



Supplement of

The tropical route of quasi-biennial oscillation (QBO) teleconnections in a climate model

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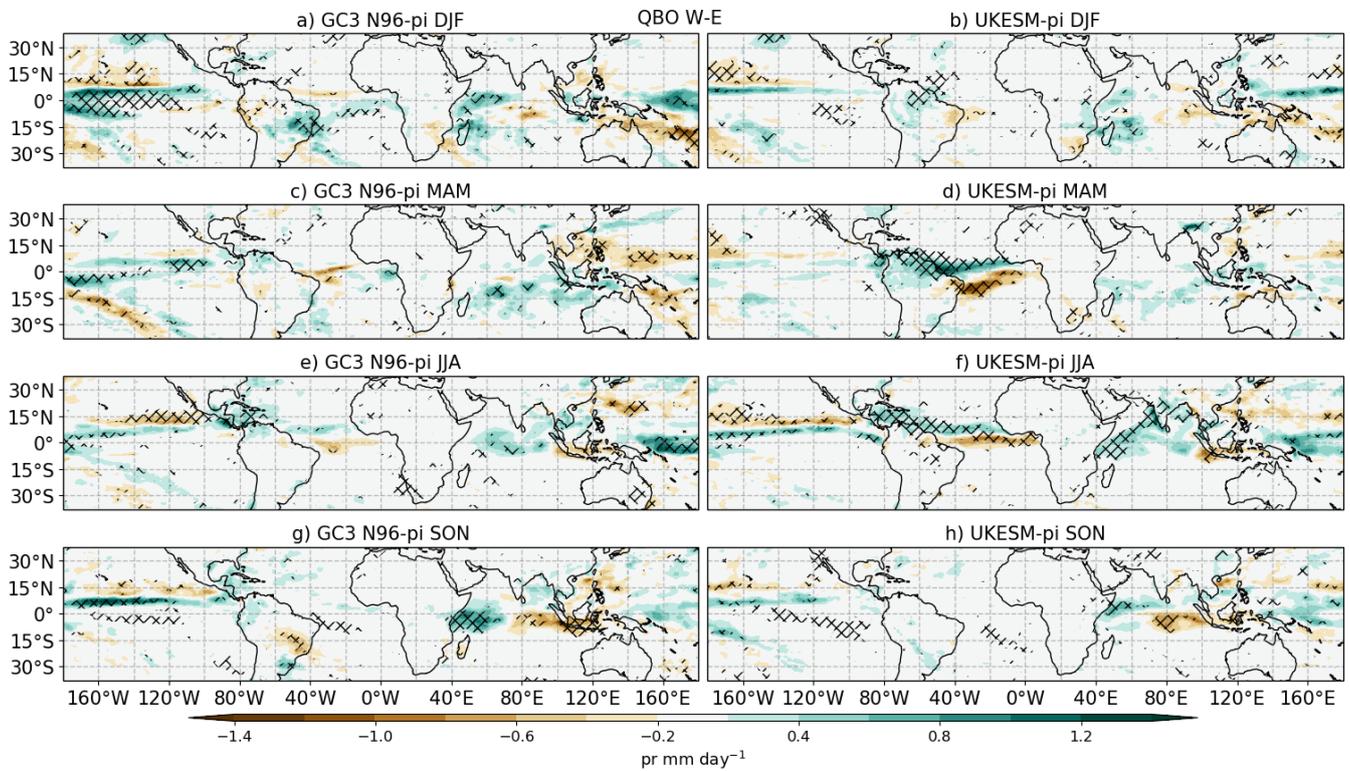


Figure S1. Seasonal mean precipitation differences between QBO W-E phases in (left) GC3 N96-pi and (right) UKESM-pi for (a, b) DJF, (c, d) MAM, (e, f) JJA and (g, h) SON. Hatching denotes statistically significant differences to the 95% confidence level using a bootstrapping with replacement test.

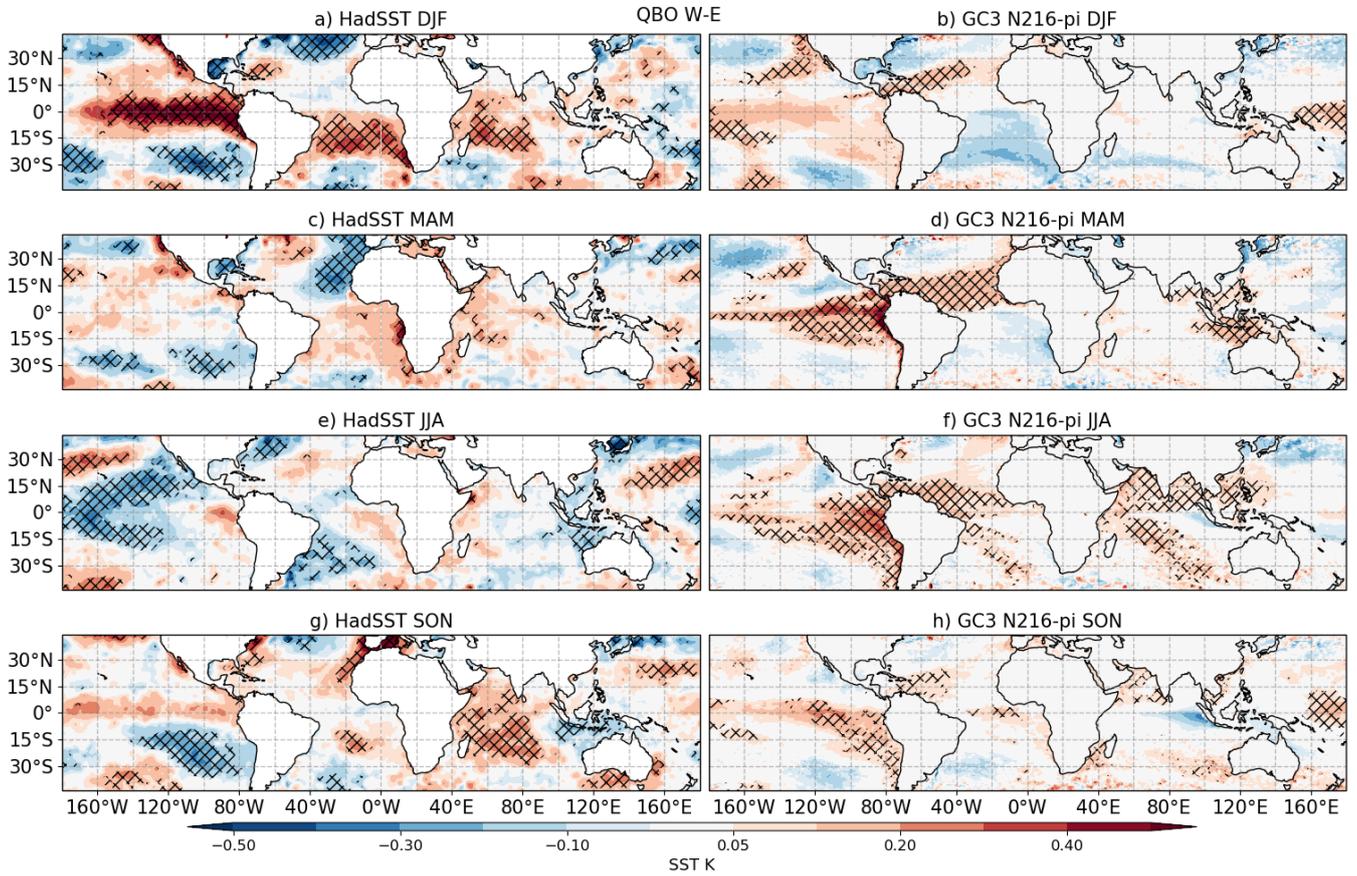


Figure S2. SST composite differences for (left) HadSST (1979-2021) and (right) GC3 N216-pi for the seasons of (a-b) DJF, (c-d) MAM, (e-f) JJA and (g-h) SON. Hatching denotes statistically significant differences to the 95% confidence level using a bootstrapping with replacement test.

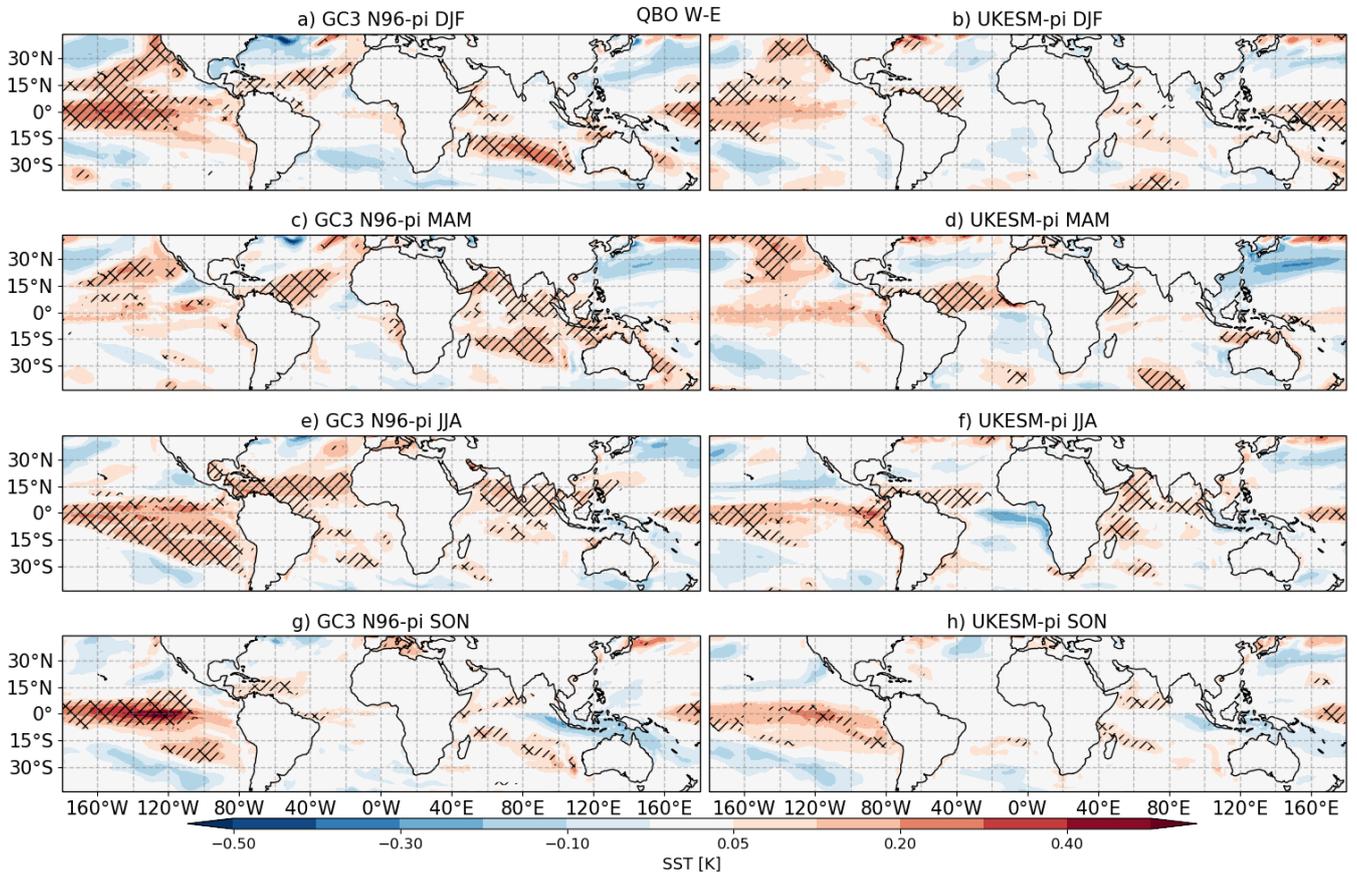


Figure S3. As in Fig. S2 but for for (left) GC3 N96-pi and (right) UKESM-pi.

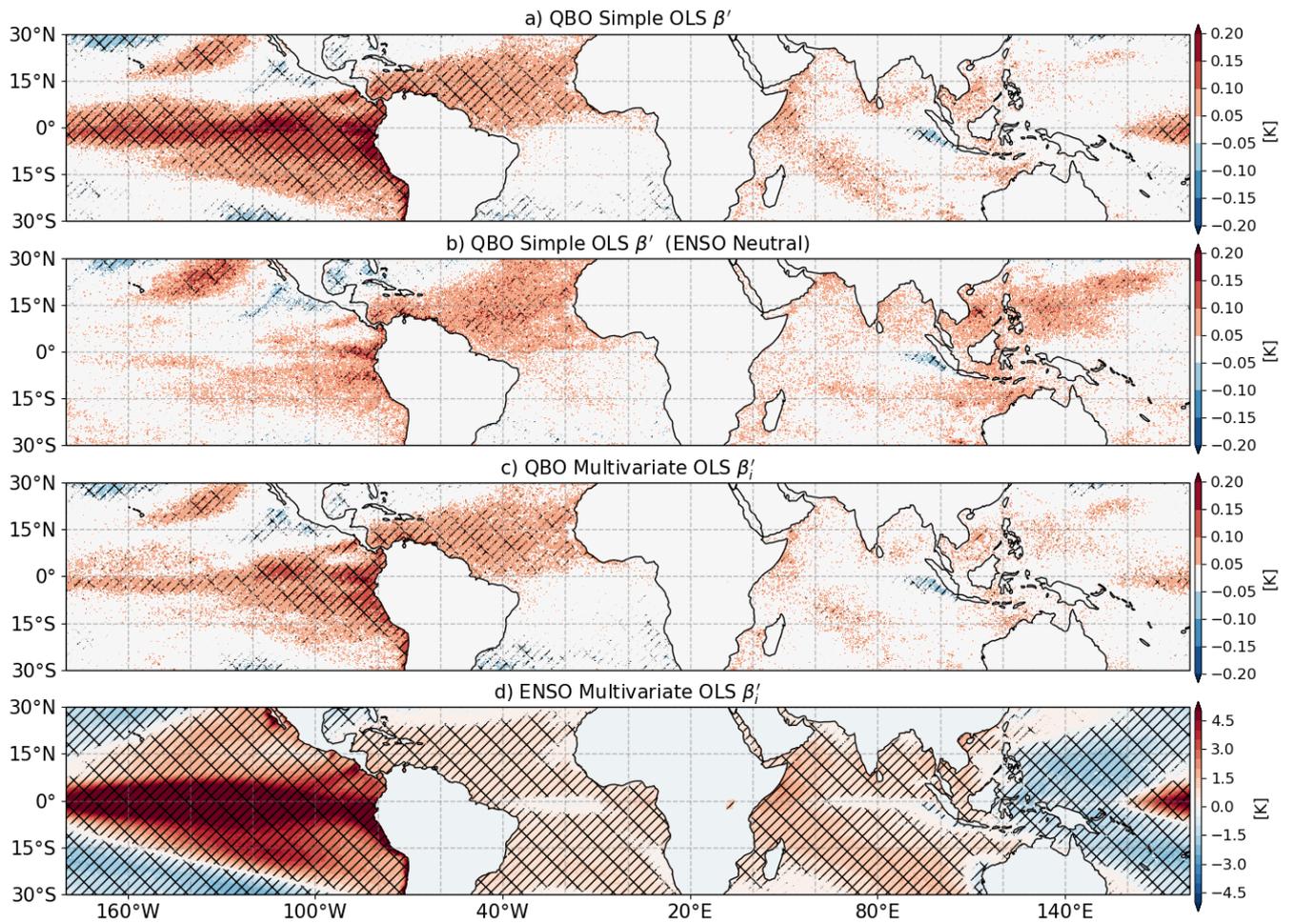


Figure S4. Regression analysis as in Figure 5 of the main manuscript but for sea-surface temperatures (SSTs).

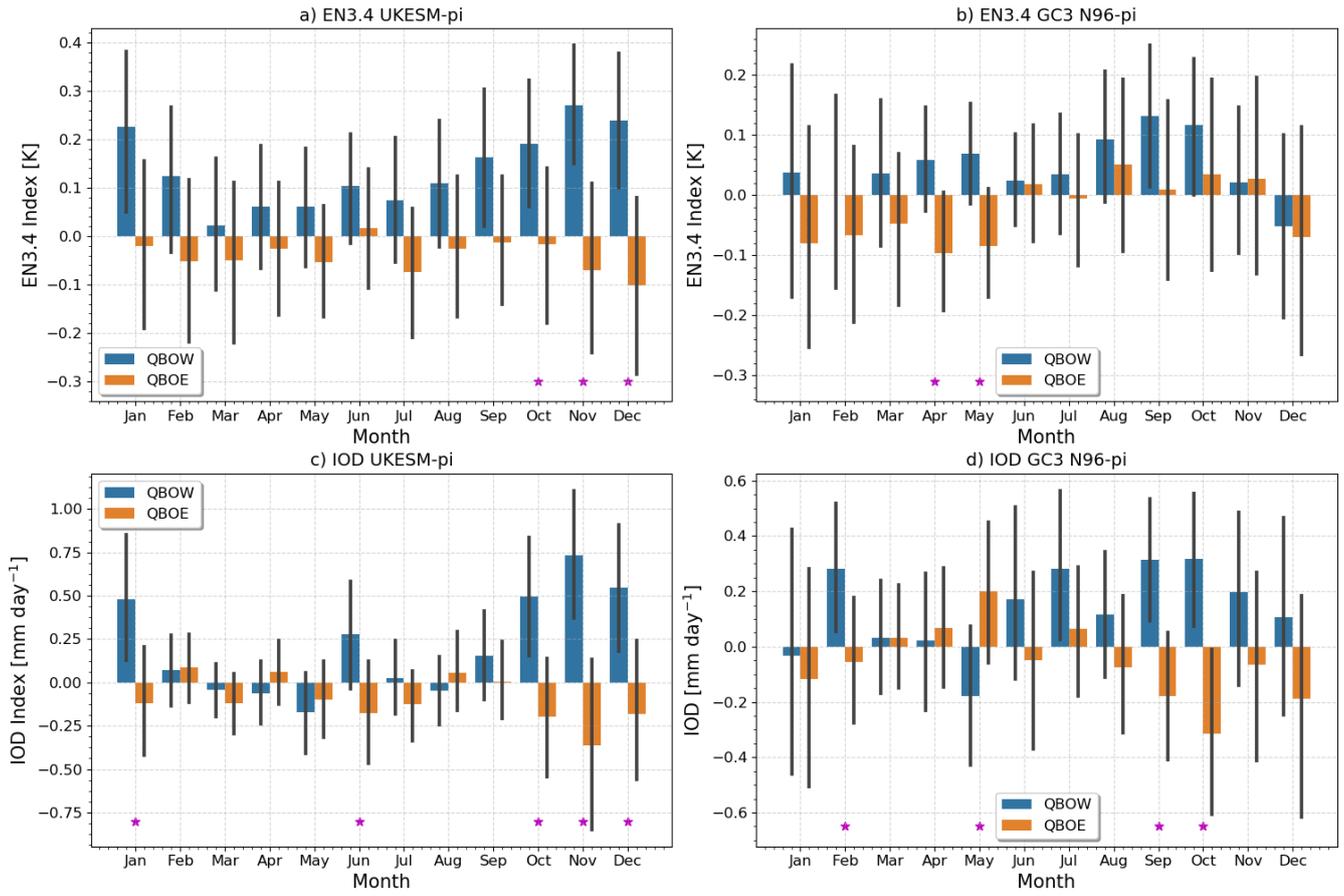


Figure S5. As in Figure 6 of the main manuscript but for (a, c) UKESM-pi and (b, d) GC3 N96-pi.

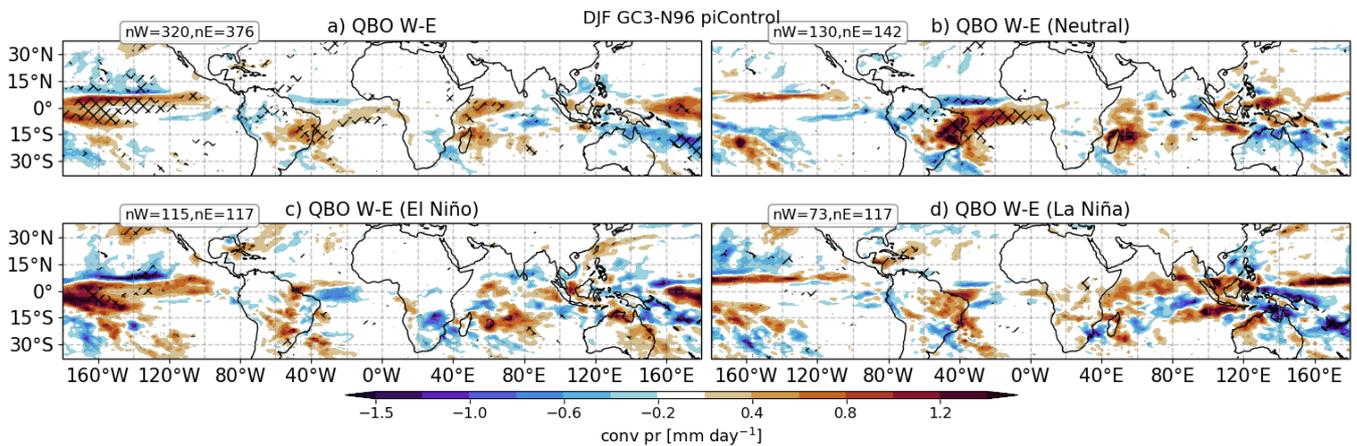


Figure S6. As in Figure 8 of the main manuscript but for GC3 N96-pi in DJF.

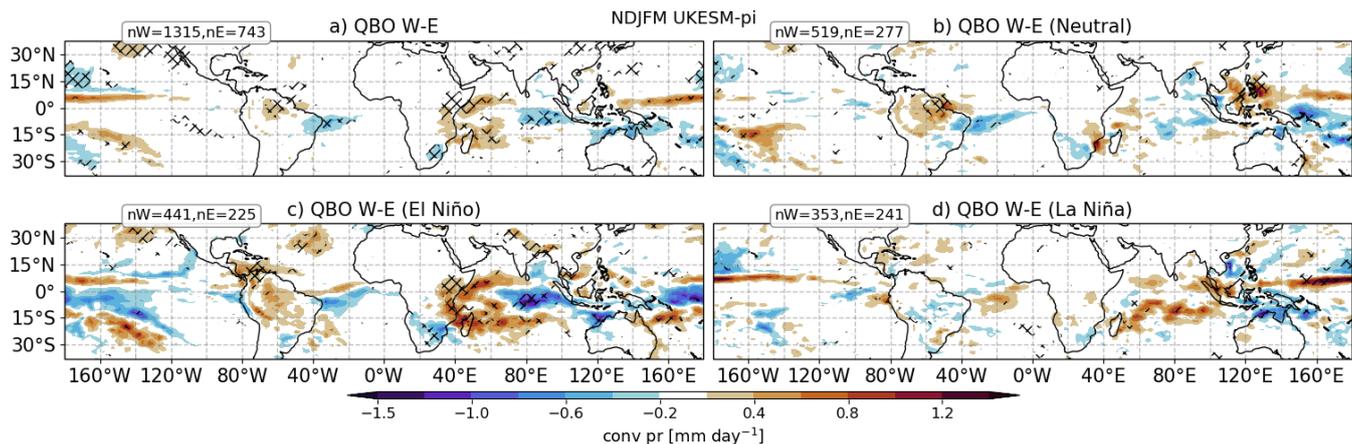


Figure S7. As in Figure 8 of the main manuscript but for UKESM-pi in NDJFM.

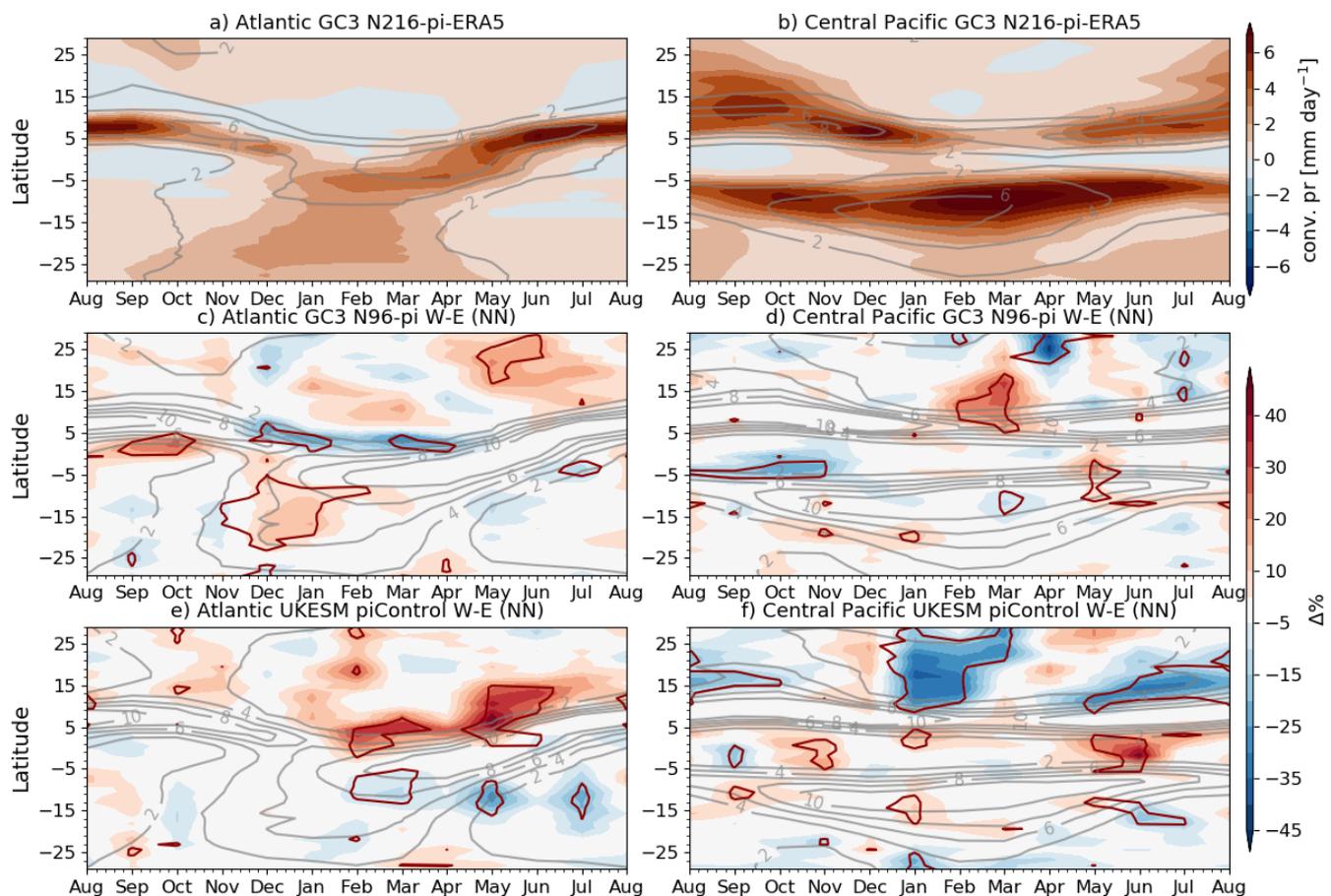


Figure S8. As in Figure 9 of the main manuscript but for (c,d) GC3 N96-pi and (e-f) UKESM-pi.

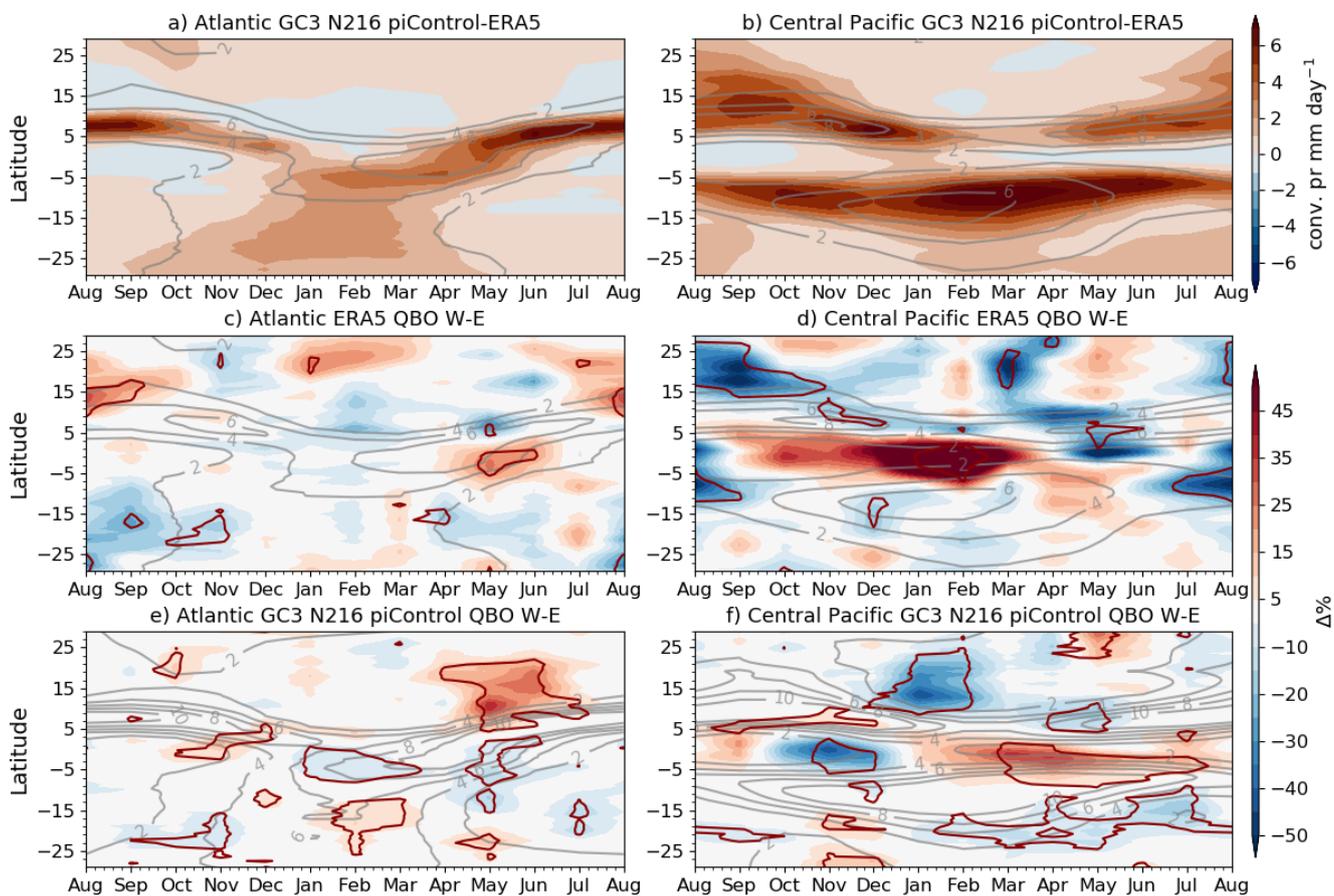


Figure S9. As in Figure 9 of the main manuscript but using all years available.

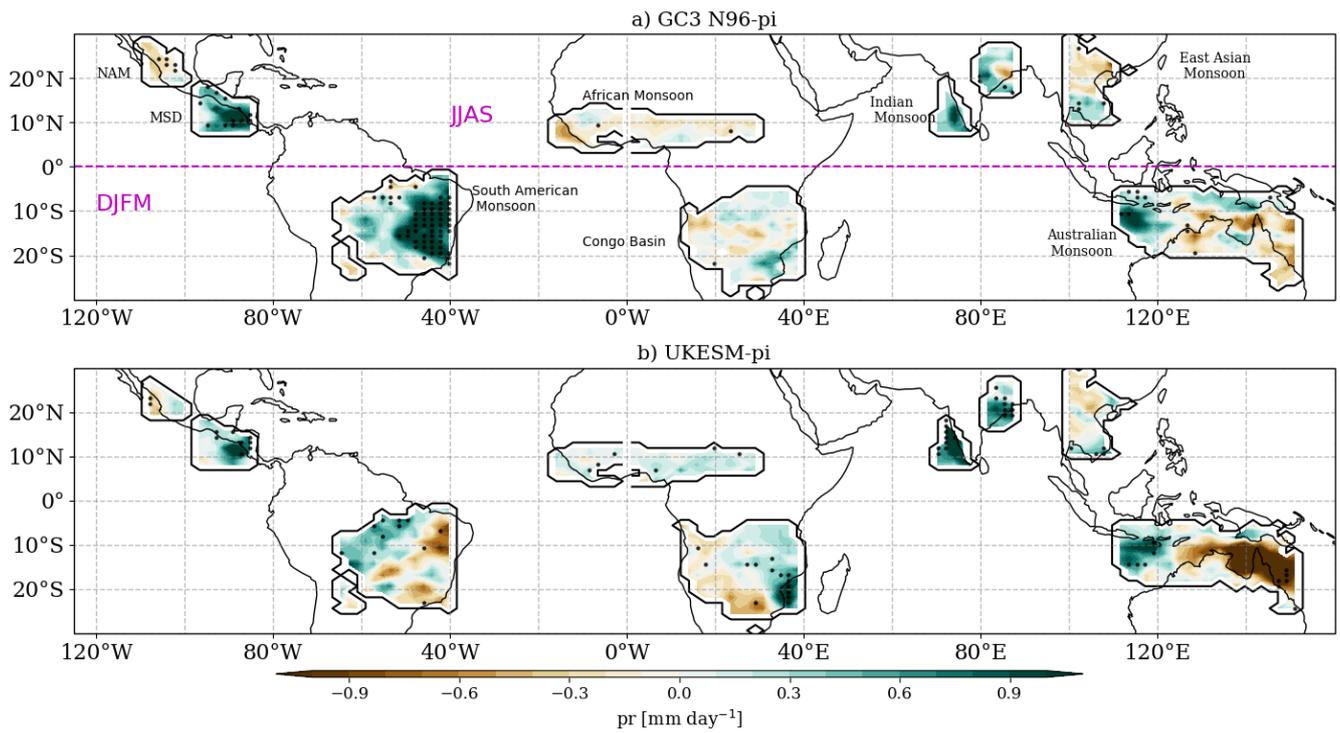


Figure S10. As in Figure 10 of the main manuscript but for (a) GC3 N96-pi and (b) UKESM-pi.

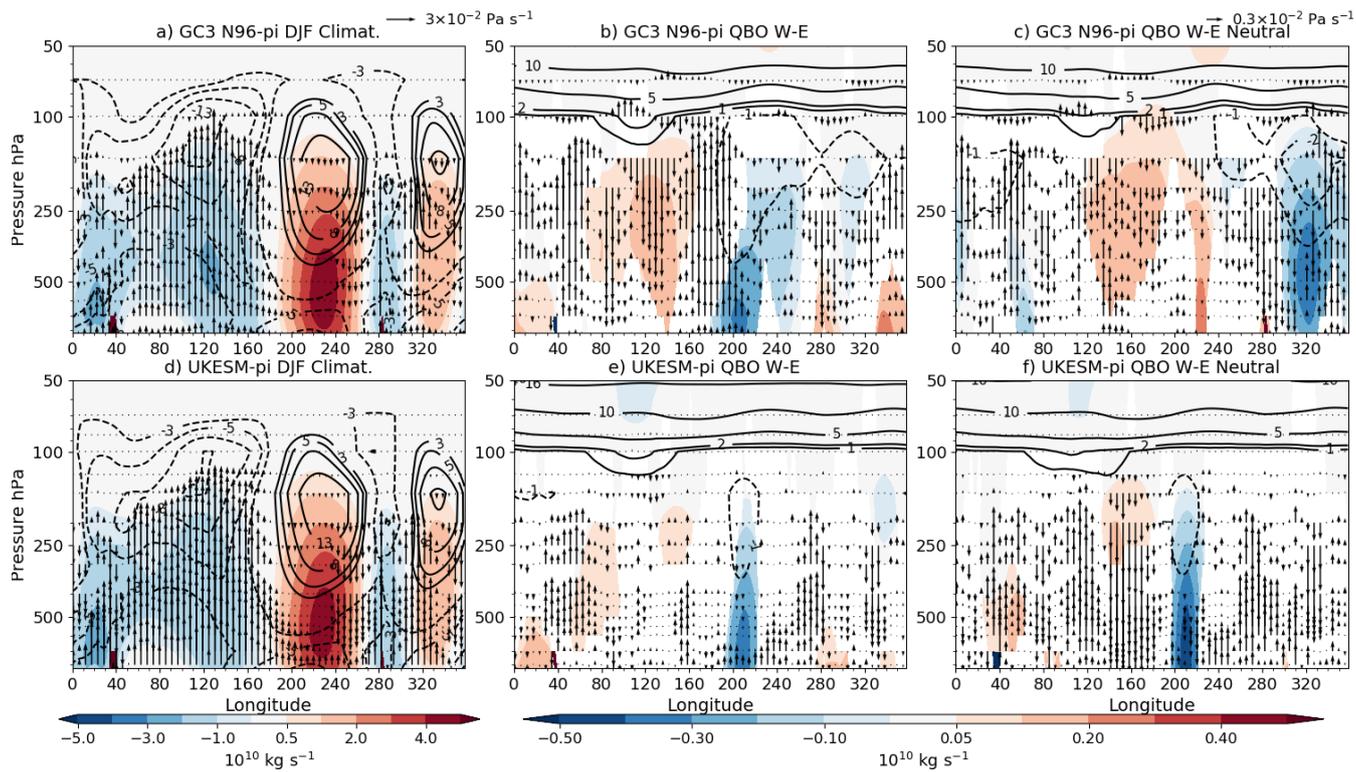


Figure S11. As in Figure 11 of the main manuscript but for (a-c) GC3 N96-pi and (d-f) UKESM-pi.

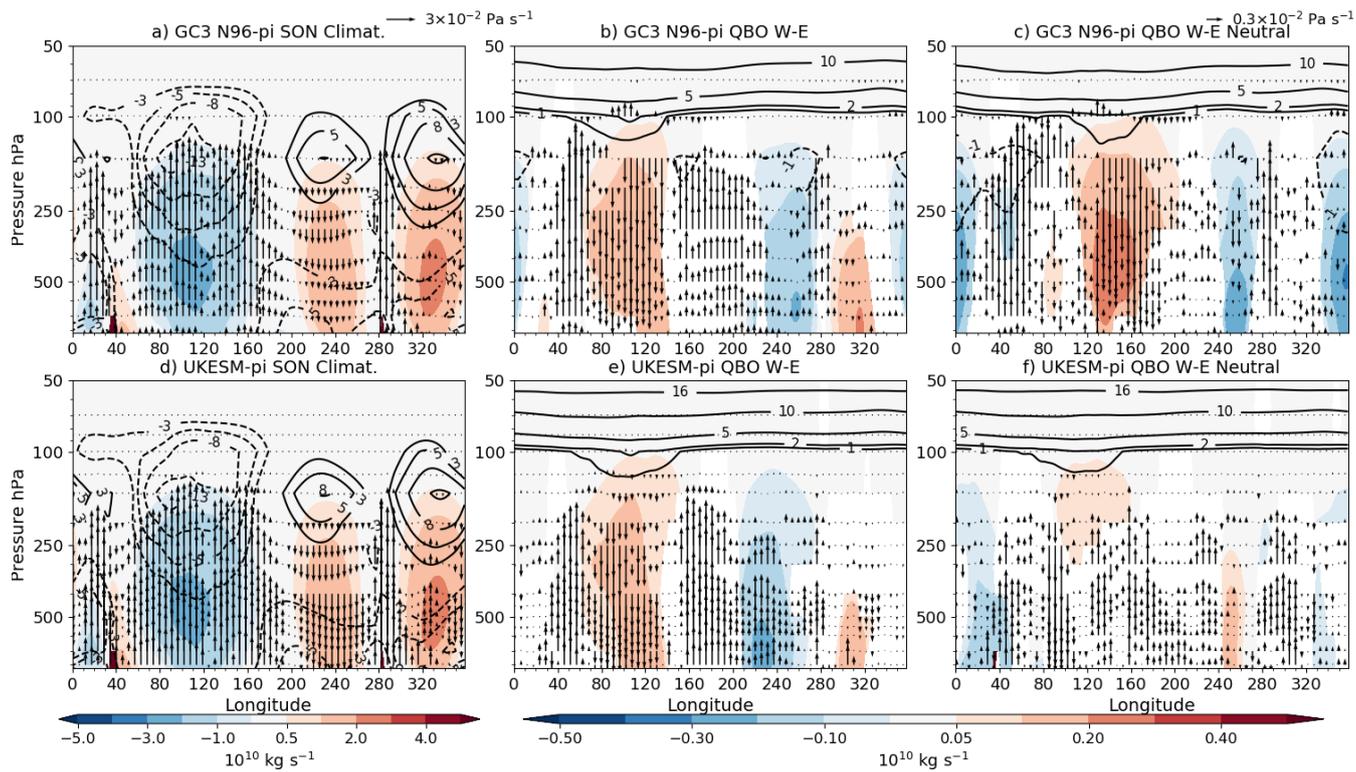


Figure S12. As in Figure 12 of the main manuscript but for (a-c) GC3 N96-pi and (d-f) UKESM-pi.

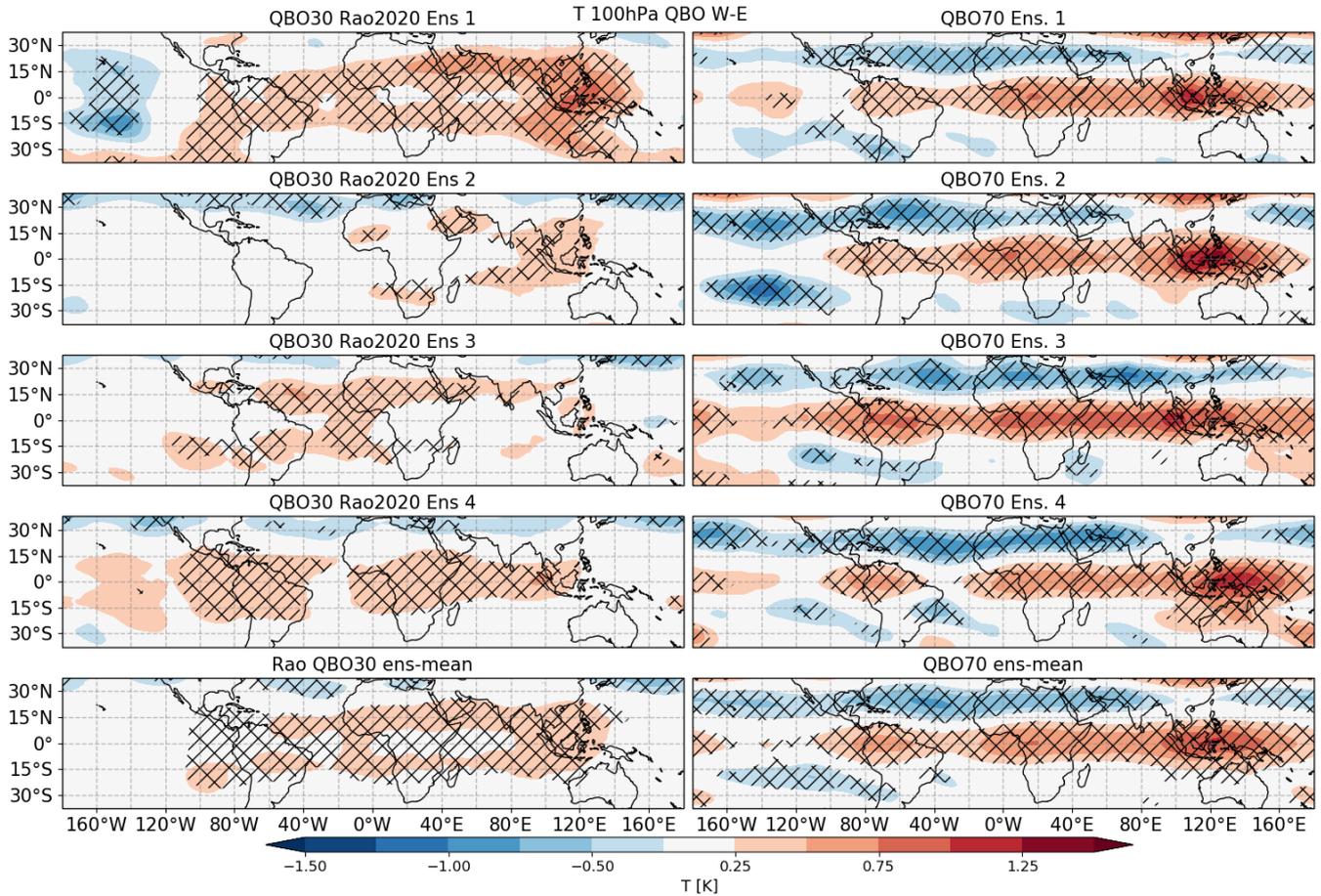


Figure S13. DJF mean air temperature (at 100 hPa) differences (QBO W-E) for GC3 N96-historical simulations using (left) a 30 hPa index defined as in Rao et al. (2020), and (right) a 70 hPa index as in the main manuscript for each individual ensemble member and (bottom) ensemble-mean. Hatching denotes statistically significant differences to the 95% confidence level.

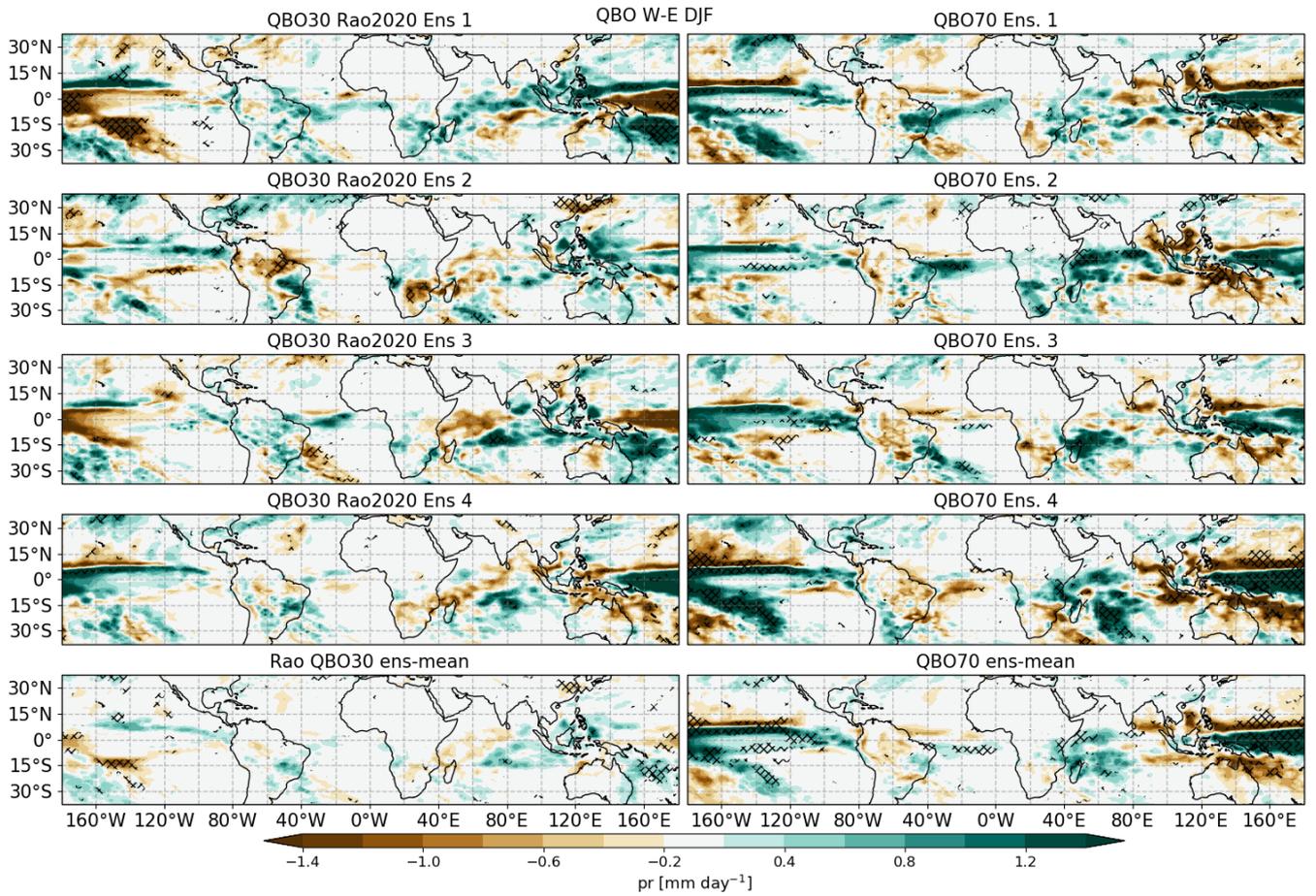


Figure S14. As in Figure S13 but for precipitation in UKESM historical simulations.