



AMS
American Meteorological Society

Supplemental Material

Journal of Climate

Advanced Peak Phase of ENSO under Global Warming

<https://doi.org/10.1175/JCLI-D-24-0002.1>

© [Copyright 2024 American Meteorological Society](#) (AMS)

For permission to reuse any portion of this work, please contact permissions@ametsoc.org. Any use of material in this work that is determined to be “fair use” under Section 107 of the U.S. Copyright Act (17 USC §107) or that satisfies the conditions specified in Section 108 of the U.S. Copyright Act (17 USC §108) does not require AMS’s permission. Republication, systematic reproduction, posting in electronic form, such as on a website or in a searchable database, or other uses of this material, except as exempted by the above statement, requires written permission or a license from AMS. All AMS journals and monograph publications are registered with the Copyright Clearance Center (<https://www.copyright.com>). Additional details are provided in the AMS Copyright Policy statement, available on the AMS website (<https://www.ametsoc.org/PUBSCopyrightPolicy>).

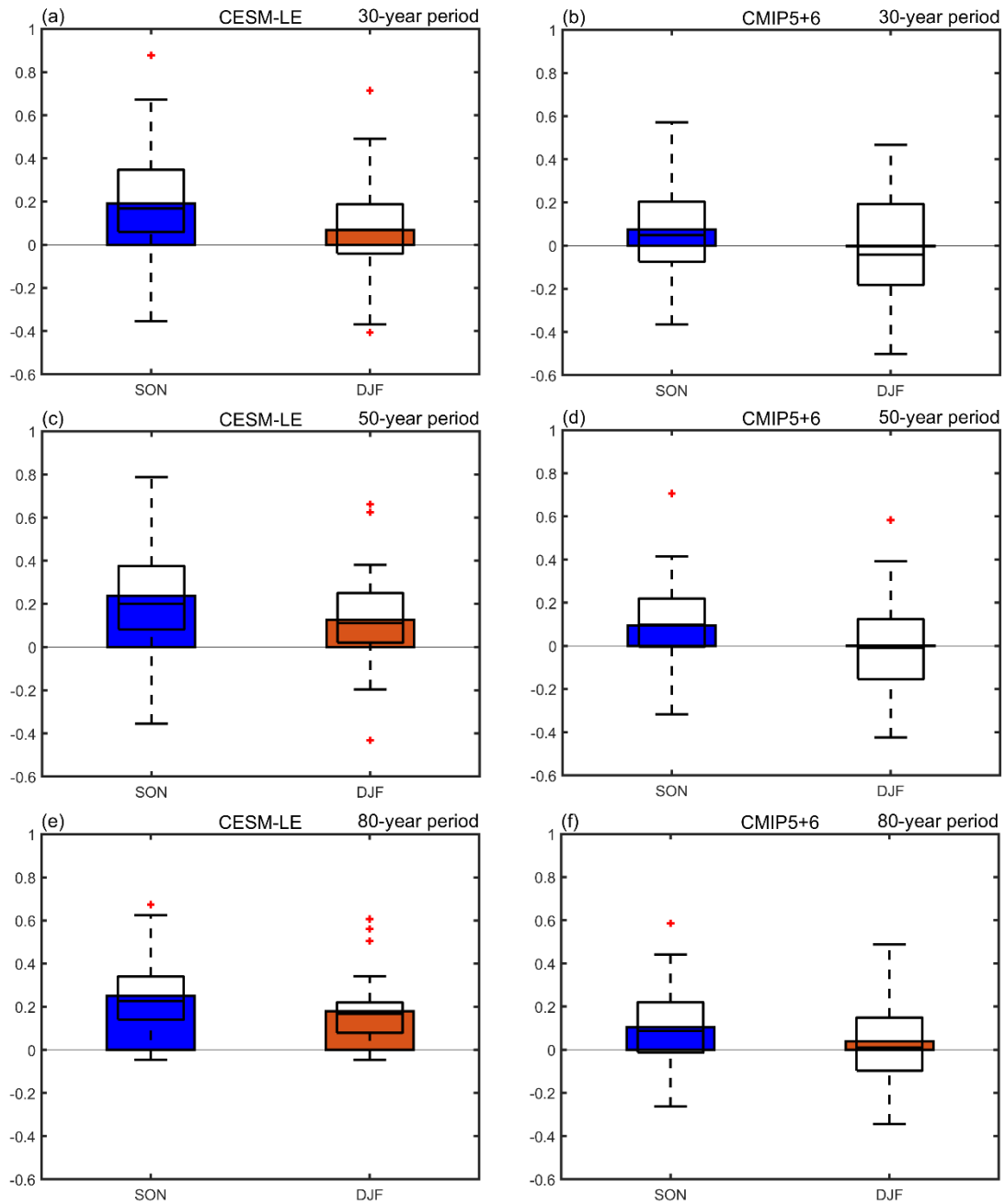


Fig. S1. Niño3.4 SST interannual variability between (a), (b) 1970-1999 and 2060-2089, (c), (d) 1950-1999 and 2050-2099, (e), (f) 1920-1999 and 2020-2099. The left column represents the results from CESM-LE, and the right column represents the results from CMIP5/6. The bar denotes the ensemble mean and the box-and-whisker plots show the 10th, 25th, 50th, 75th, and 90th percentiles.

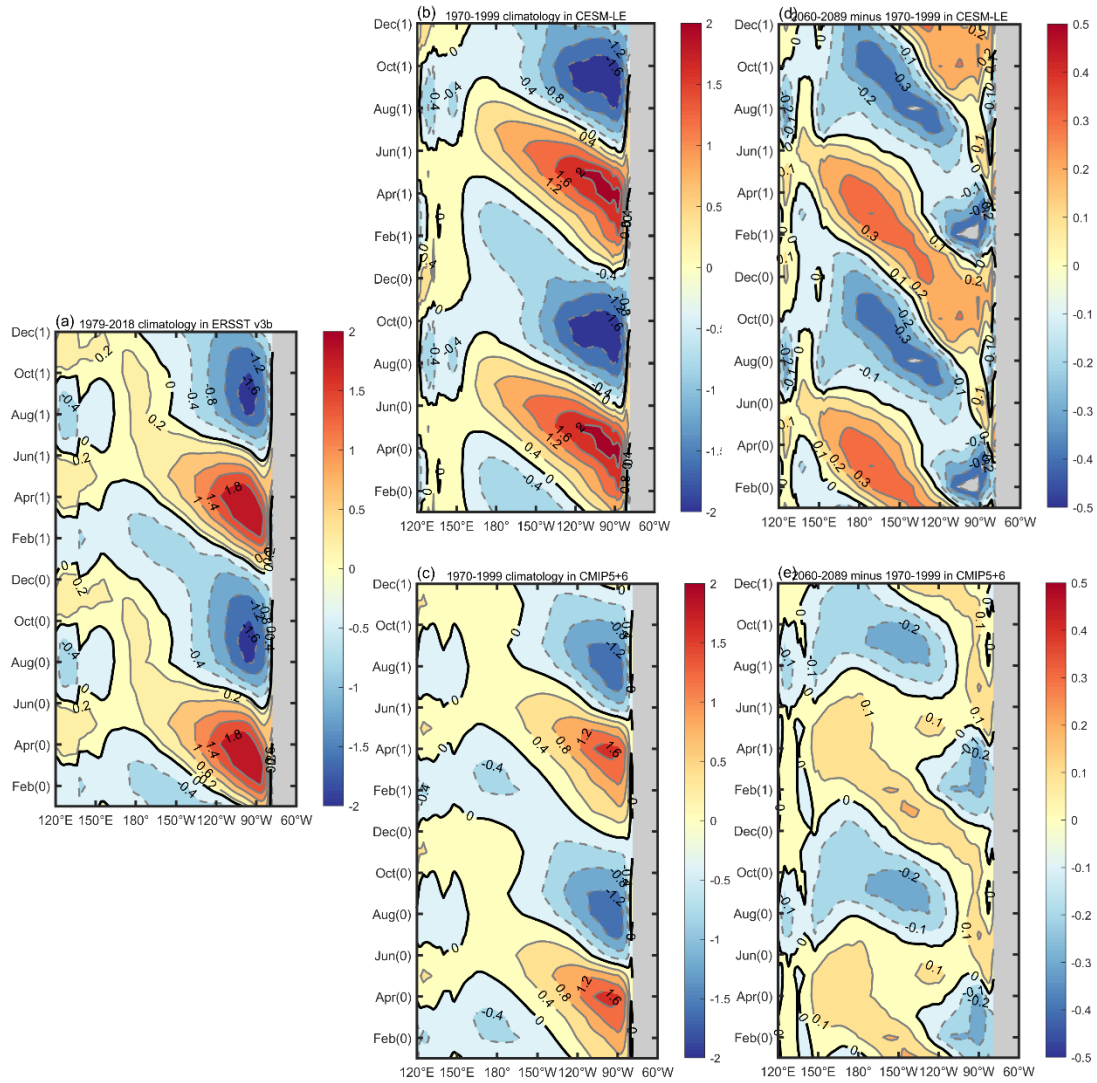


Fig. S2. The seasonal cycle of the equatorial (averaged in 5°S - 5°N) Pacific climatological SST (K) during (a) 1979-2018 in ERSST v3b, (b) 1970-1999 in the CESM-LE, (c) 1970-1999 in CMIP models. The difference between 2060-2089 and 1970-1999 for (d) CESM-LE, and for (e) CMIP models, with the annual mean climatological SST removed beforehand. All the value in (b), (c), (d), and (e) are the multi-member or multi-model ensemble mean.

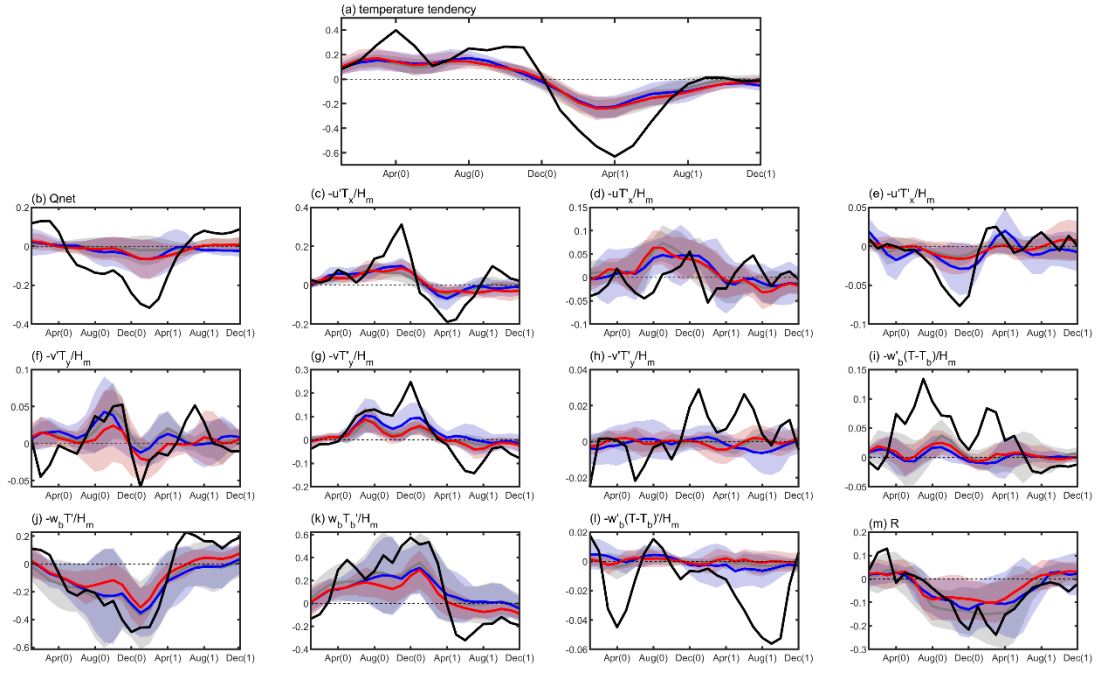


Fig. S3. Comparison of the heat budget terms during historical ENSO evolution between ECCO datasets and CMIP5/6 models. (a) Niño3.4 temperature tendency, (b)-(m) the term1 to term12 as presented in Fig. 2.

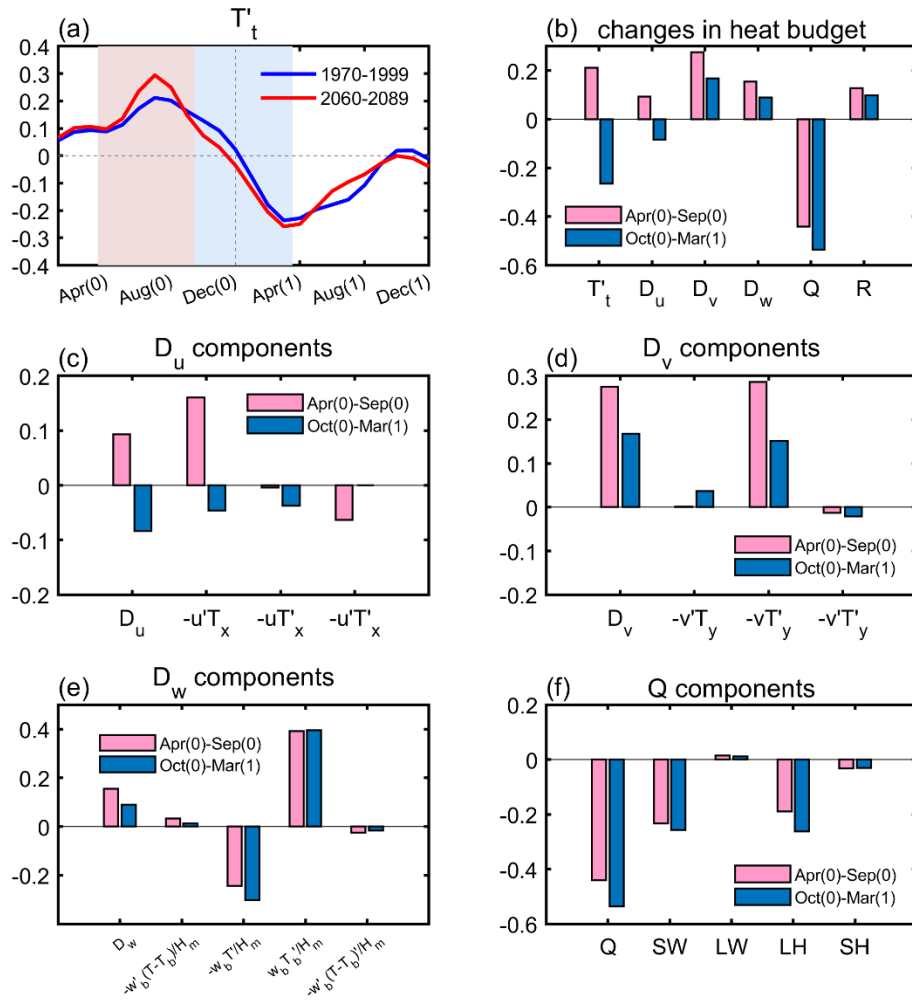


Fig. S4. Same as Fig. 3, but the mixed layer depth is defined as the depth where the temperature is 0.5 K cooler than the surface