

Supplement to

MioMIP2: Experimental design for Phase 1 & 2 of the Miocene component of the CMIP7/PMIP7 Deep-time Model Intercomparison Project (DeepMIP-Miocene)

N. J. Burls¹ et al.

¹Department of Atmospheric, Oceanic and Earth Sciences & the Center for Ocean-Land-Atmosphere Studies, George Mason University, Fairfax, VA 22030, USA

Correspondence to: Natalie J. Burls (nburls@gmu.com)

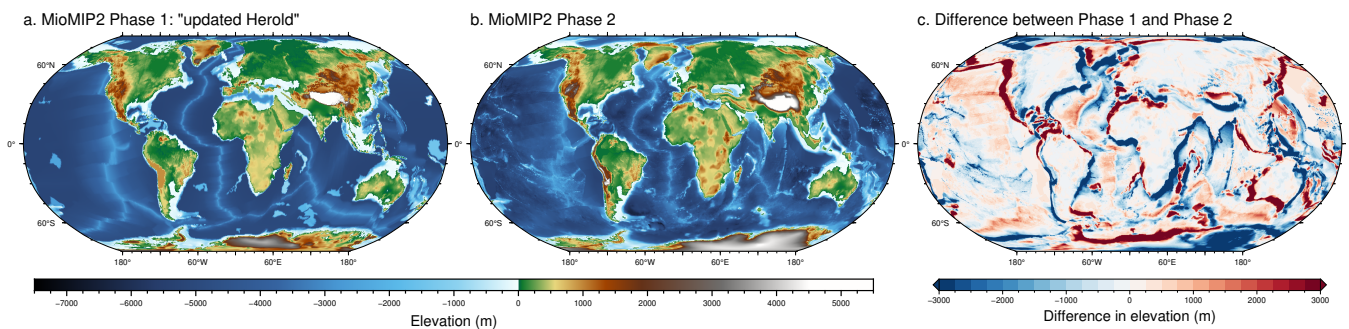


Figure S1. Comparison of paleogeography for MioMIP2 Phase 1 and Phase 2. a. MioMIP2 Phase 1 paleogeography ("updated Herold"). b. MioMIP2 Phase 2 CORE paleogeography. c. The difference in elevation between paleogeography for Phase 1 and Phase 2, noting that these paleogeography reconstructions use different plate tectonic reconstructions and absolute reference frames, which have not been adjusted for here.

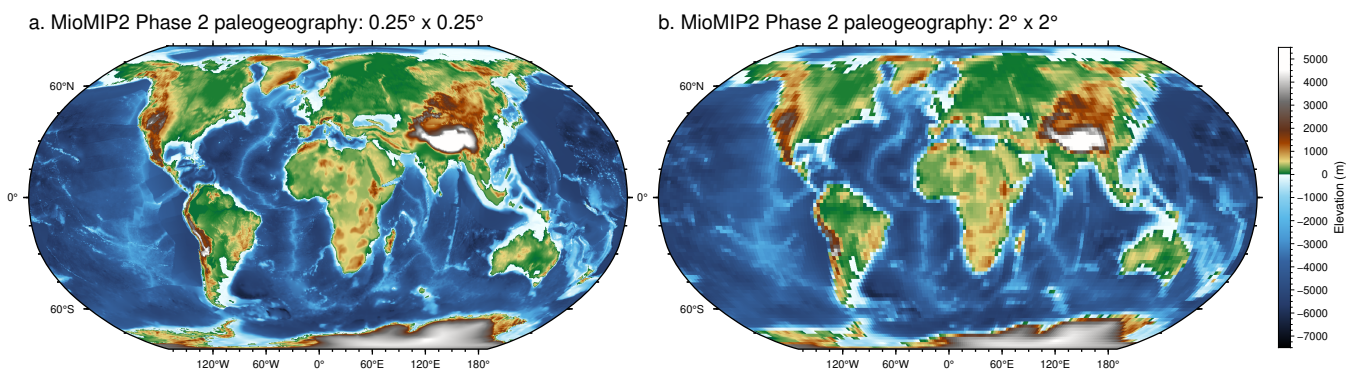


Figure S2. Comparison of MioMIP2 Phase 2 CORE paleogeography. a. high resolution: 0.25° x 0.25°. b. low resolution: 2° x 2°

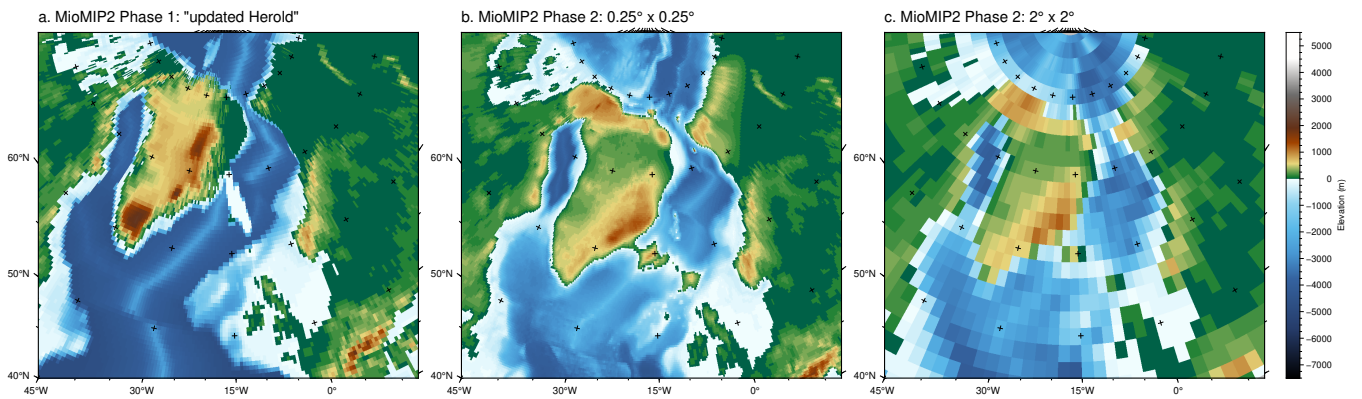


Figure S3. Comparison of paleogeography for the North Atlantic, including the Fram Strait. a. MioMIP2 Phase 1 “updated Herold”. b. MioMIP2 Phase 2 CORE paleogeography at the high resolution ($0.25^\circ \times 0.25^\circ$). c. MioMIP2 Phase 2 CORE paleogeography at the low resolution ($2^\circ \times 2^\circ$)

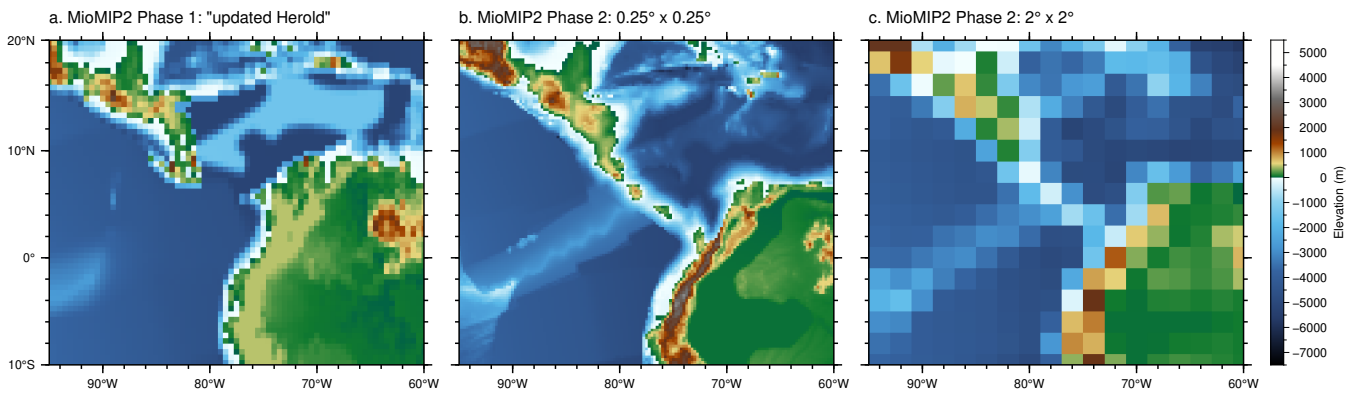


Figure S4: Comparison of paleogeography for the Central American Seaway. a. MioMIP2 Phase 1 “updated Herold”. b. MioMIP2 Phase 2 CORE paleogeography at the high resolution ($0.25^\circ \times 0.25^\circ$). c. MioMIP2 Phase 2 CORE paleogeography at the low resolution ($2^\circ \times 2^\circ$)

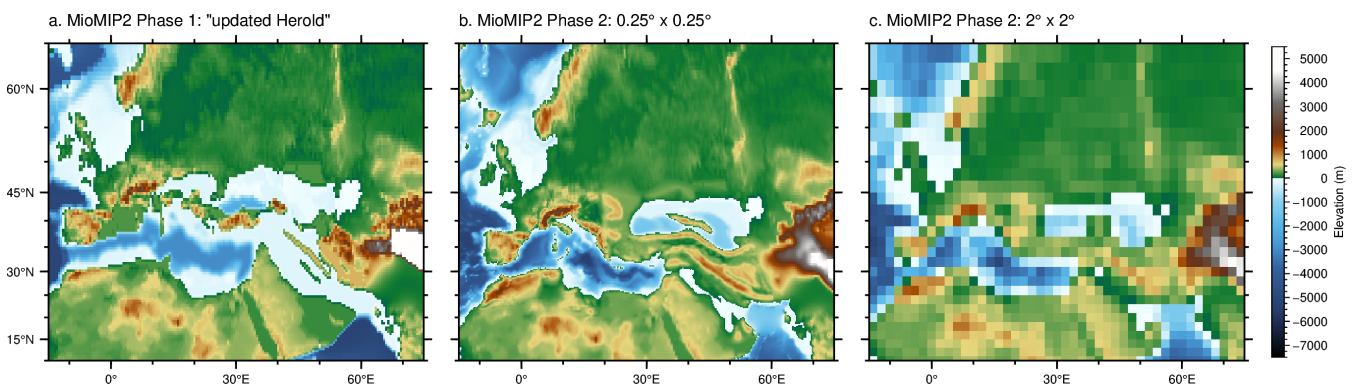


Figure S5. Comparison of paleogeography for Europe and the Tethys. a. MioMIP2 Phase 1 “updated Herold”. b. MioMIP2 Phase 2 CORE paleogeography at the high resolution ($0.25^\circ \times 0.25^\circ$). c. MioMIP2 Phase 2 CORE paleogeography at the low resolution ($2^\circ \times 2^\circ$)

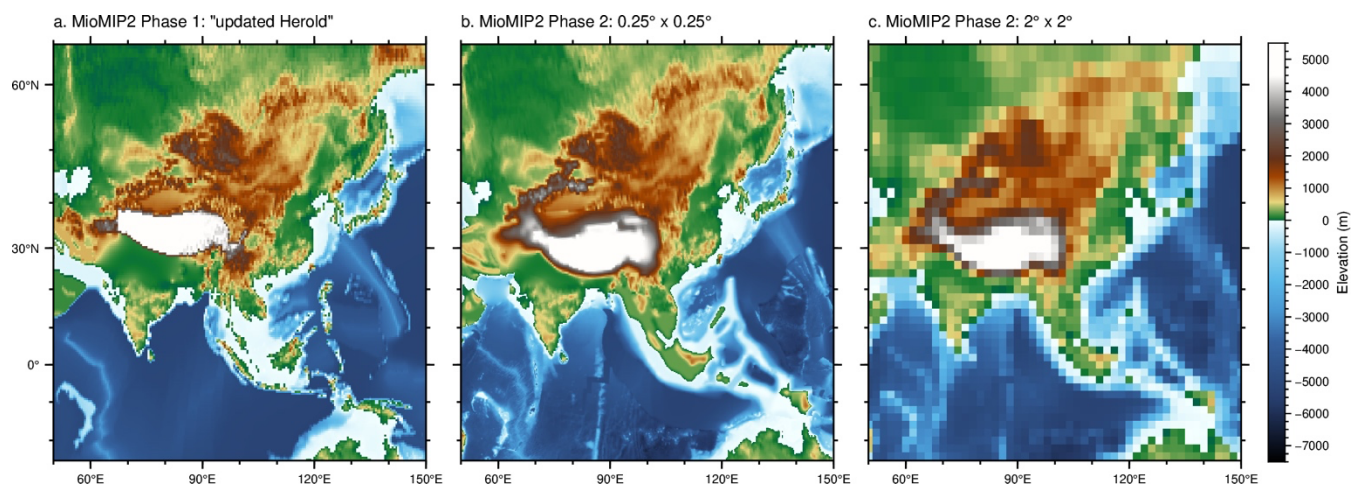


Figure S6. Comparison of paleogeography for Asia, including the Maritime continent and the Indonesian Gateway. a. MioMIP2 Phase 1 “updated Herold”. b. MioMIP2 Phase 2 CORE paleogeography at the high resolution ($0.25^\circ \times 0.25^\circ$). c. MioMIP2 Phase 2 CORE paleogeography at the low resolution ($2^\circ \times 2^\circ$)

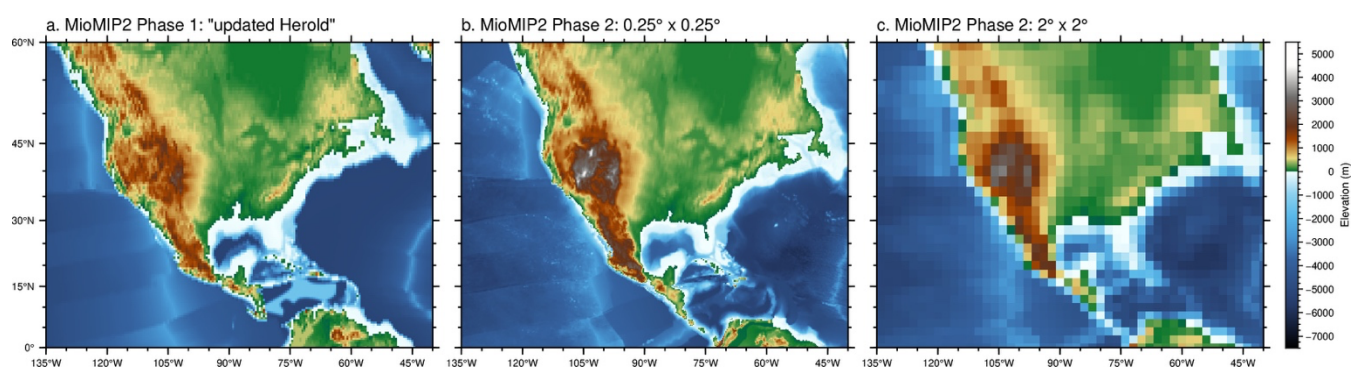


Figure S7. Comparison of North and Central America paleogeography, including the Central American Seaway. a. MioMIP2 Phase 1 “updated Herold”. b. MioMIP2 Phase 2 CORE paleogeography at the high resolution ($0.25^\circ \times 0.25^\circ$). c. MioMIP2 Phase 2 CORE paleogeography at the low resolution ($2^\circ \times 2^\circ$)

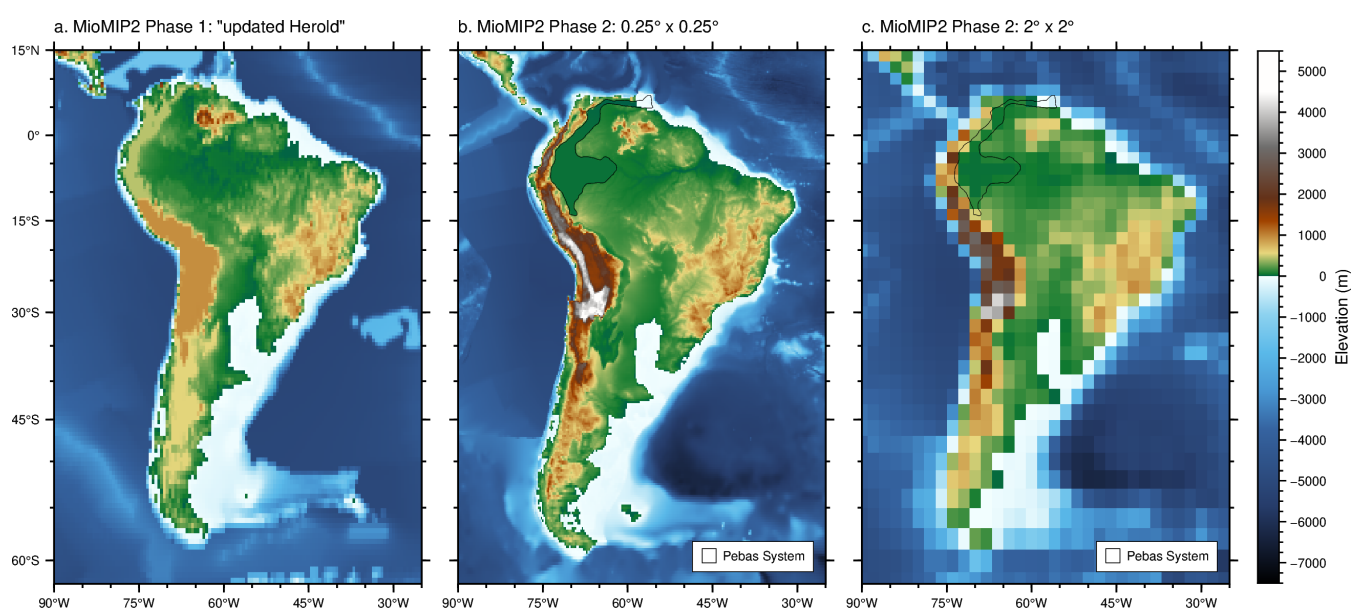


Figure S8. Comparison of South America paleogeography. a. MioMIP2 Phase 1 “updated Herold”. b. MioMIP2 Phase 2 CORE paleogeography at the high resolution ($0.25^\circ \times 0.25^\circ$). c. MioMIP2 Phase 2 CORE paleogeography at the low resolution ($2^\circ \times 2^\circ$)

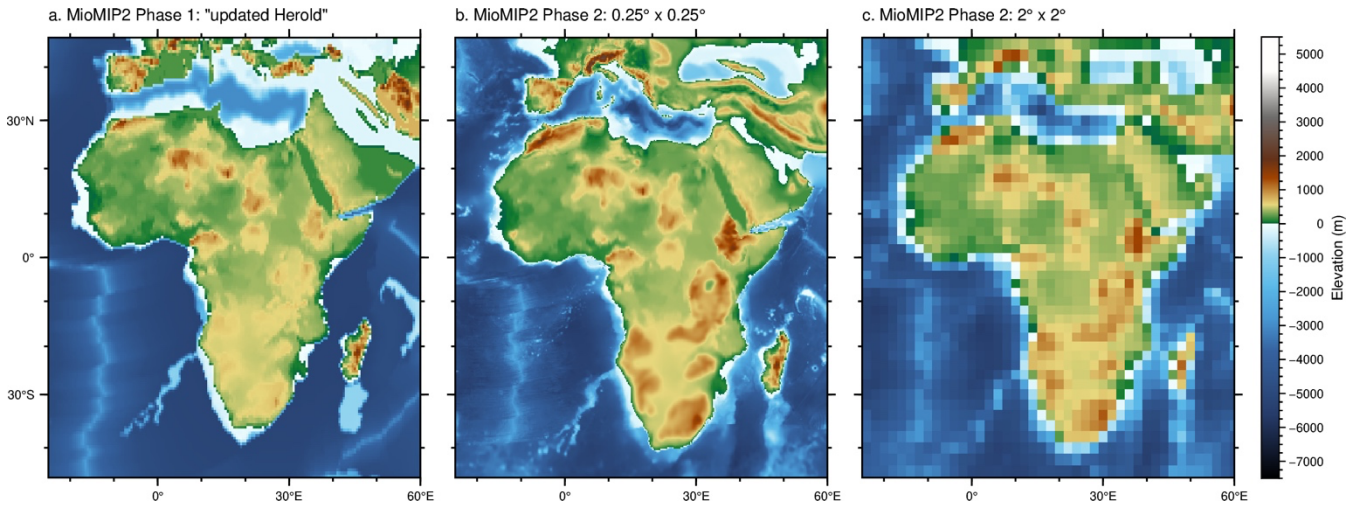


Figure S9. Comparison of paleogeography for Africa. a. MioMIP2 Phase 1 "updated Herold". b. MioMIP2 Phase 2 CORE paleogeography at the high resolution ($0.25^\circ \times 0.25^\circ$). c. MioMIP2 Phase 2 CORE paleogeography at the low resolution ($2^\circ \times 2^\circ$)

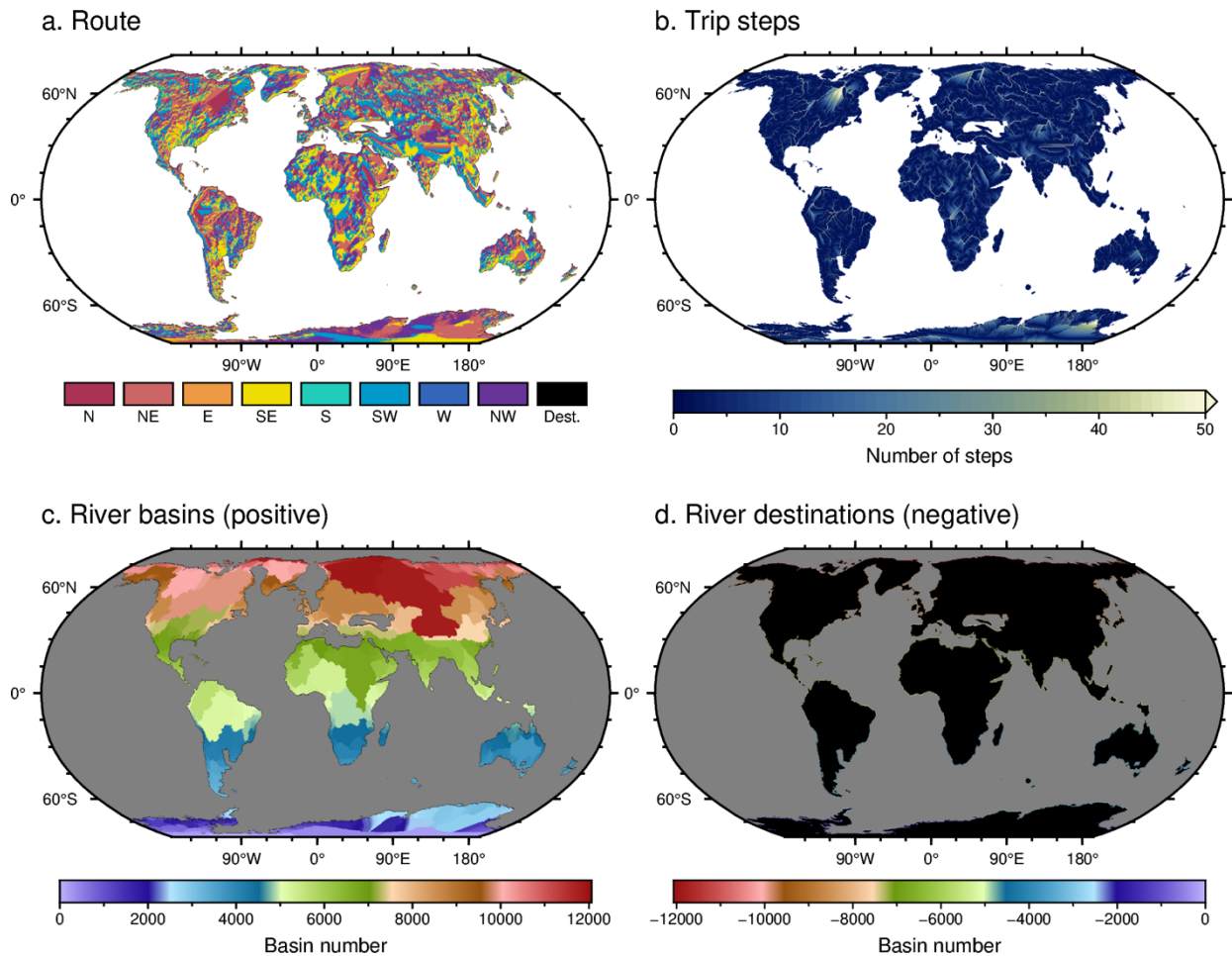


Figure S10: MioMIP2 Phase 2 CORE experiment river routing scheme at the high ($0.25^\circ \times 0.25^\circ$) resolution. a. river routes, where 'Dest' refers to the ocean destination; b. River trip steps, demonstrating the number of steps for a river to get to an ocean (i.e., major drainage pathways are indicated by a higher number of steps); c. river basins and d. river destinations, showing the source and destination of unique draining points based on their unique positive value (panel c) and corresponding negative value (panel d), respectively.

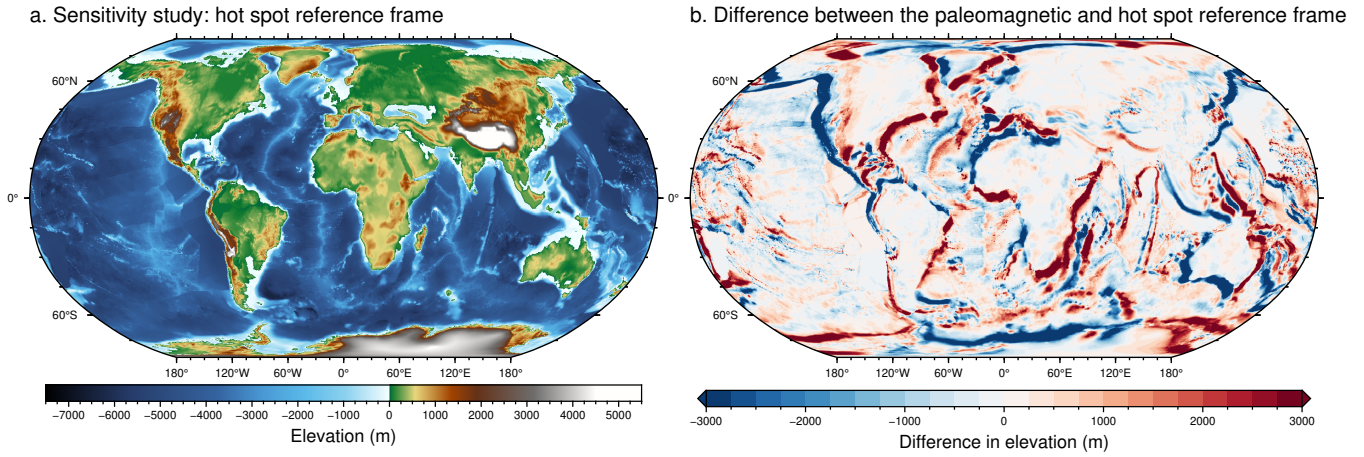


Figure S11. Hot spot reference frame sensitivity experiment and comparison with the paleomagnetic reference frame used in the Phase 2 CORE experiment. a. Hot spot reference frame paleogeography. b. Difference between the paleomagnetic reference frame (from the CORE experiment) and hot spot reference frame sensitivity study.

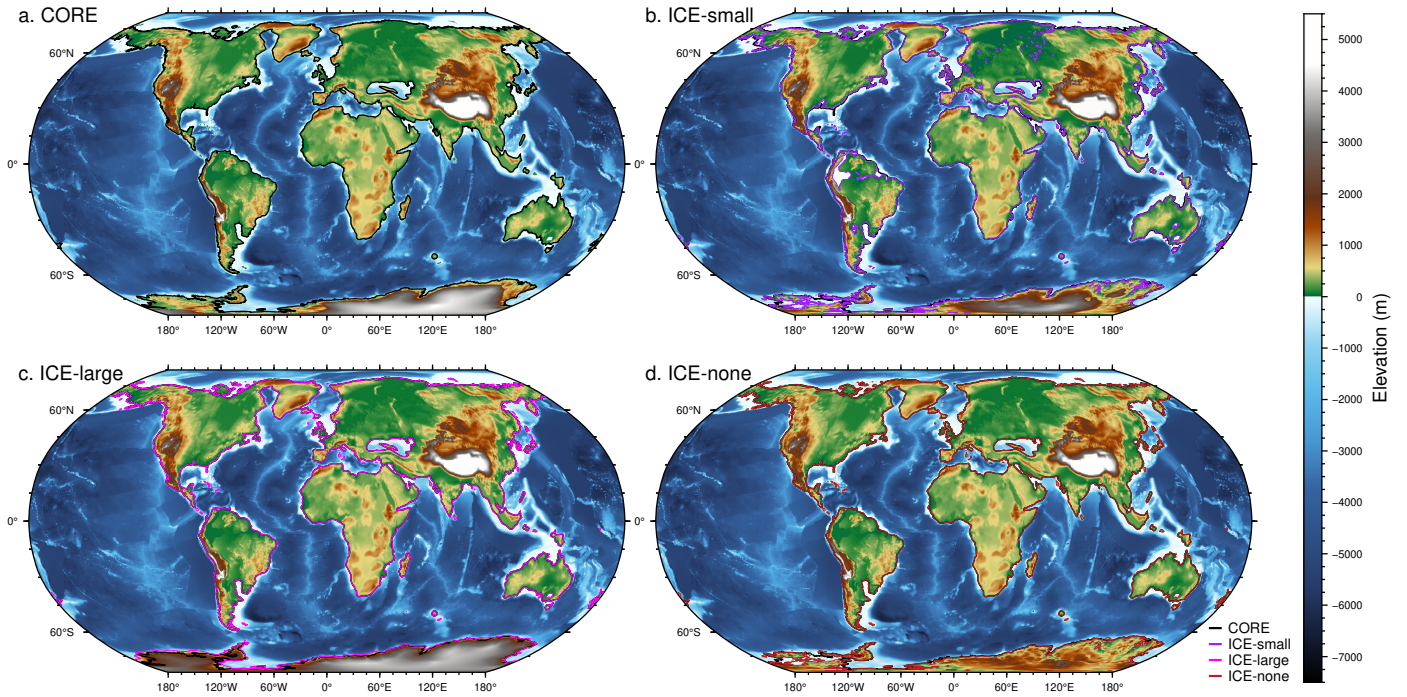


Figure S12. Comparison of paleoshorelines based on the ice sheet sensitivity studies. a. CORE experiment, with the land-sea mask indicated as a black line. b. Small ice sheet sensitivity study (ICE-small) including its equivalent sea-level rise. New land-sea mask indicated by the purple line. c. Large ice sheet sensitivity study (ICE-large), where the land-sea mask is indicated by the magenta line. d. No ice sheet sensitivity study (ICE-none), where the land-sea mask is indicated by the dark red line. In panels b–d, the CORE land-sea mask is shown as a black line. Note that in the ICE-large and ICE-none sensitivity studies, no equivalent sea-level rise is incorporated.