Supplementary materials

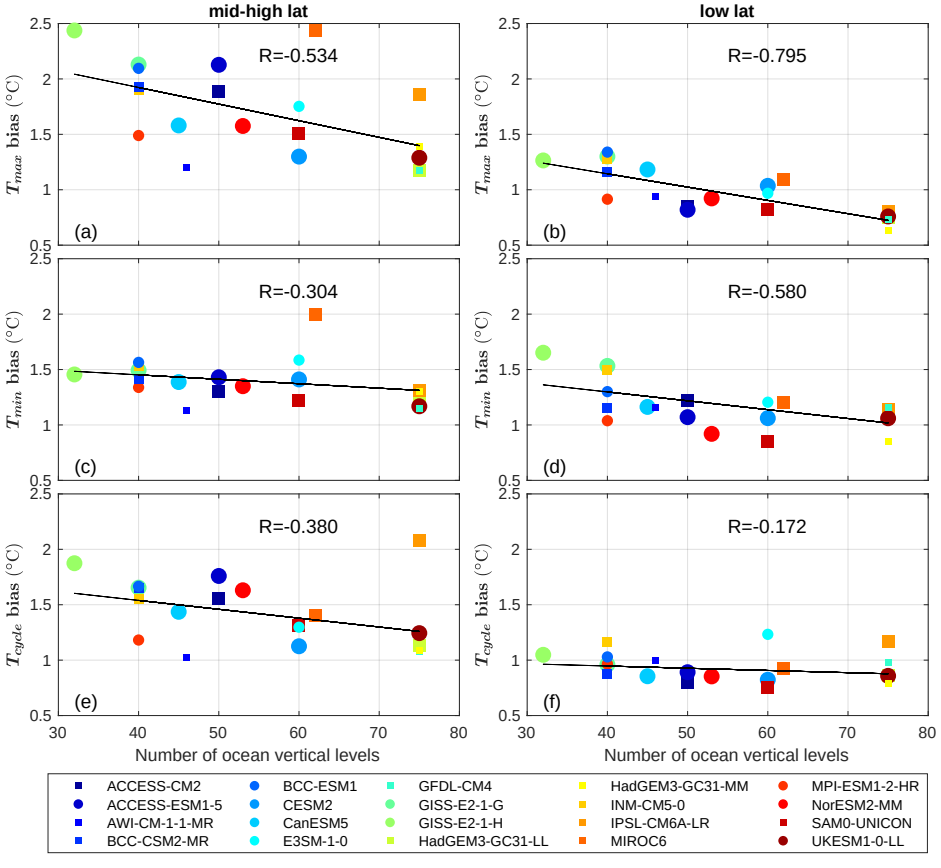

Figure S1. The area-weighted SST RMSE against total vertical levels for (a-b) mid-high latitudes (30°-90°) and (c-d) low latitudes 30°S-30°N.

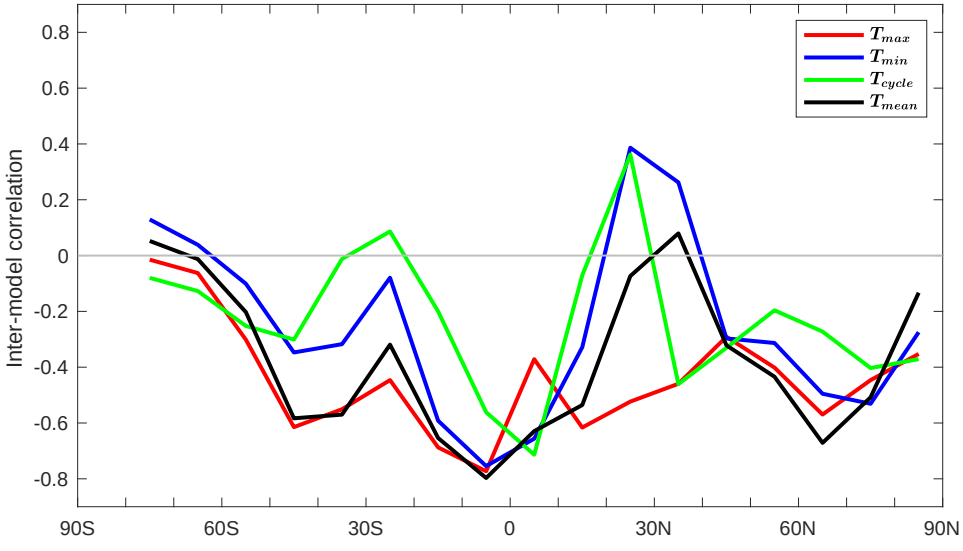

Figure S2. Inter-model correlation between number of ocean vertical levels and area-weighted RMSE in 10° latitude bands for T_{max}, T_{min}, T_{cycle} and T_{mean}.

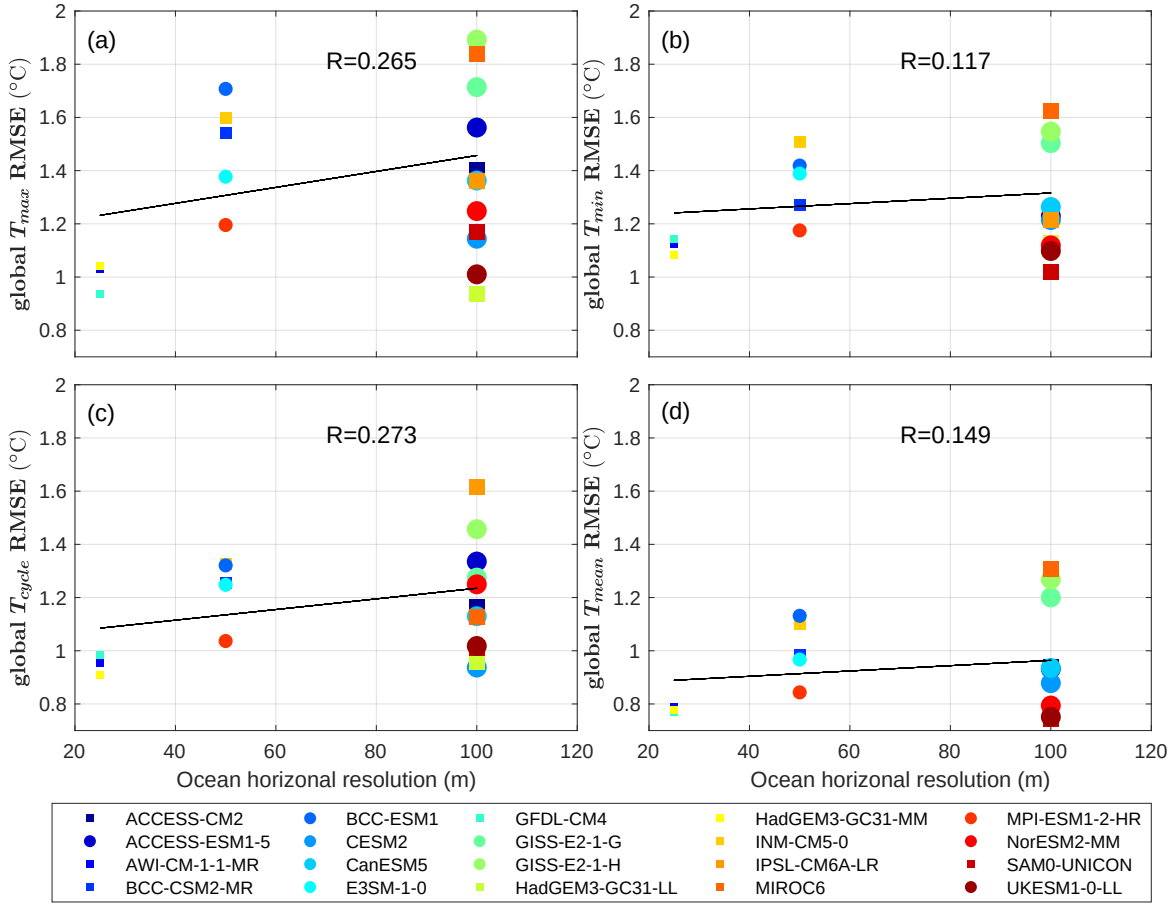

Figure S3. Global RMSE of (a) T_{max}, (b) T_{min}, (c) T_{cycle} and (d) T_{mean}, all against the ocean horizontal resolution.

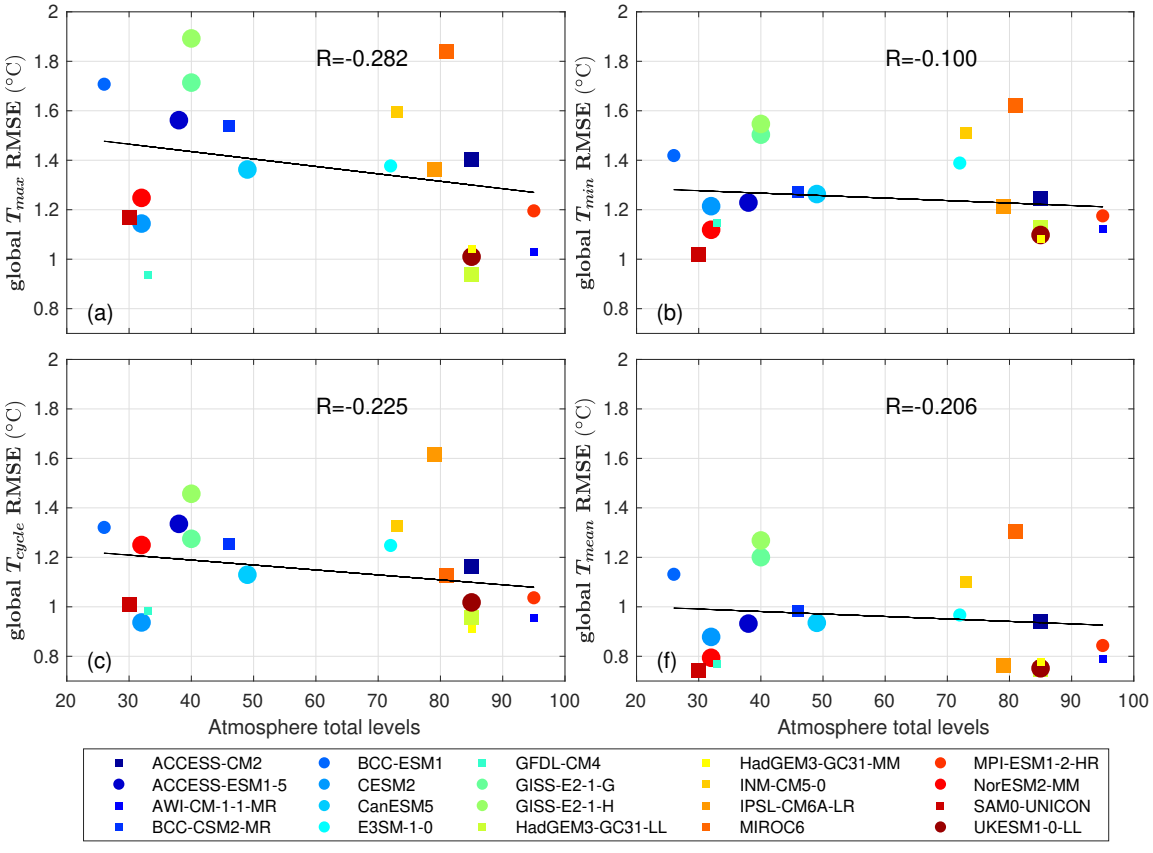

Figure S4. As Fig. S3, but for atmosphere vertical levels.

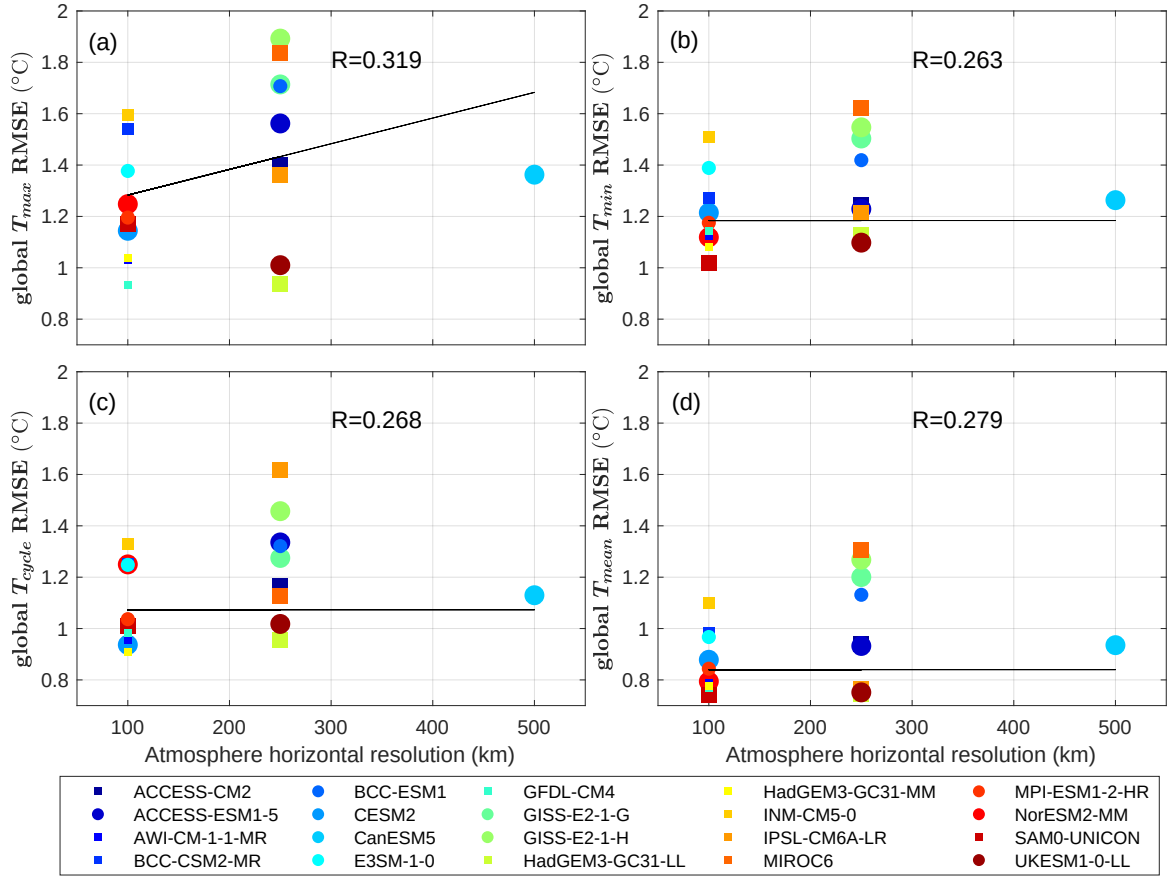

Figure S5. As Fig. S3, but for atmosphere horizontal resolution.

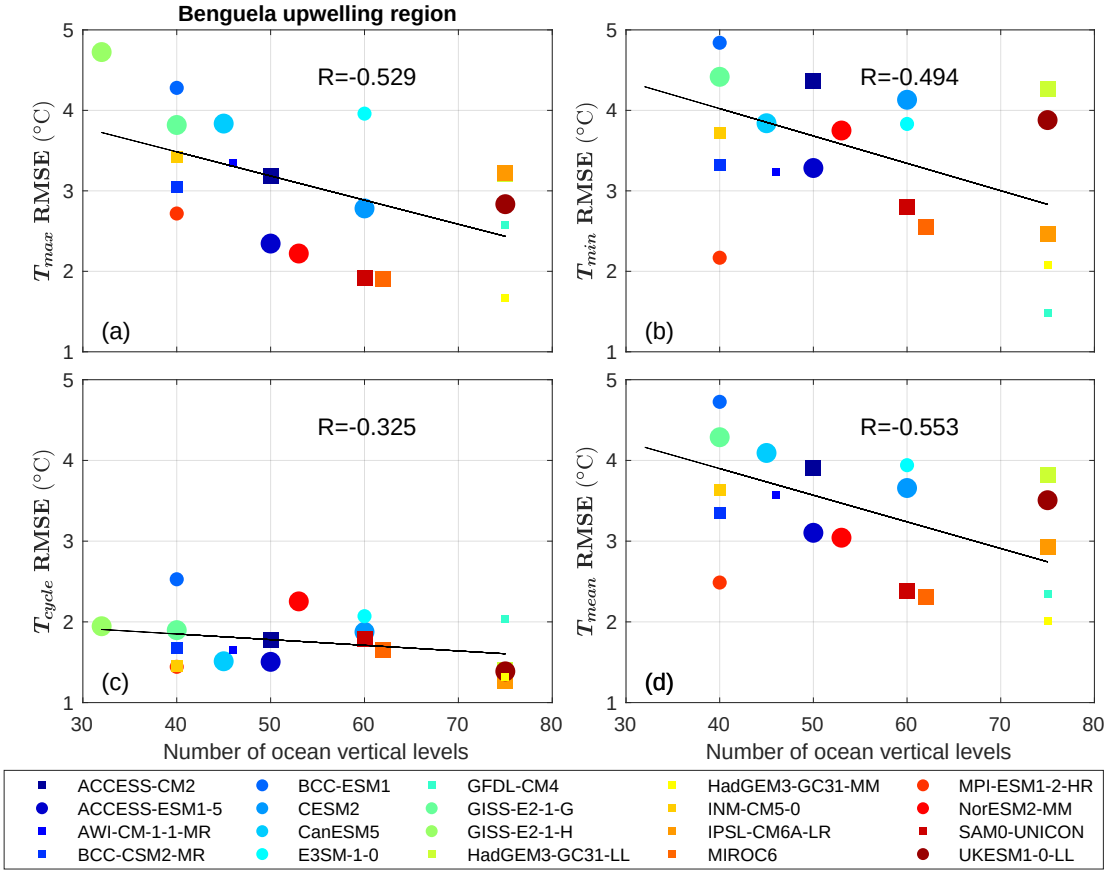

Figure S6. RMSE in Benguela upwelling region (18°S-28°S, from the coast to 500 km offshore) of (a) T_{max}, (b) T_{min}, (c) T_{cycle} and (d) T_{mean}, all against the number of ocean vertical levels.

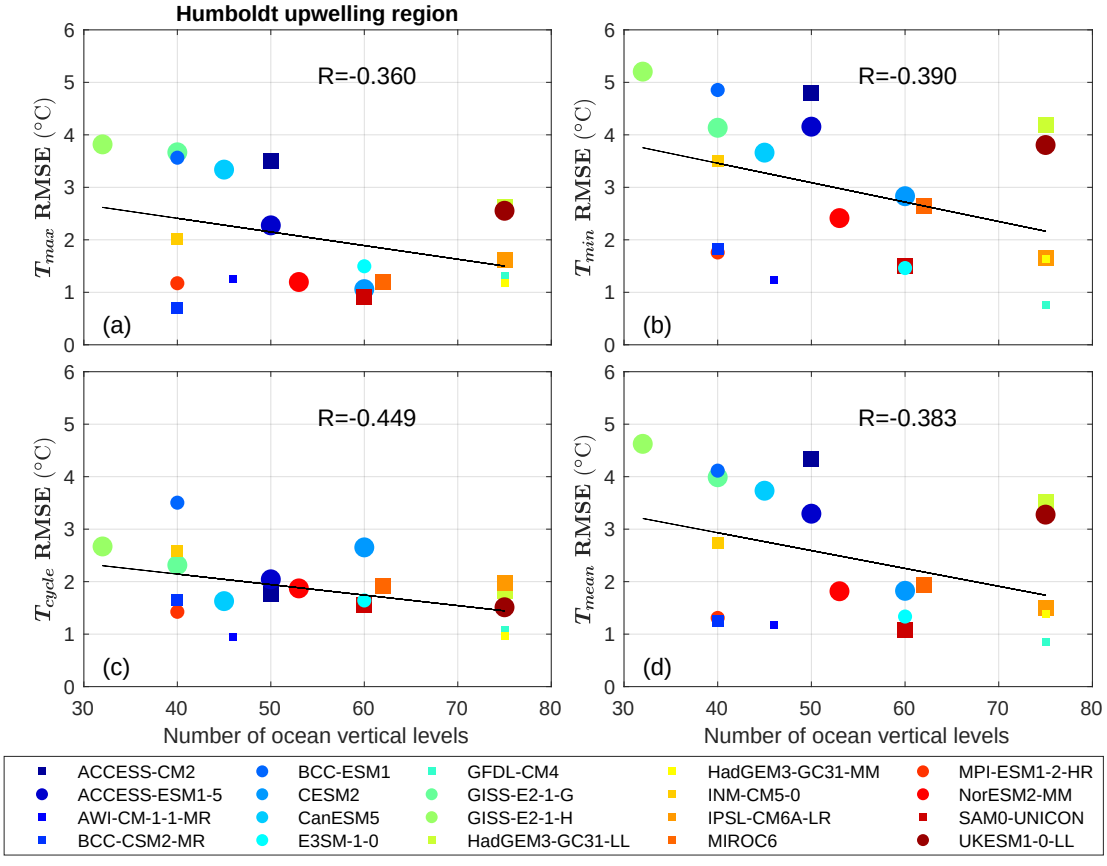

Figure S7. As in S6, but for Humboldt upwelling region (6°S-16°S, from the coast to 500 km offshore).

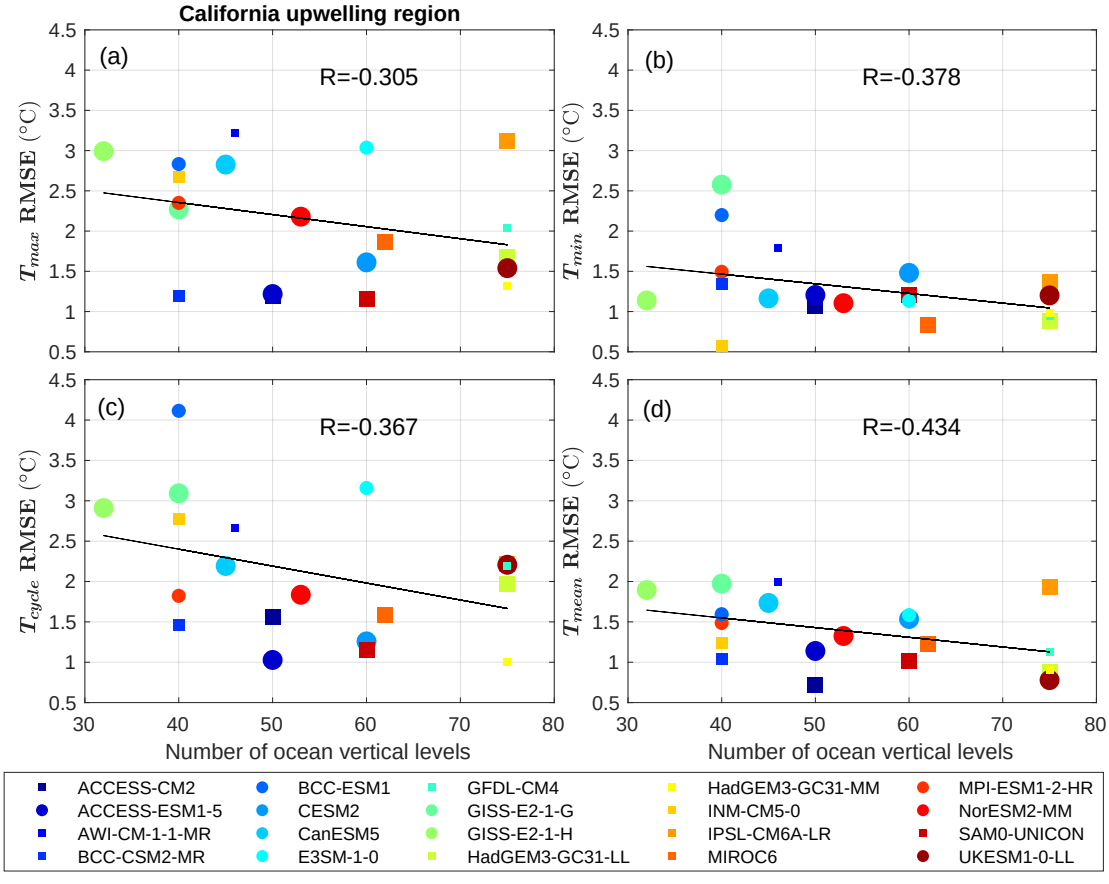

Figure S8. As in S6, but for California upwelling region (34°N-44°N, from the coast to 500 km offshore).

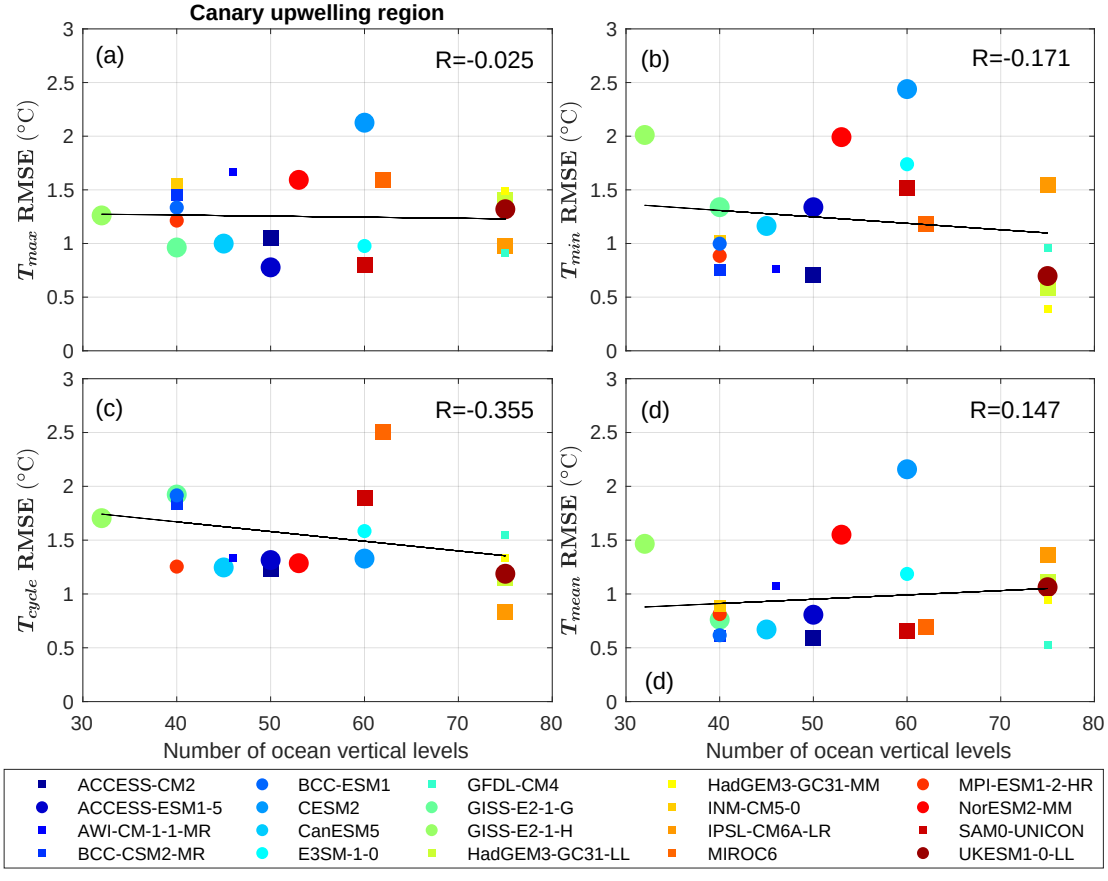

Figure S9. As in S6, but for Canary upwelling region (12°N-22°N, from the coast to 500 km offshore).