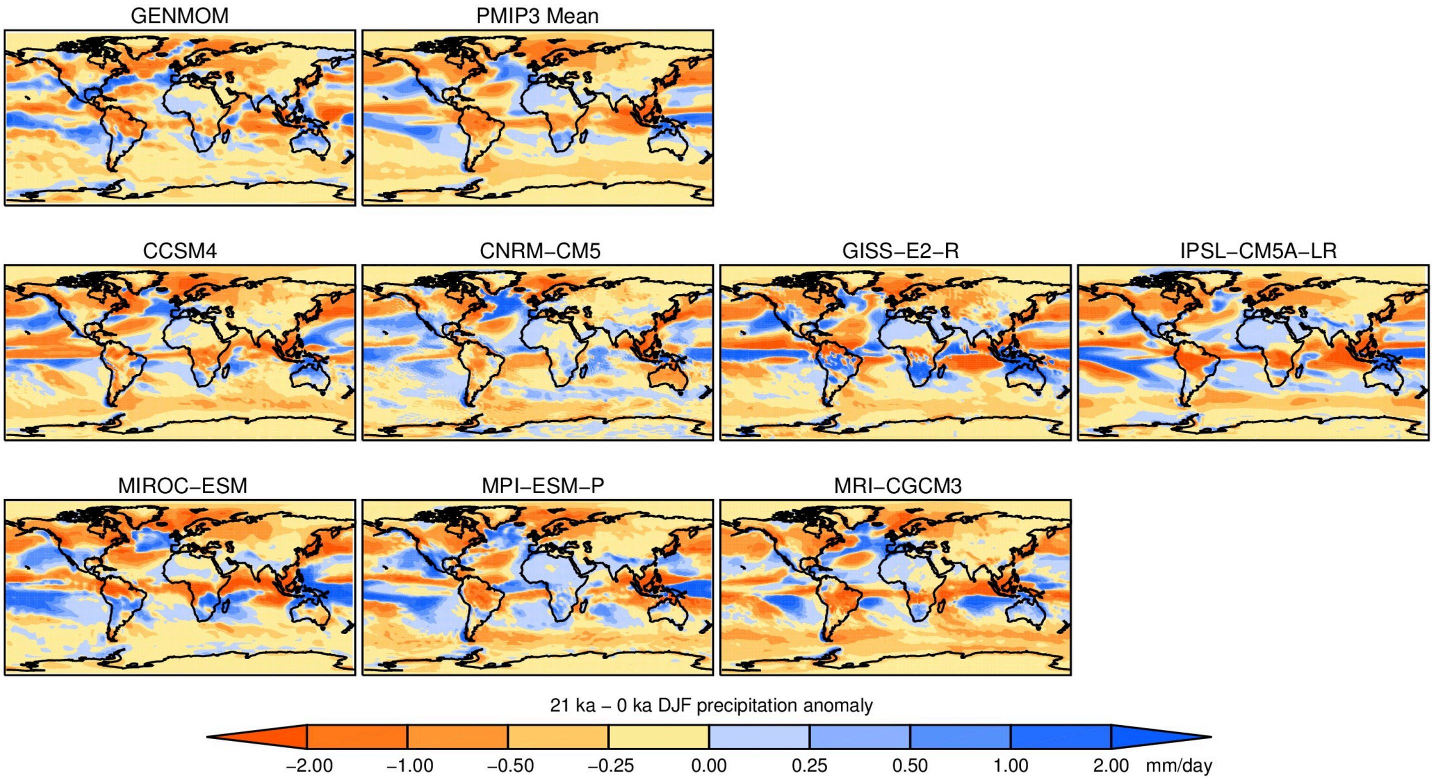
SFig. 6. 21 ka June, July and August average 2-m surface air temperature anomalies relative to the PI for GENMOM and the PMIP3.



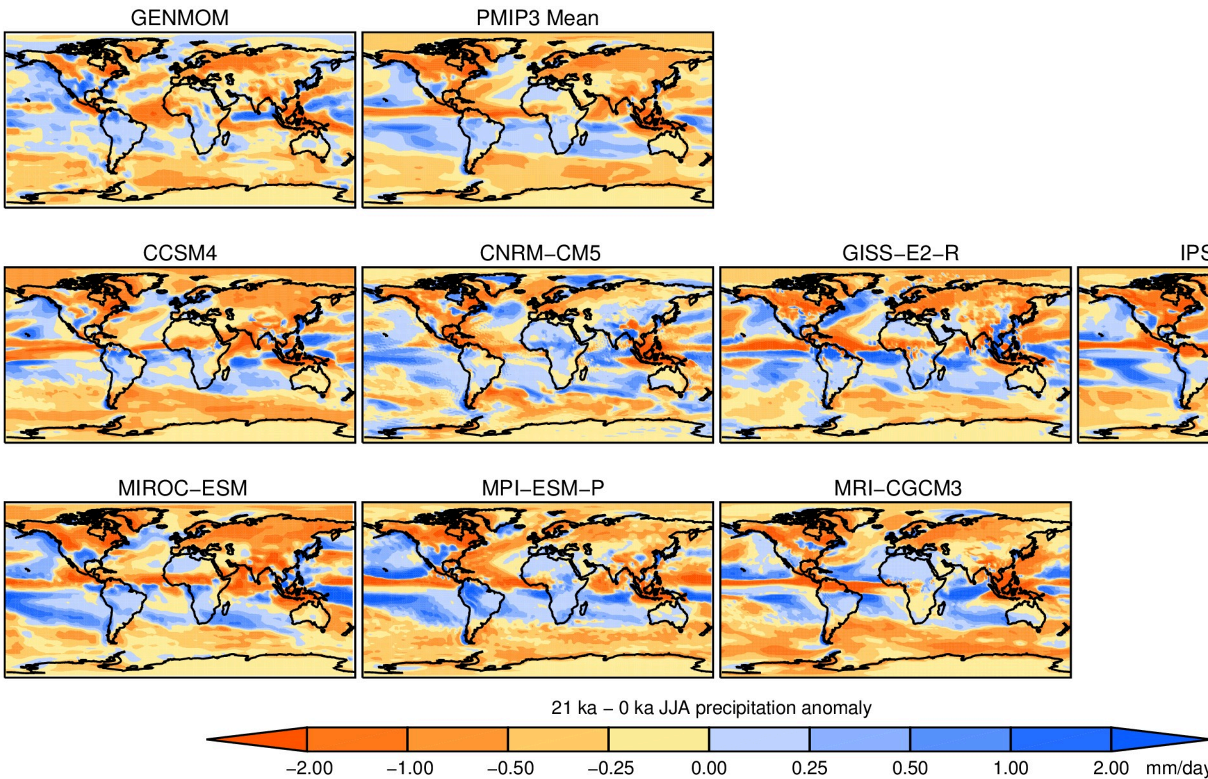
SFig. 7. 6 ka December, January and February average 2-m surface air temperature anomalies relative to the PI for GENMOM and the PMIP3.



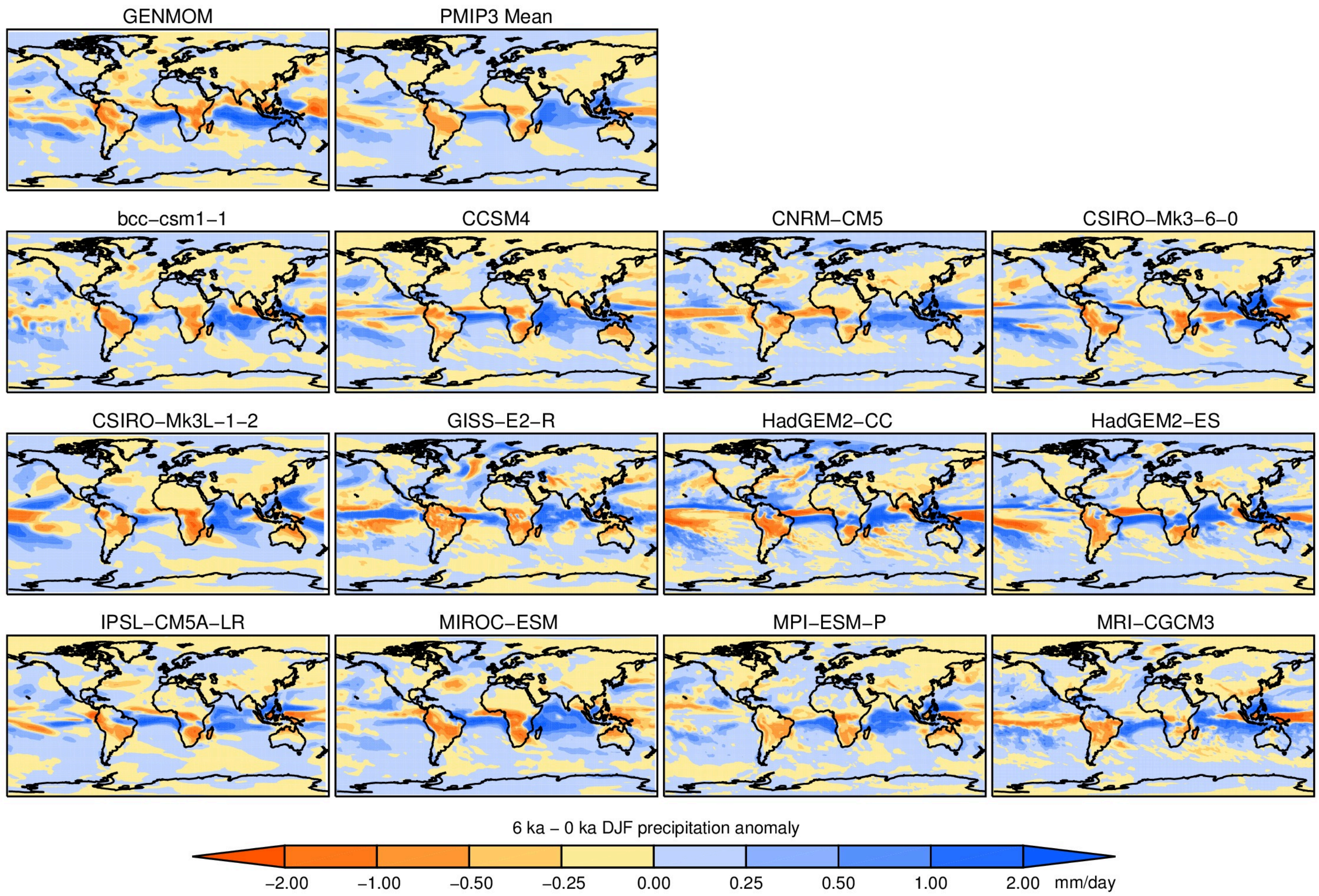
SFig. 8. 6 ka June, July and August average 2-m surface air temperature anomalies relative to the PI for GENMOM and the PMIP3.



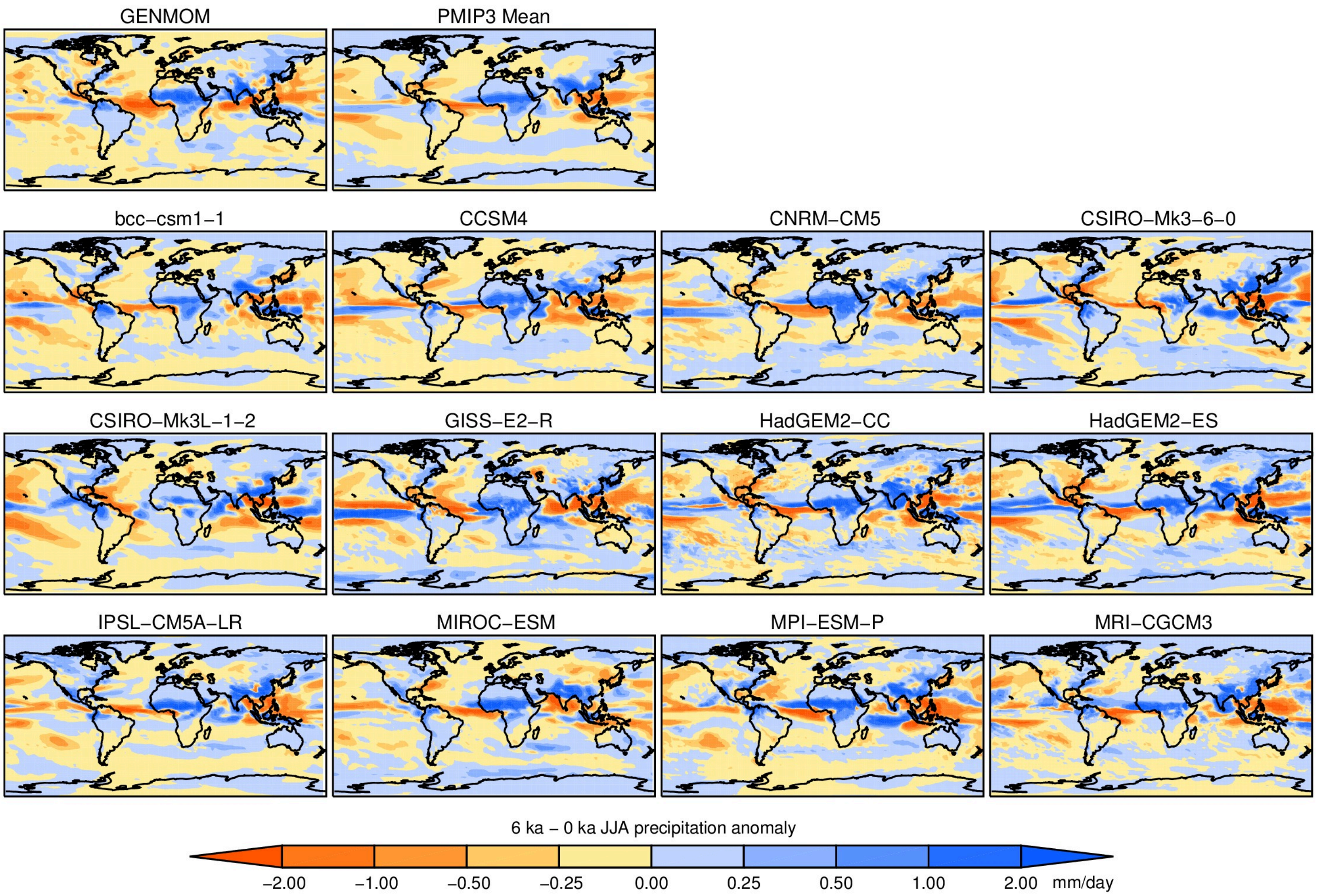
SFig. 9. 21 ka June, July and August average precipitation anomalies relative to the PI for GENMOM and the PMIP3.



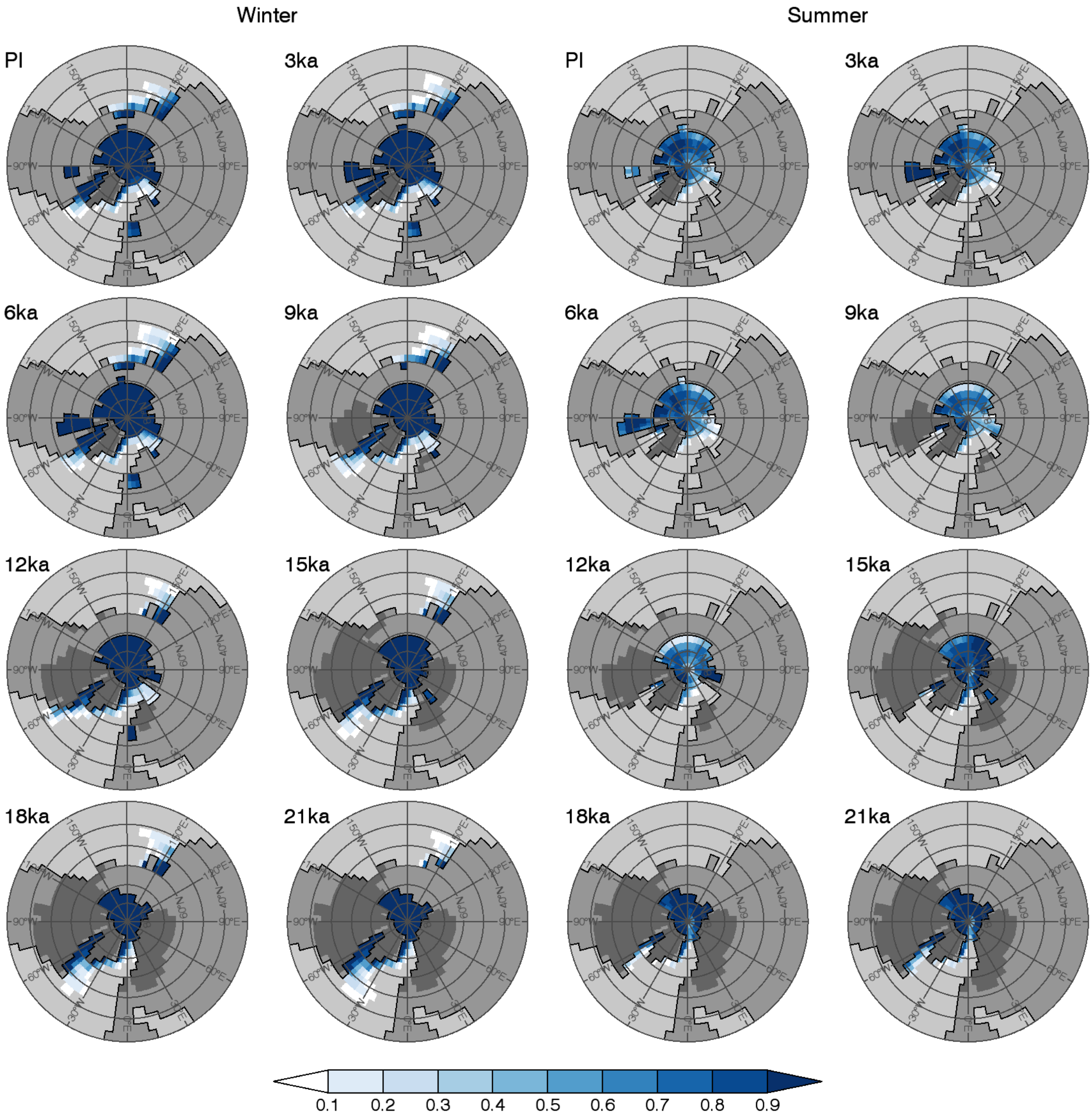
SFig. 10. 21 ka June, July and August average precipitation anomalies relative to the PI for GENMOM and the PMIP3.



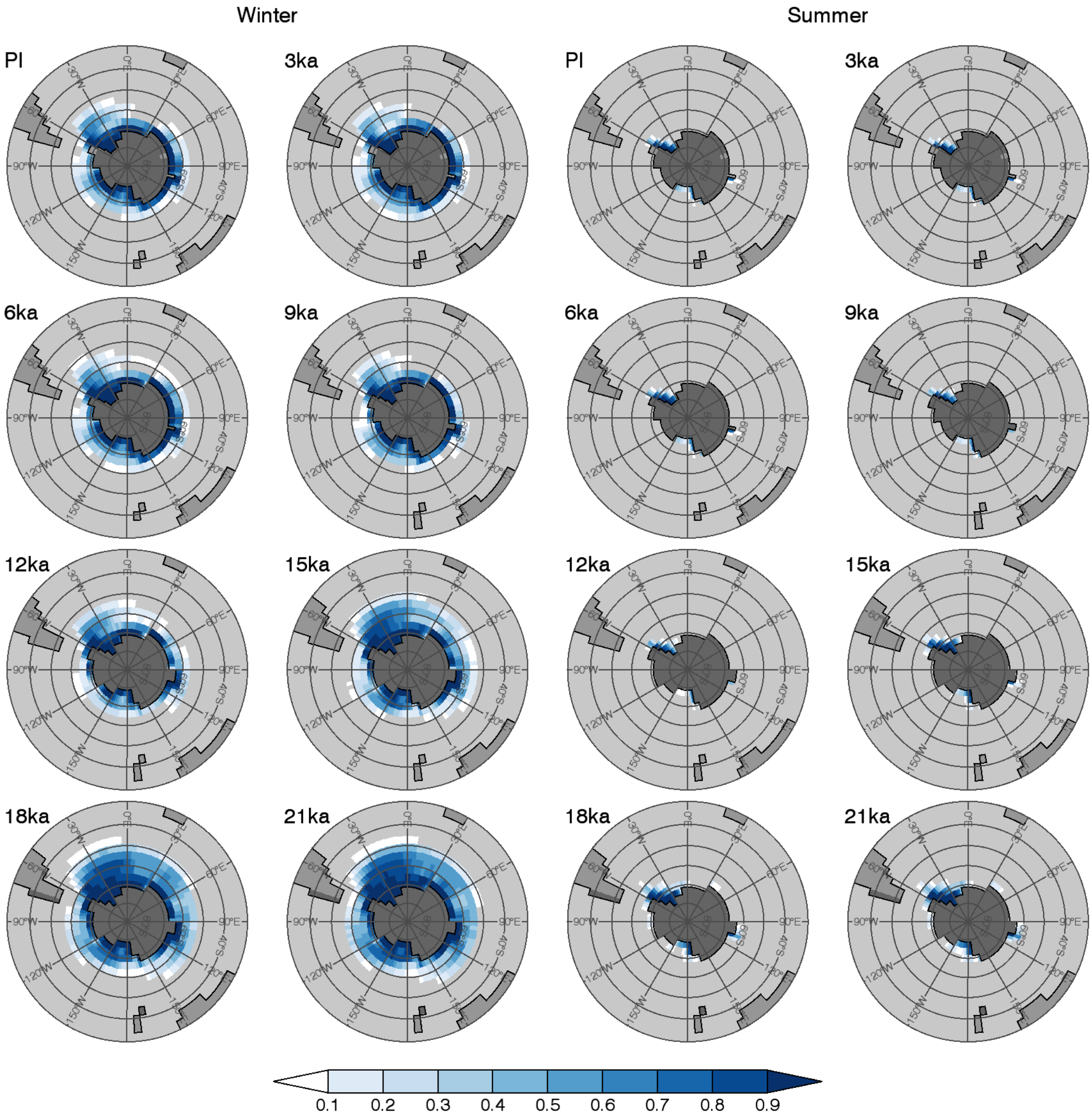
SFig. 11. 6 ka December, January and February average precipitation anomalies relative to the PI for GENMOM and the PMIP3.



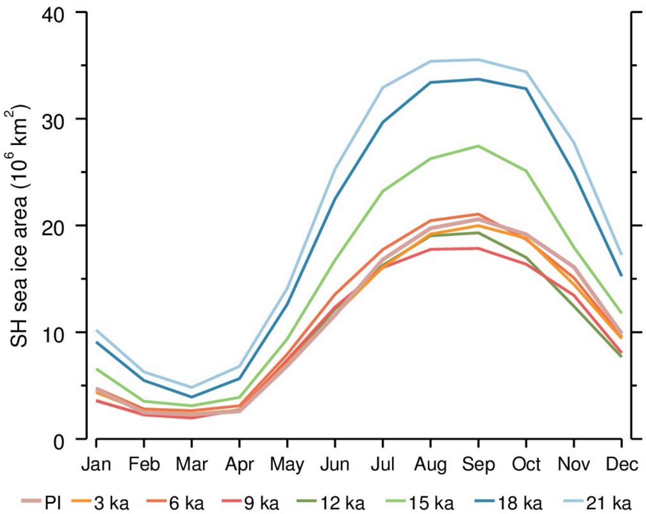
SFig. 12. 6 ka June, July and August average precipitation anomalies relative to the PI for GENMOM and the PMIP3.



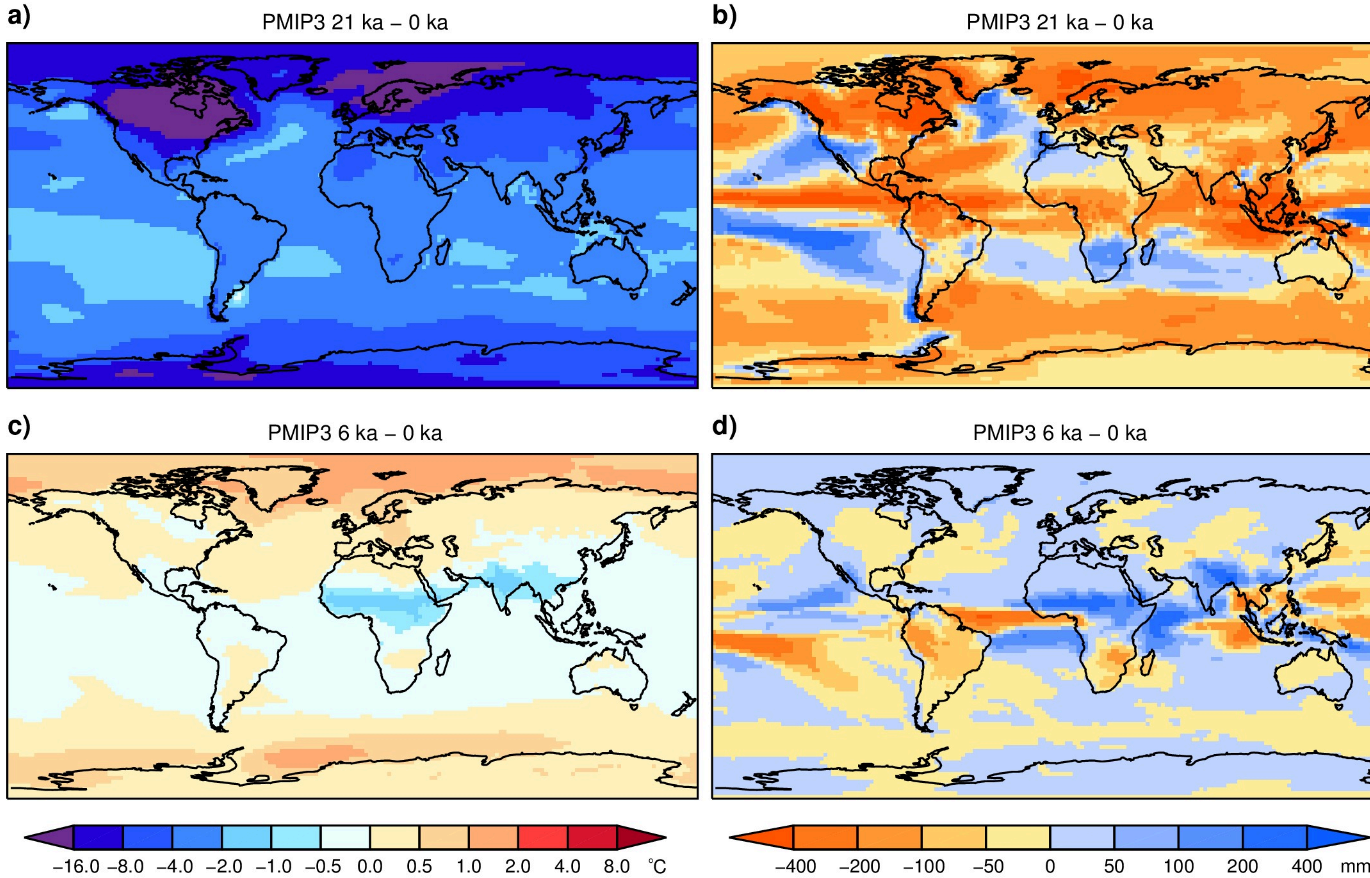
SFig. 13. Northern Hemisphere (NH) fractional sea-ice extent for winter (Feburary-March) and summer (August-September).



SFig. 14. Southern Hemisphere (SH) fractional sea-ice extent for winter (August-September) and summer (Feburary-March).



SFig. 15. Simulated seasonal change of the total area covered by sea ice in the Southern Hemisphere for the time segment simulations. The total area includes the grid cells with ≥15% fractional coverage.



SFig. 16. Average changes in mean-annual temperature (MAT) and precipitation (MAP) as simulated by 12 PMIP3 models. a) 21 ka TAS, b) 21 ka MAP, c) 6 ka TAS and d) 6 ka MAP.

Supplemental Table 1. Description of the PMIP3 models used in the SFigs 5 – 12 and 16. Adapted from Harrison et al. (2013).

Model Code	**Model Name**	**Type**	**Resolution (number of gridcells: latitude, longitude)**			**Year Length**	**Simulations**		**Reference**
			Atmosphere	Ocean	Sea Ice		MH	LGM	
bcc-csm1-1	BCC	OAC	64, 128	232, 360	232, 360	365	X		(Wu et al., 2010)
CCSM4	CCSM4	OA	192, 288	320, 384	320384	365	X	X	(Gent et al., 2011)
CNRM-CM5	CNRM5	OA	128, 256	292, 362	292, 362	365-366	X	X	(Voldoire et al., 2013)
CSIRO-Mk3-6-0	CSIRO3.6	OA	96, 192	189, 192	96, 192	365	X		(Rotstayn et al., 2010)
CSIRO-Mk3L-1-2	CSIRO3.1.2	OA	56, 64	128, 225	56, 64	365	X		(Phipps et al., 2011; Wu et al., 2008)
GISS-E2-R	GISS.E2	OA	90, 144	90, 144	90, 144	365	X	X	No publication
HadGEM2-CC	HadGEM2 (CC)	OAC	145, 192	216, 360	216, 360	360	X		(Jones et al., 2011; Martin et al., 2011)
HadGEM2-ES	HadGEM2 (ESM)	OAC	145, 192	216, 360	216, 360	360	X		(Jones et al., 2011; Martin et al., 2011)
IPSL-CM5A-LR	IPSL5	OAC	96, 96	149, 182	149, 182	365	X	X	(Dufresne et al., 2013)
MIROC-ESM	MIROC (ESM)	OAC	64, 128	192, 256	192, 256	365	X		(Watanabe et al., 2011)
MPI-ESM-P	MPI (ESM)	OA	96, 192	220, 256	220, 256	365-366	X	X	No publication
MRI-CGCM3	MRI3	OA	160, 320	360, 368	360, 368	365	X	X	(Yukimoto et al., 2011)

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