

Supplement of Geosci. Model Dev., 14, 1195–1217, 2021
<https://doi.org/10.5194/gmd-14-1195-2021-supplement>
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Supplement of

PMIP4 experiments using MIROC-ES2L Earth system model

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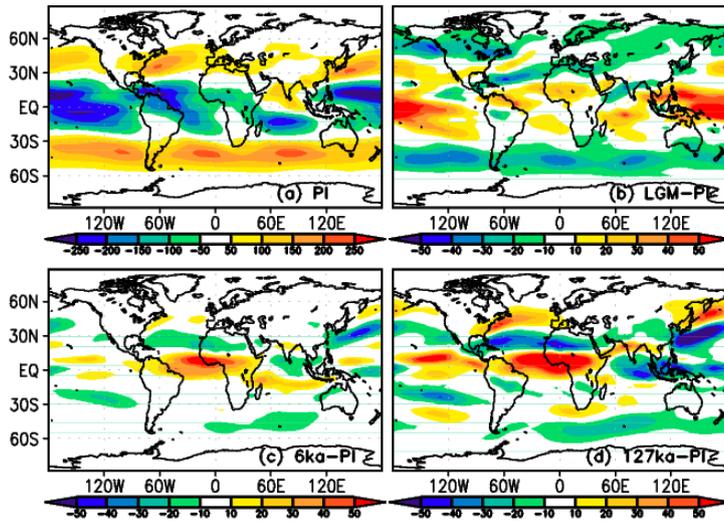
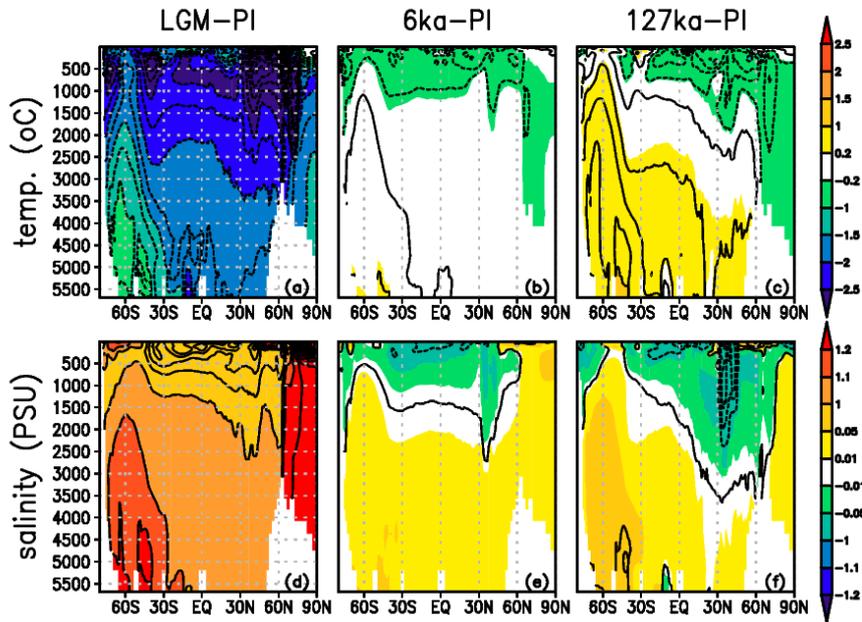


Figure S1: Column cumulative zonal water vapor transport for (a) PI, and anomaly from PI for (b) LGM, (c) 6ka and (d) 127ka.



5 Figure S2: Anomalies of oceanic potential temperature and salinity for LGM (a, d), 6ka (b, e) and 127ka (c, f).

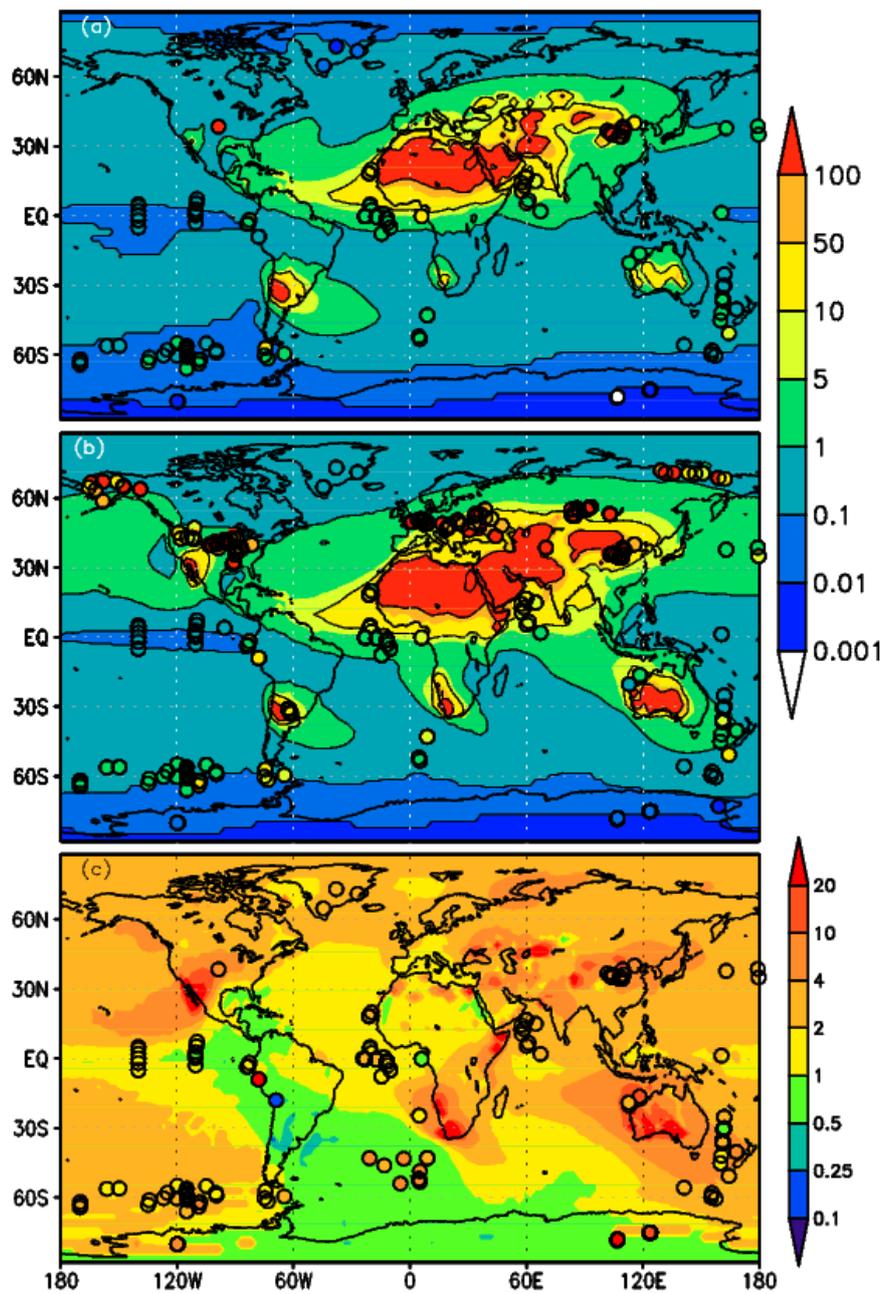
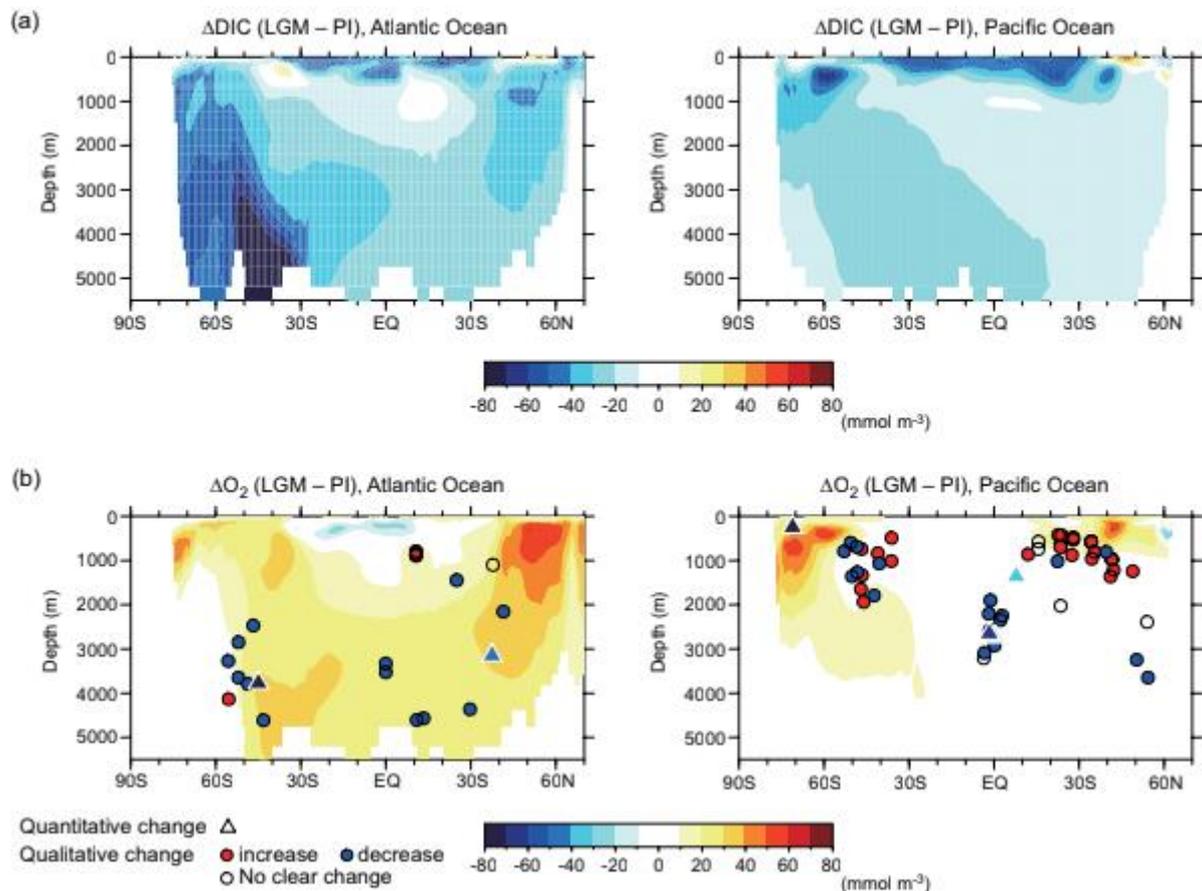


Figure S3: Dust deposition flux ($\text{g m}^{-2} \text{y}^{-1}$) for (a) PI (b) LGM and (c) ratio of LGM/PI in comparison with data archives (Kohfeld et al. 2013, Albani et al. 2014) in colored circles.



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Fig. S4: Zonal mean changes in (a) dissolved inorganic carbon concentration and dissolved oxygen concentration from PI to LGM. The left and right panels show the Atlantic and Pacific oceans, respectively. Circles show proxy data of qualitative oxygen change from Jaccard et al (2016), and Durand et al (2018). Red and blue circles indicate oxygen increase and decrease from the Holocene to LGM. Triangles show proxy records of quantitative oxygen change (Schmiedl and Mackensen, 2006; Hoogakker et al., 2015, 2018; Gottschalk et al., 2016; Lu et al., 2016; Bunzel et al., 2017; Umling and Thunell, 2018) (Triangles shaded using the same color scale)

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