Supplement of 'Quasi-Biennial Oscillation Modulation of the Semi-Annual Oscillation in QBOi Models'

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Figure S1: Zonal-mean zonal wind (ms^{-1}) averaged over 15°N to 15°S for the years 1980 to 2020 for 10 models, as labelled, from Control (left column) and Nudged simulations (right column).

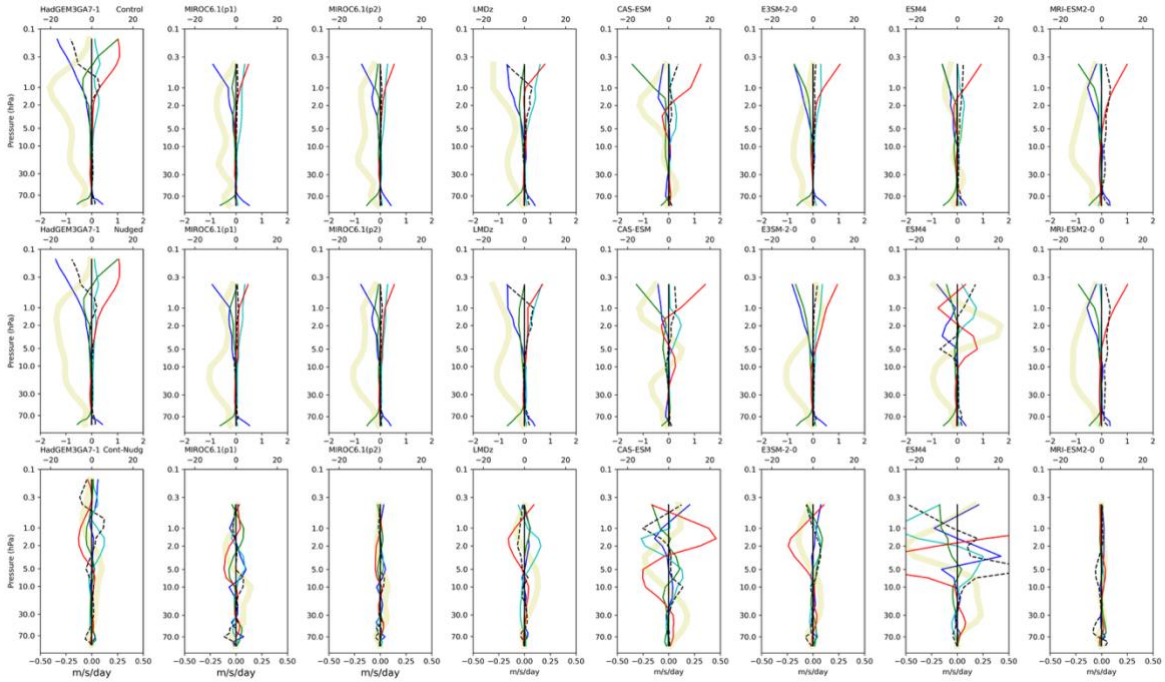

Figure S2: Multi-year time-average of TEM forcing terms (see legend) and zonal-mean zonal winds ('U' thicker light-yellow line) averaged over 15°S-15°N for Control (top row), Nudged (middle row) and Control minus Nudged differences (bottom row) for 8 models, indicated by labels. The legend is same as in figure 7 with dashed line showing the residual (remaining forcing term). Units of TEM forcing terms are $ms^{-1}day^{-1}$ (lower axis) and zonal-mean zonal wind is ms^{-1} (upper axis).

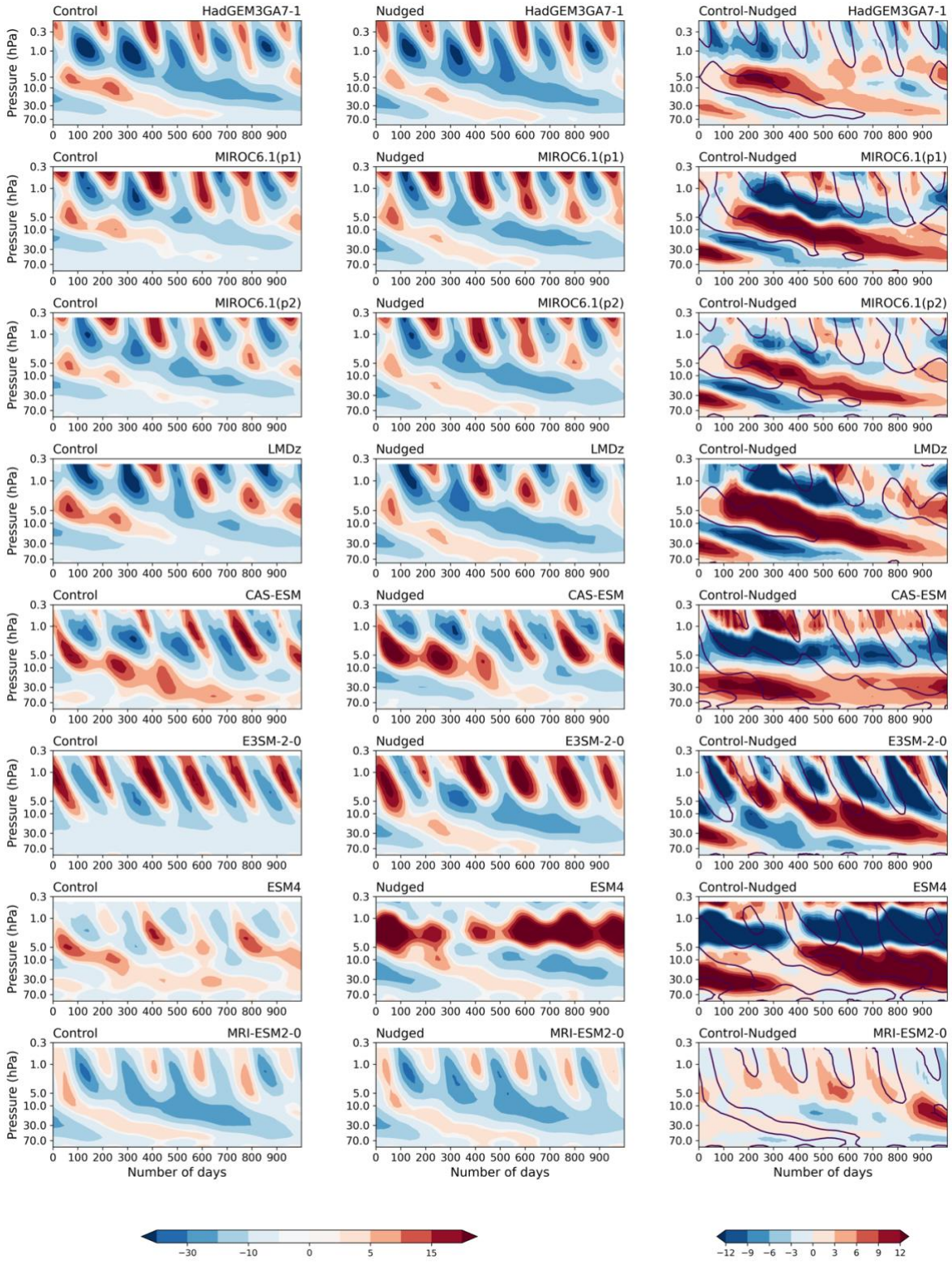

Figure S3: QBO composite of zonal-mean zonal wind (ms^{-1}) for the Control (left column) experiment and Nudged (middle column) experiment for 8 models, as labelled. The composite members start from 1st of March or 1st of September whichever is closest to the start of the QBOW phase. The 10hPa reference level is used to identify the start of the QBO westerly phase in the models (see text for more details). Difference (right column) between the Control and Nudged experiments, with the QBO composite winds from the Control experiment overlaid as black contours in rightmost column.

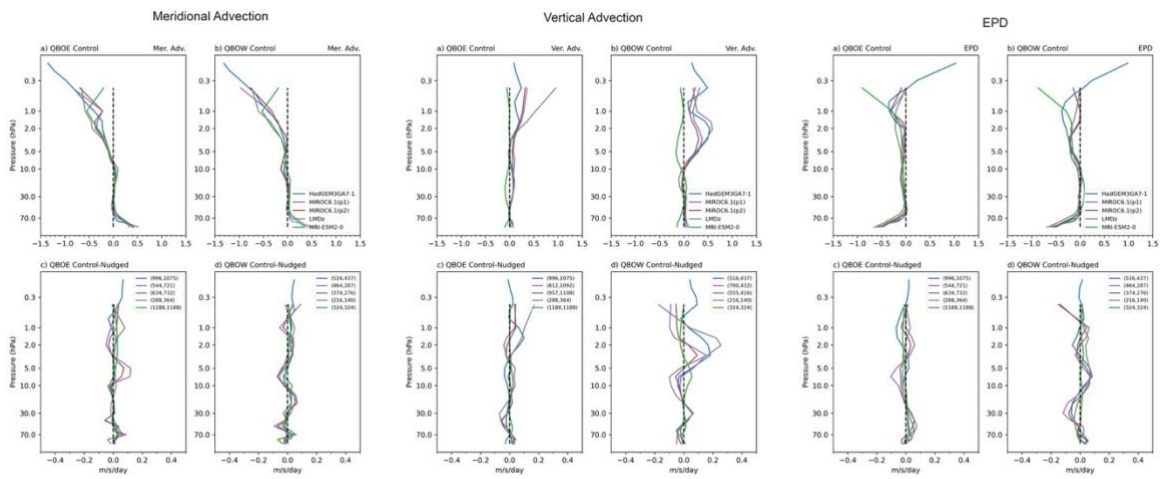

Figure S4: Composite of time-mean meridional advection, vertical advection and EPD averaged over 15S-15N for (a) Control experiment in QBOE months, (b) Control experiment in QBOW months, (c) Control minus Nudged differences during QBOE months, (d) Control minus Nudged differences during QBOW months for 5 models, as labelled. Units are $ms^{-1}day^{-1}$.