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Supporting Information for

Hiatus-like decades in the absence of equatorial Pacific cooling and accelerated global ocean heat uptake

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Figures S1 to S7



Figure S1. Annual-mean, global-mean surface temperature anomaly relative to 1961-1990 base period for the 1860 control (grey), for the historical simulation from 1861-1949 (red) and for the individual ensemble members of the GFDL ESM2M large ensemble simulation over the period 1950-2100 following the high greenhouse gas concentration scenario RCP8.5.



Figure S2. (a,b): Simulated and observed estimates of annual mean ocean heat content changes in the (a) top 700 meters and (b) integrated between 700 and 2000m over the 1960-2015 period. Anomalies in (a,b) are shown relative to the 1960-2005 base period. (c): Simulated and observed estimates of ocean heat content changes in the top 700 meters after the Pinatubo eruption. Anomalies in (c) are shown relative to year 1991. To remove the anthropogenic trend in (c), the simulated and observed ocean heat content estimates are first linearly detrended before calculating the anomalies. Error bars for the observational-based estimates are not shown.



Figure S3. Composite of the simulated SST trend anomaly pattern (a) of all accelerated warming decades and (b-d) for the three individual accelerated warming decades that have a SST cooling trend anomaly in the NINO3.4 region. Stippling in (a) denotes significant differences from the ensemble mean trend.



Figure S4. SST trend anomaly pattern of each individual hiatus decade (numbered from 1 to 41) between 2005 and 2024. The titles above the plots indicate the ensemble number as well as the first and the last year of the respective decade (e.g.' Ens2: 2007-2016'). Hiatus decades number 2, 5, 24, and 32 show a warming trend in the NINO3.4 region and are also shown in Fig. 2c-f in the main text.



Figure S5. The division of the global ocean into the Pacific, Atlantic, Indian and Southern Ocean.



Figure S6. Bars indicate mean changes in the rate of OHC changes during (a-d) hiatus decades and (e-h) accelerated warming decades relative to the ensemble mean integrated over different depth levels and for different basins. In all panels, light blue points are for hiatus decades, light red points are for accelerated warming decades, green crosses indicate hiatus decades with warming trend anomalies in the Niño3.4 region, and brown crosses indicate accelerated warming decades.



Figure S7. Similar as Fig. 2b of the main text, but here the hiatus period is defined with a linear decadal GMST trend of 0.10°C /decade or lower between 2005 and 2024.