



Supplement of

Understanding the Australian Monsoon change during the Last Glacial Maximum with a multi-model ensemble

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29 Figure S1 Change of the insolation during the LGM. The insolation during PI is plotted in

- 30 contours, and the difference between the LGM and the PI is color-shaded (units in W m^{-2}).
- 31 Reprint of Fig. 2 in Yan et al. (2016).
- 32



35 **Figure S2** Distributions of the land–sea mask and land-ice during the LGM. The land–sea mask

36 during the LGM is in red contour. The land-sea mask during the PI is in black contour. The land

- 37 ice-sheet is color-shaded. Reprint of Fig. 1 in Yan et al. (2016).
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JJA mean





Figure S3 The JJA mean difference between LGME and piControl derived from 7MME. Shown

41 are precipitation (top left), sum of each term (top center), thermodynamic term (top right),

- 42 dynamic term (bottom left), surface evaporation (bottom center) and advection term (bottom
- 43 right).
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Figure S5 The ND mean zonal (top panels) and meridional (bottom panels) gradient difference between LGME and piControl. (a)-(b) for surface air temperature anomaly, (c)-(d) for sea level pressure anomaly, and (e)-(f) for sea surface temperature anomaly. The thick black lines denote the coastal lines in LGME provided by CMIP5/PMIP3, and the thin black lines denote the coastal lines in piControl. Only those areas where signal-to-noise ratio exceeds one are plotted.



64 Figure S6 Same as Fig. S3, but for ND mean.





Figure S7 The ND mean SST difference between the LGME and piControl. The orange lines

69 enclose the monsoon domains. Only those areas where signal-to-noise ratio exceeds one are

- 70 plotted.



78 **Figure S8** The 7MME ND mean ITCZ location defined by the meridional maximum

79 precipitation between 20 °S and 20 °N. The red line indicates the position during the LGM and the

- 80 blue line indicates the position during the PI.
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