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## Supplemental Material

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Process-Based Evaluation of Intraseasonal Oceanic Kelvin Waves in the Pacific Ocean in  
CMIP6 Models

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**SUPPLEMENTAL MATERIAL**

**Process-based evaluation of intraseasonal oceanic Kelvin waves  
in the Pacific Ocean in CMIP6 models**

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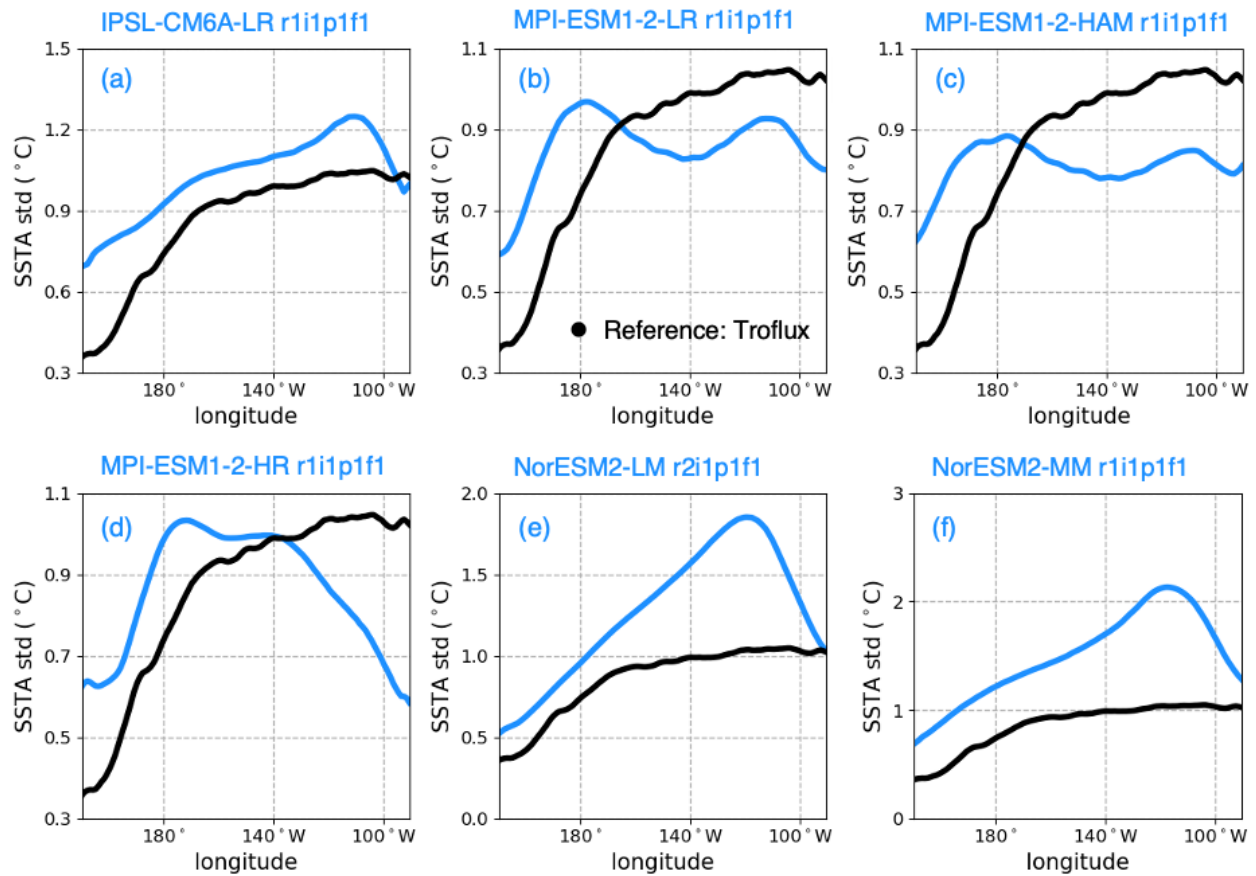


Figure S1 Zonal distribution of ENSO amplitude defined by the standard deviation of sea surface temperature (SST) anomalies based on the Niño3.4 regional average in the central equatorial Pacific for the six CMIP6 member models and the observation (TropFlux are from 1979 to 2018). This panel is adapted from Planton et al. (2021). The black and blue curves represent the reference and the model results, respectively. Note that the y-axis values have different ranges in each panel. The ensemble member in (e), NorESM2-LM, is different from the member r1i1p1f1 used in our study.

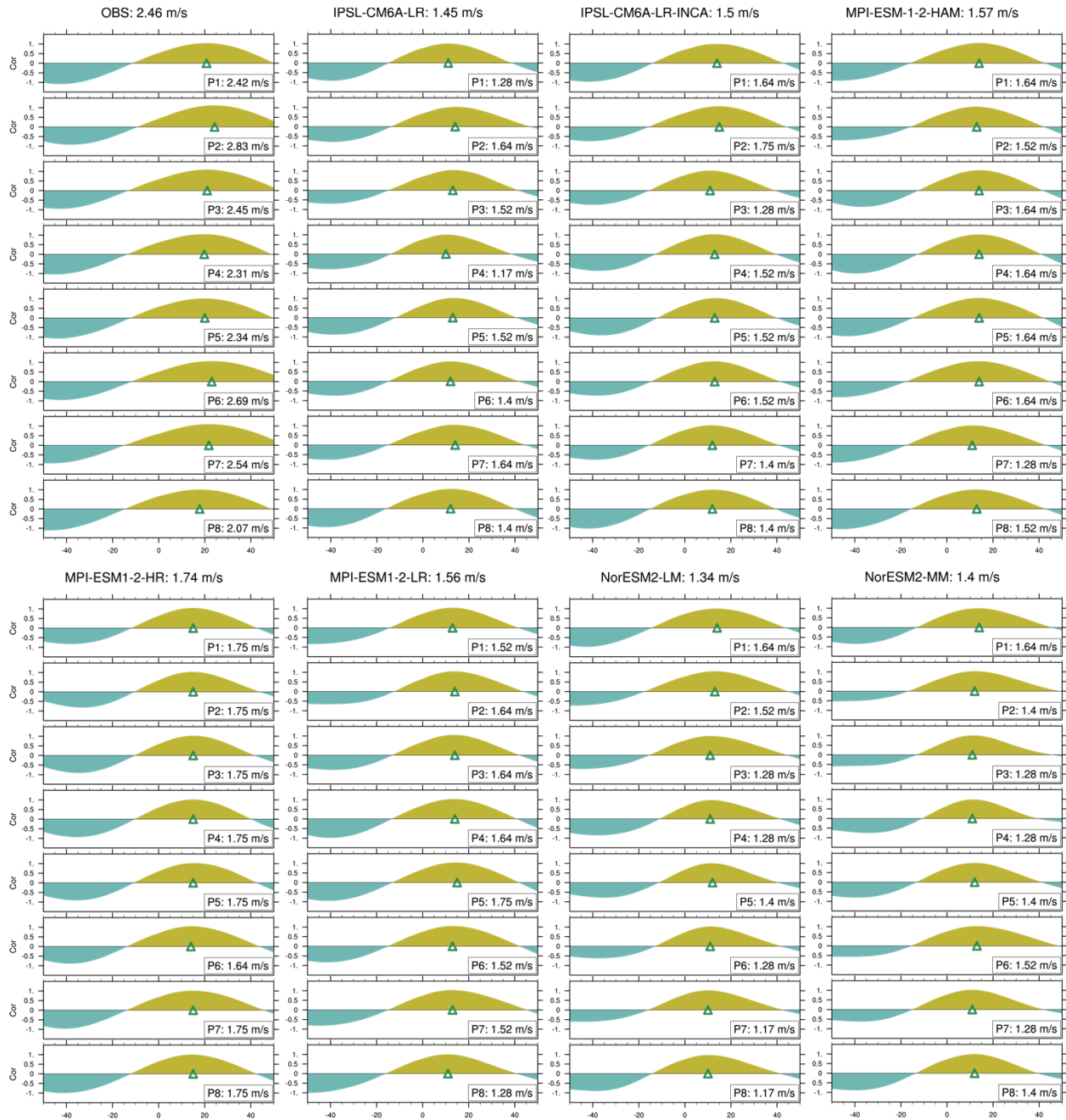


Figure S2 The spatial pattern correlations between the Day -5 composite and Day 5 composite at different longitude shifts for the Day -5 composite for each phase in observations and the CMIP6 models. The x-axis is the longitude shifting, with positive (negative) values representing the eastward (westward) longitudinal shifting of the KWs composite at Day -5 when calculating the pattern correlation between the two composites. The green triangle in each panel indicates the longitudinal difference when the correlation maximizes. The value in the right bottom corner of each panel shows the calculated propagation speed for each phase using the longitude shift divided by the time lag of 11 days.

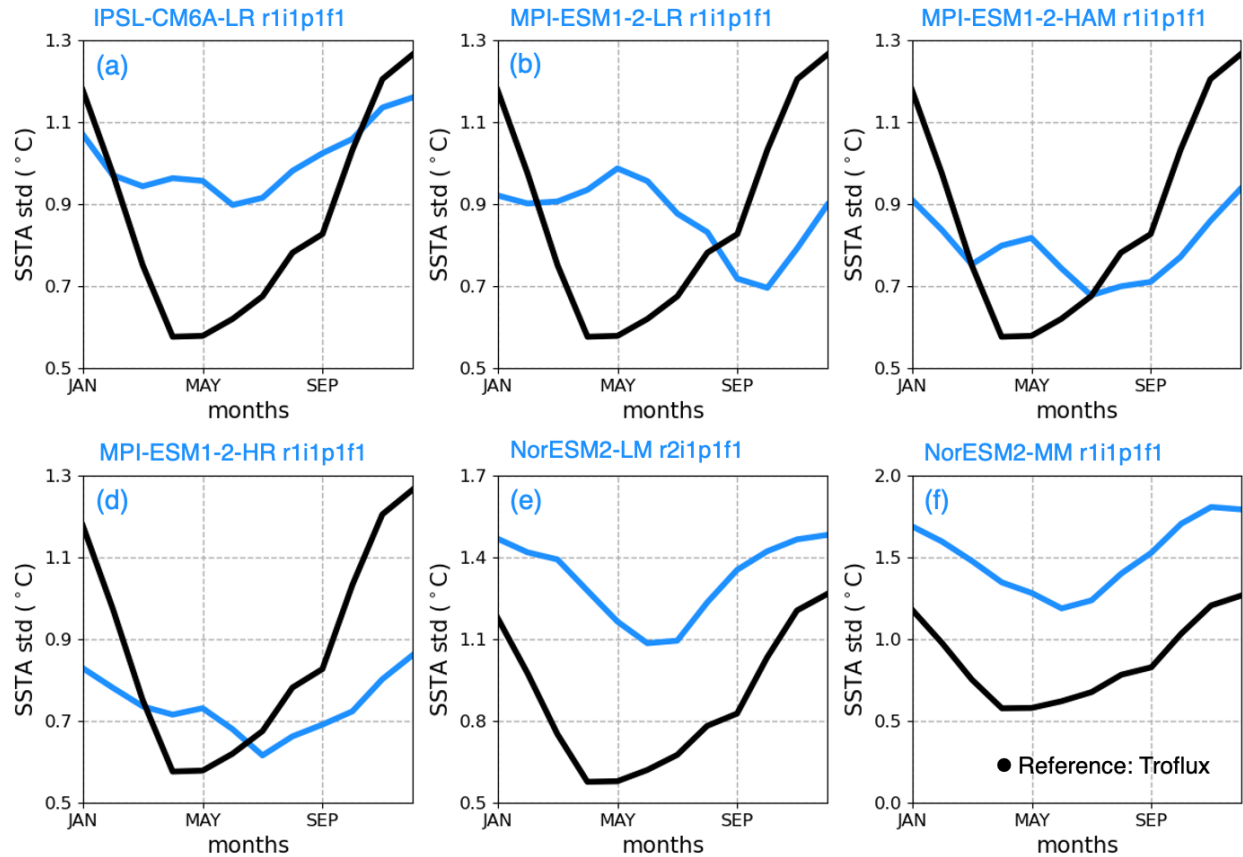


Figure S3 Mean annual structure of the ENSO seasonality defined by the standard deviation of the SST anomalies in the central equatorial Pacific (Niño3.4 averaged) for each month in the six CMIP6 member models and the observation, showing the delayed onset of the ENSO in all six models. The black and blue curves represent the reference and the model results respectively. This panel is adapted from Planton et al. (2021). Note that the y-axis values have different ranges in each panel. The ensemble member in (e), NorESM2-LM, is different from the member r1i1p1f1 used in our study.

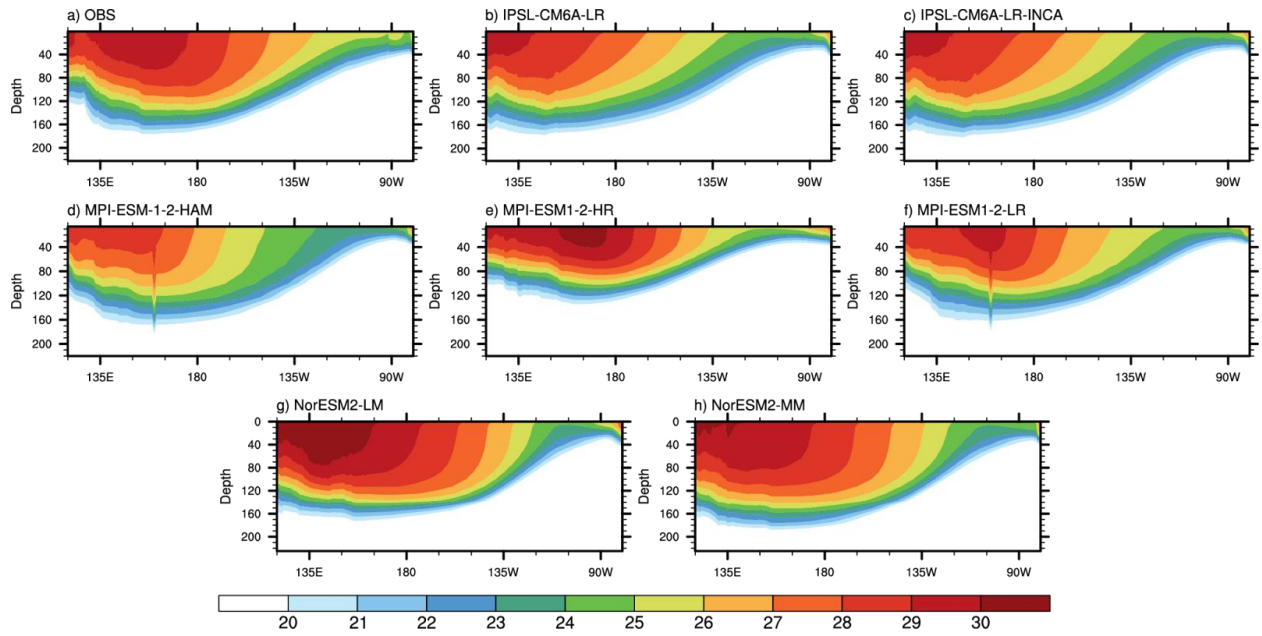


Figure S4 The meridional averaged (2°S-2°N) mean temperature (unit: °C) for (a) the observation and (b)-(h) CMIP6 models.