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Supplemental Material

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Supplementary Figures

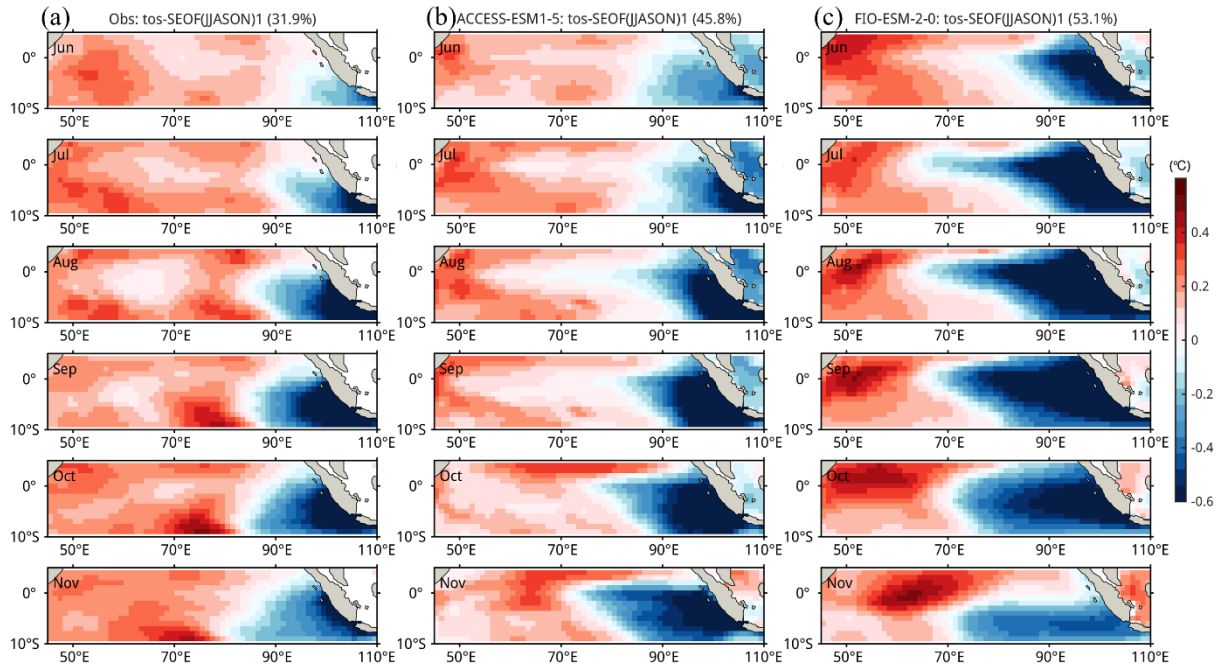


Fig. S1. S-EOF1 of SST (units: °C) during JJASON based on (a) observations, (b) ACCESS-ESM1-5 model and (c) FIO-ESM-2-0 model.

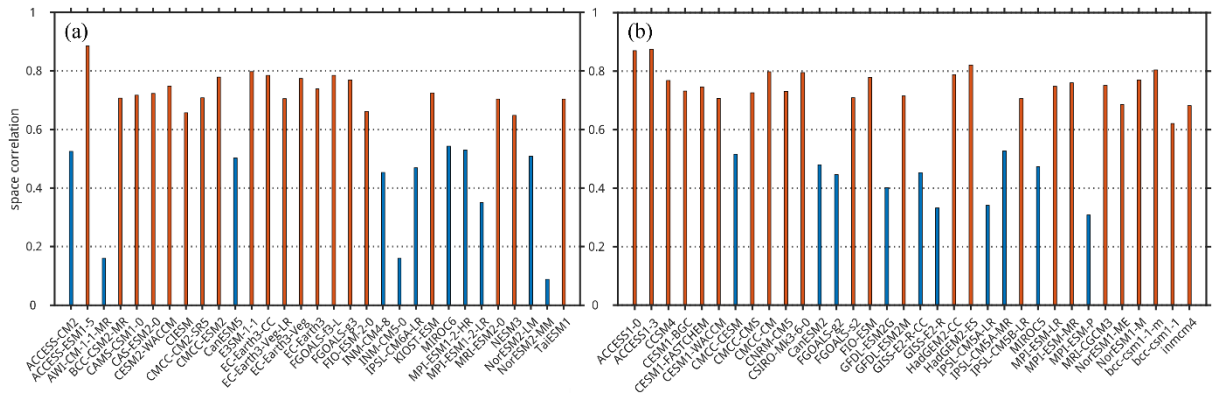


Fig. S2. Spatial correlation of S-EOF1 pattern between observations and each (a) CMIP6 or (b) CMIP5 model. Orange (blue) bars denote models with IOD well (poorly) simulated.

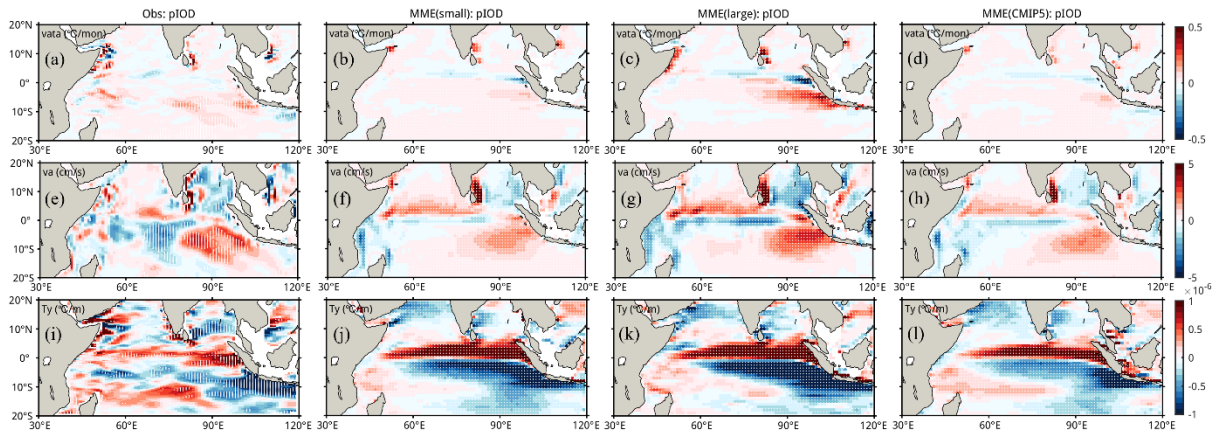


Fig. S3. Positive IOD composites during JASO for (a, b, c, d) nonlinear meridional advection (units: $^{\circ}\text{C month}^{-1}$), (e, f, g, h) meridional mixed-layer current anomalies (units: cm s^{-1}) and (i, j, k, l) meridional temperature gradient anomalies within the mixed layer (units: $10^{-6} \text{ }^{\circ}\text{C m}^{-1}$), based on (a, e, i) observations, (b, f, j) less-skewed CMIP6 model group, (c, g, k) more-skewed CMIP6 model group and (d, h, l) CMIP5 models.

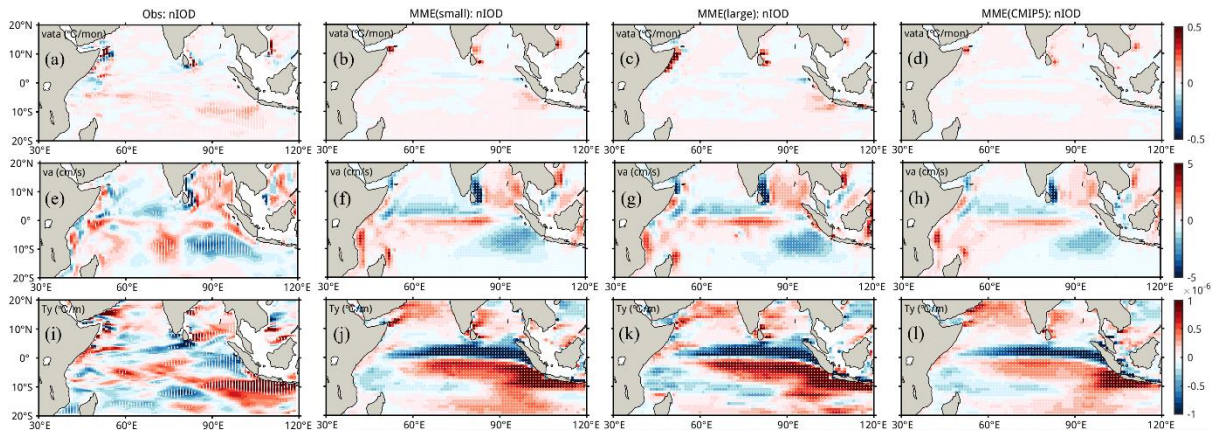


Fig. S4. Same as Fig. S3, but for negative IOD.