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*Supplement of*

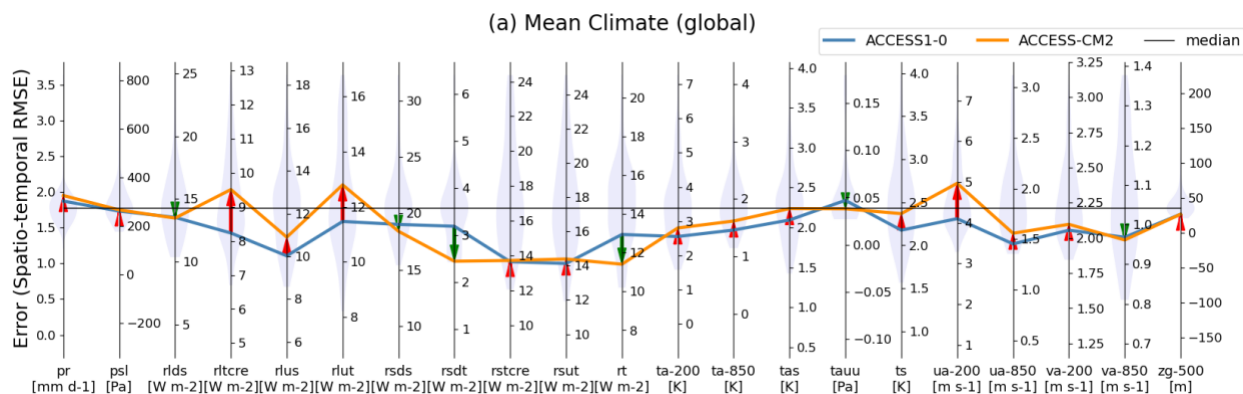
## **Systematic and objective evaluation of Earth system models: PCMDI Metrics Package (PMP) version 3**

**Jiwoo Lee et al.**

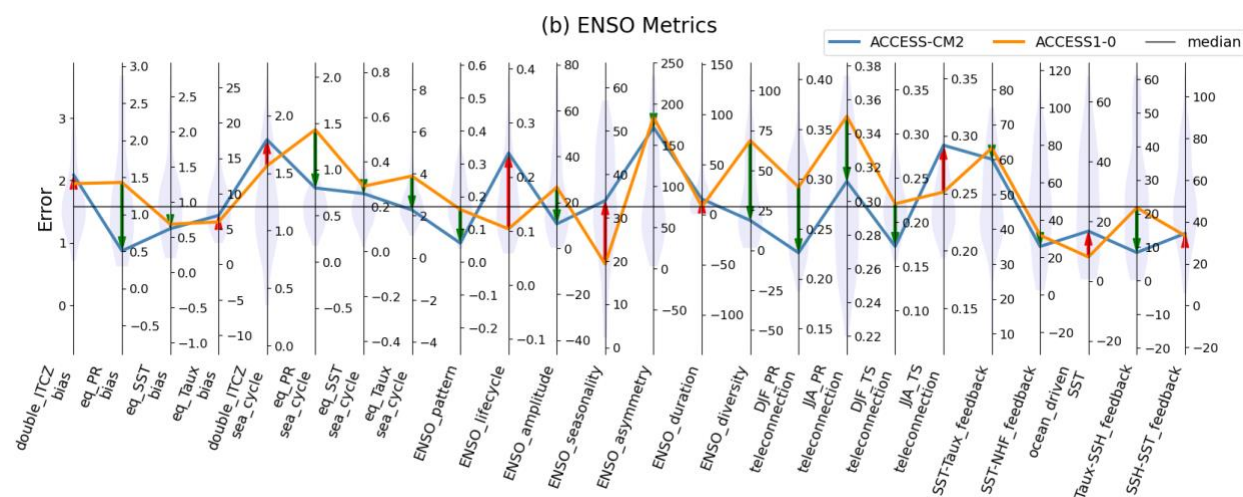
*Correspondence to:* Jiwoo Lee (lee1043@llnl.gov)

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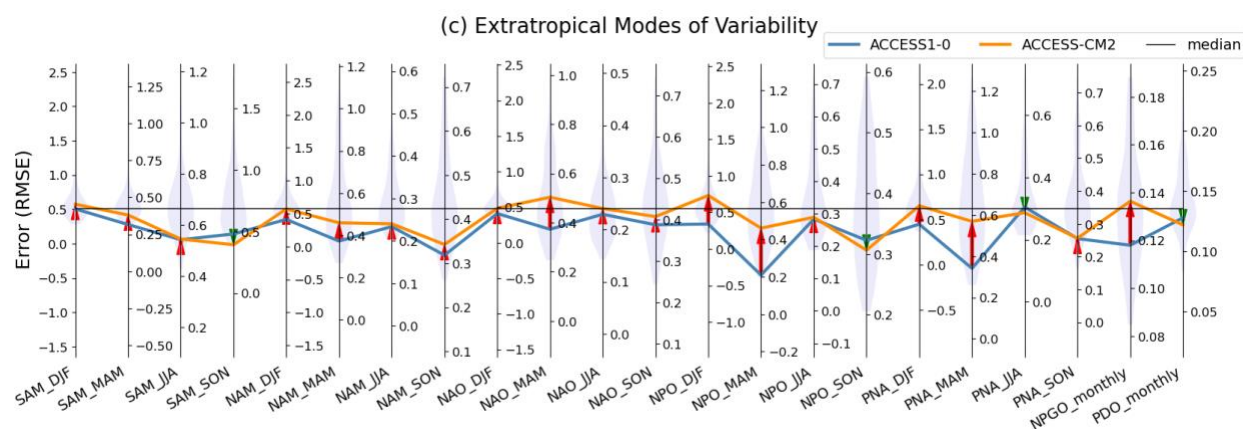
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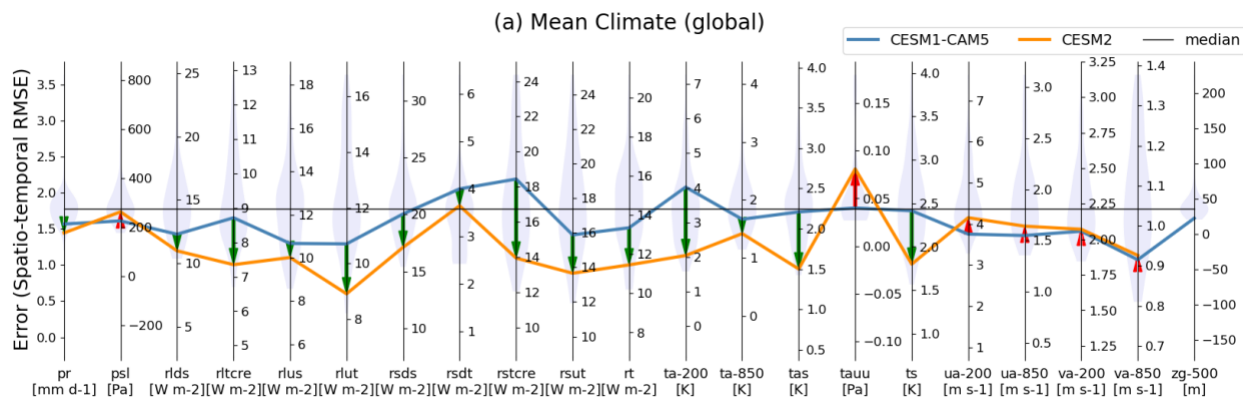


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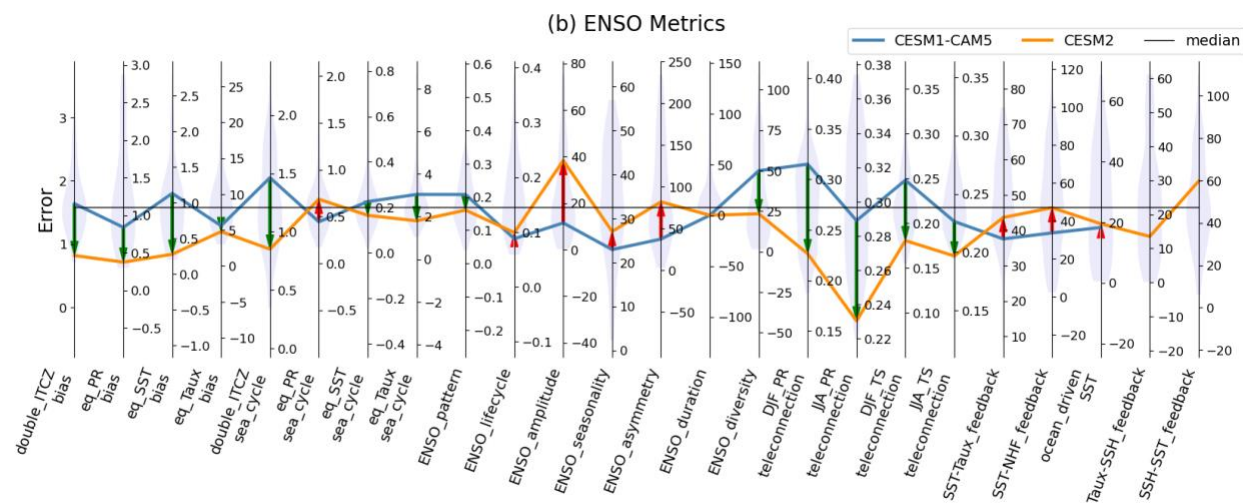


36 **Figure S1.** Parallel Coordinate Plot contrasting performance of two different versions of the  
 37 ACCESS model (i.e., ACCESS-1-0 from CMIP5 and ACCESS-CM2 from CMIP6) in their  
 38 Historical experiment for errors from (a) mean climate, (b) ENSO, and (c) extratropical modes of  
 39 variability. Improvement (degradation) in the later version of the model is highlighted as a  
 40 downward green (upward red) arrow between lines. Middle of each vertical axis is set to the  
 41 median of the group of benchmarking models (i.e., CMIP5 and CMIP6), with the axis range  
 42 stretched to maximum distance to either minimum or maximum from the median for visual  
 43 consistency. The inter-model distributions of model performance are shown as shaded violin  
 44 plots along each vertical axis.

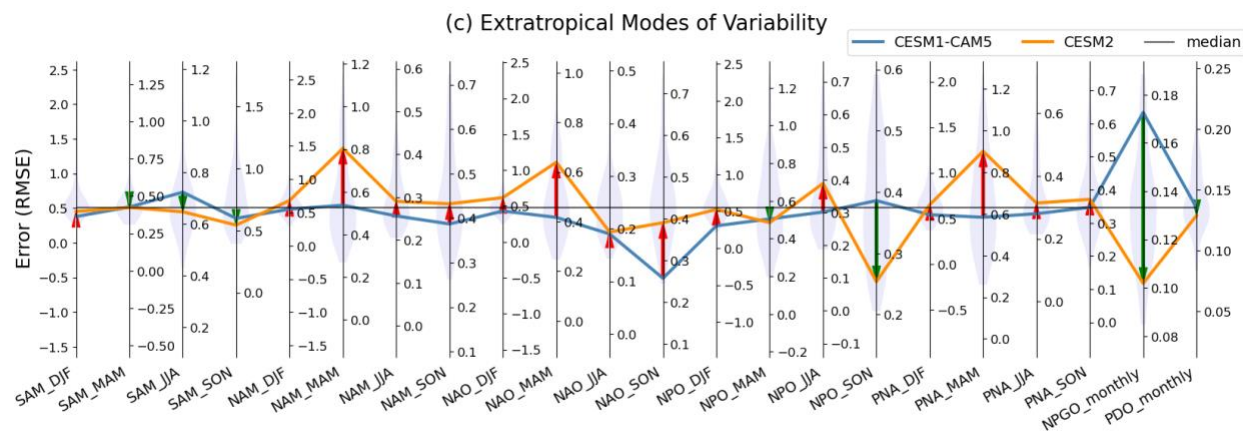
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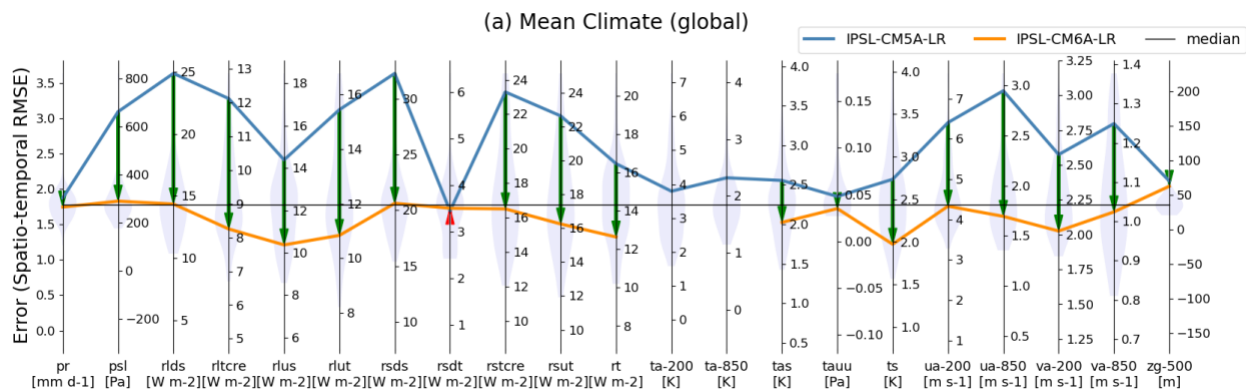
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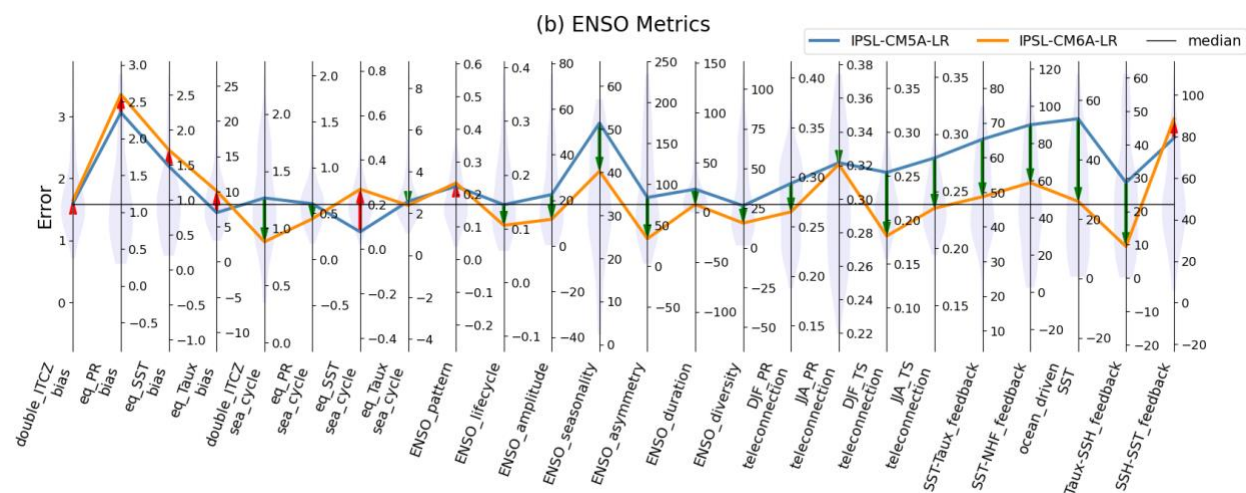
48 **Figure S2.** Same as Figure S1, but for CESM models (i.e., CESM1-CAM5 from CMIP5 and  
 49 CESM2 from CMIP6)

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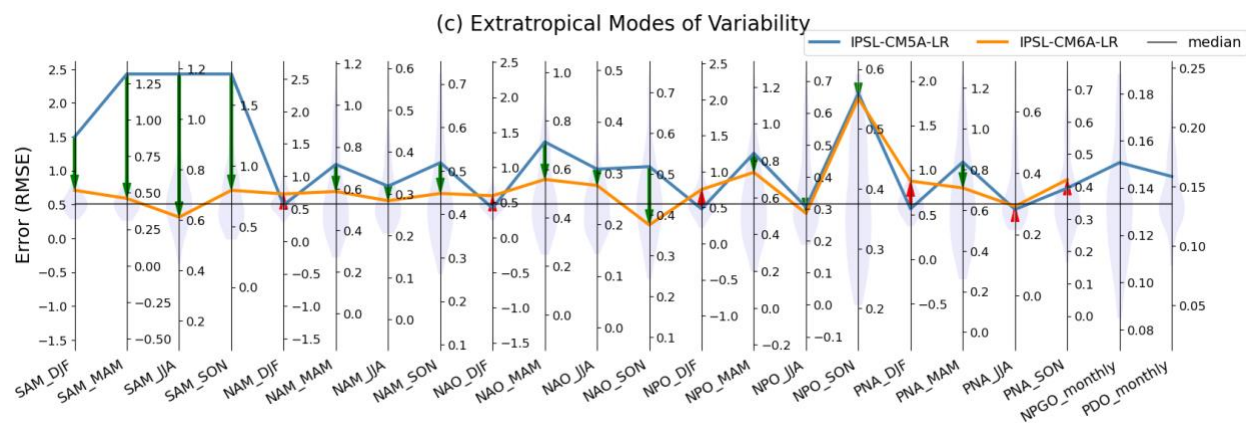
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54 **Figure S3.** Same as Figure S1, but for IPSL models (i.e., IPSL-CM5A-LR from CMIP5 and  
 55 IPSL-CM6A-LR from CMIP6)