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Supporting Information for

Evaluation of CMIP6 HighResMIP in simulating the annual cycle of tropical cyclone activity over the western North Pacific

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Introduction

This document includes additional tables and figures supporting the main text.

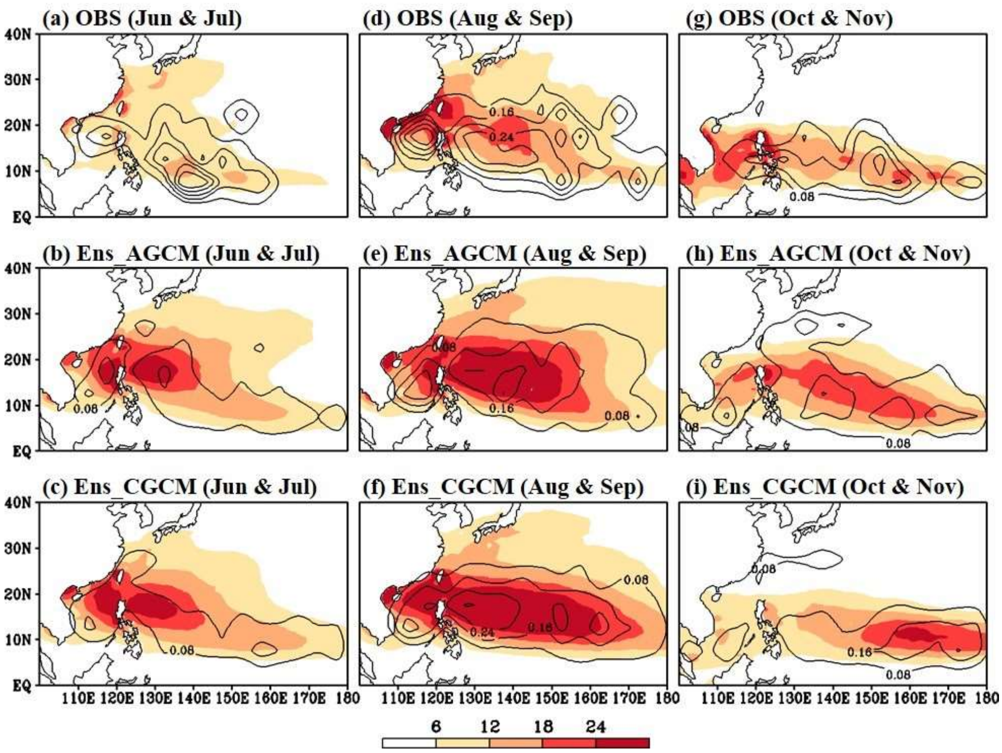

Figure S1. GPI (shaded) and TC genesis (numbers year^{-1}; contour) distribution during June-July for (a) observation, (b) Ens-AGCM, and (c) Ens-CGCM. (d-f) and (g-i) same as (a-c) except for during August-September and October-November, respectively.

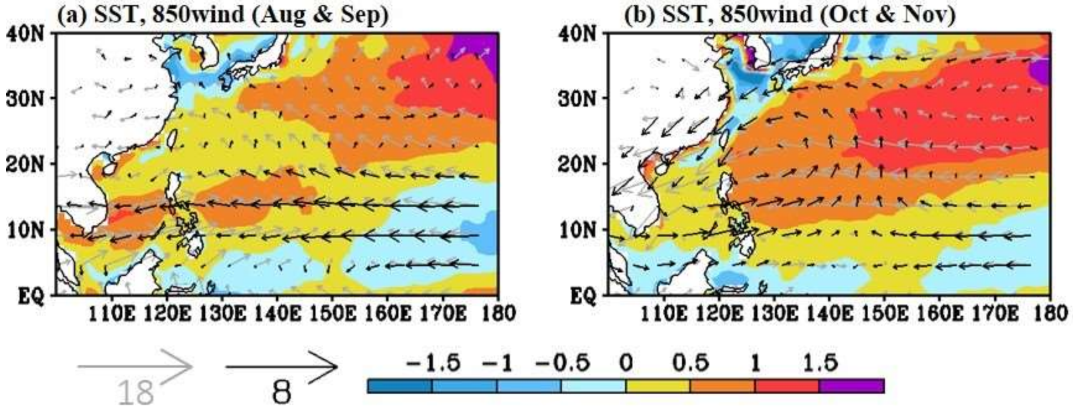

Figure S2. Climatology of 850-hPa wind (m s^{-1}; gray vector) in Ens-AGCM and the difference in the SST (˚C; shaded) and 850-hPa wind (m s^{-1}; black vector) between the Ens-AGCM and Ens-CGCM simulations during (a) August-September, and (b) October-November.

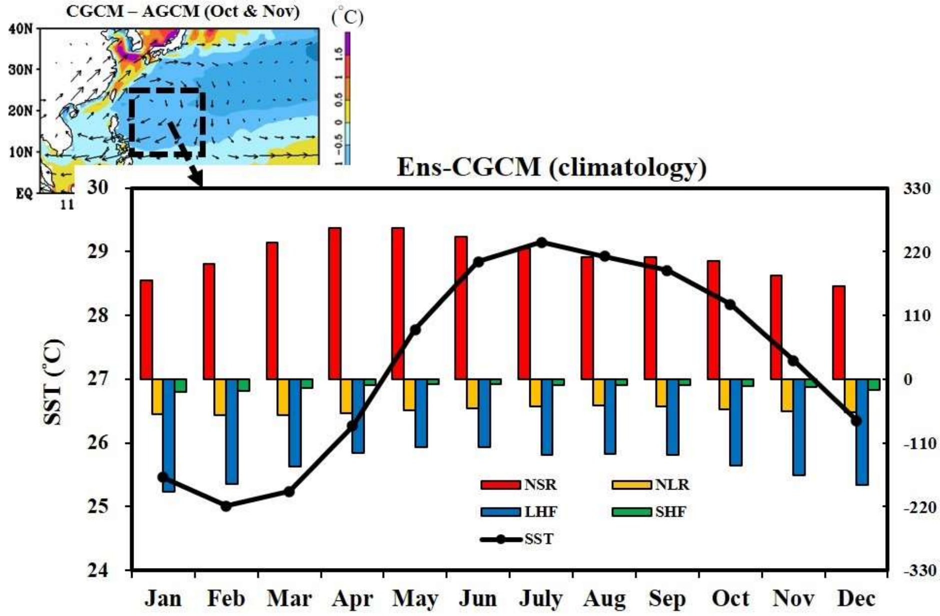

Figure S3. The key WES area-averaged climatology of annual cycle of SST and surface fluxes in Ens-CGCM.

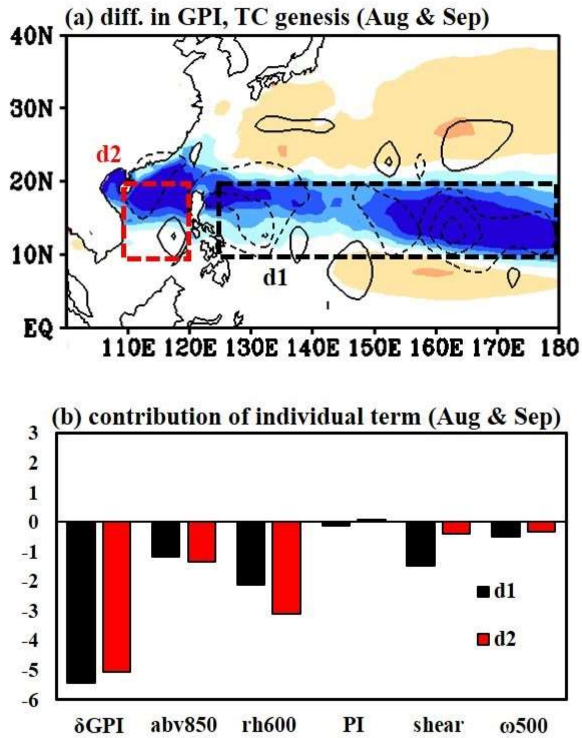

Figure S4. Same as Figure 3 except for during August-September.

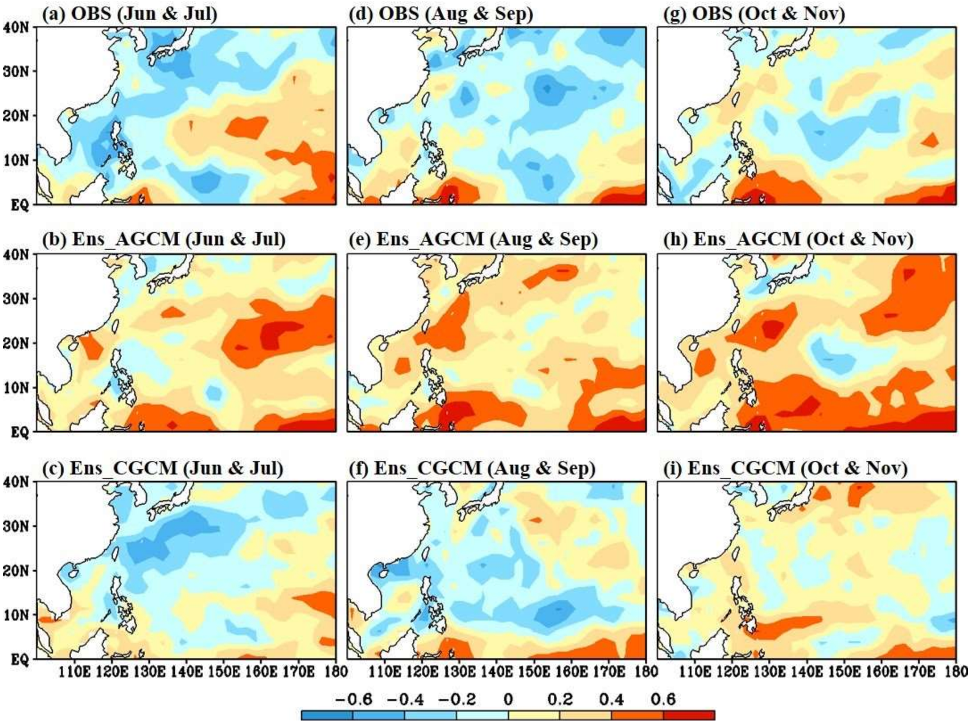

Figure S5. The point correlation coefficients between SST and precipitation during June-July for (a) observation, (b) Ens-AGCM, and (c) Ens-CGCM. (d-f) and (g-i) same as (a-c) except for August-September and October-November, respectively. The precipitation data at a resolution of 2.5° × 2.5° were obtained from satellite and gauge measurements performed by the Global Precipitation Climatology Project (GPCP) version 2.3 (Adler et al., 2018).

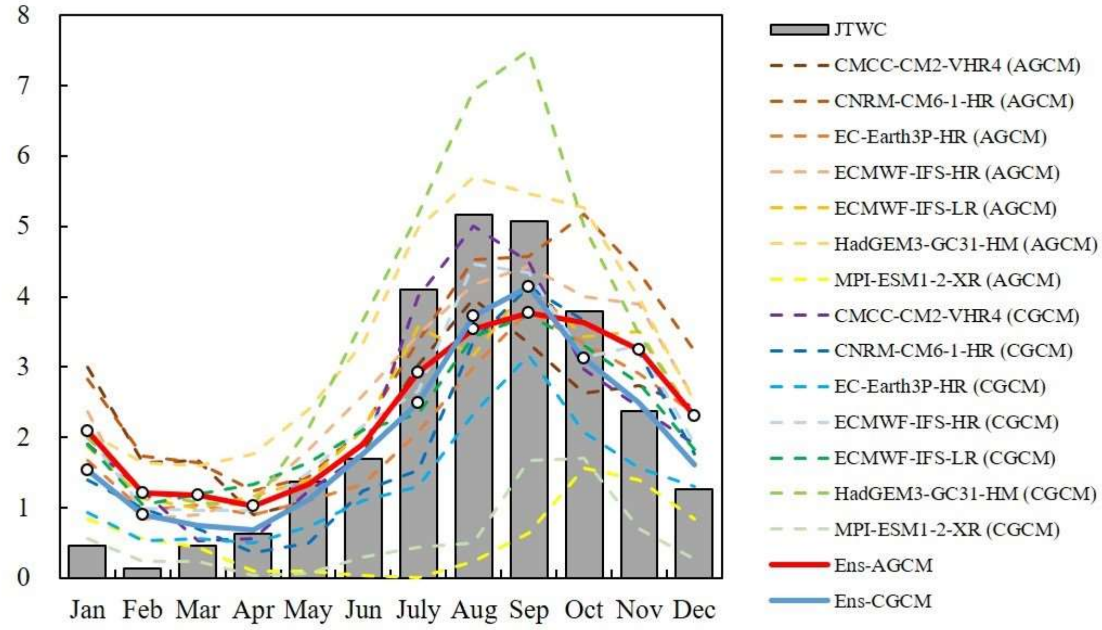

Figure S6. Same as Figure 1 except for the addition of ECMWF-IFS-LR simulations.

Table S1. Concise list of PRIMAVERA (HighResMIP) model configurations.

Model name	Institution	Atmospheric nominal resolution (km)	Atmospheric model levels	Ocean resolution (degree)
CMCC-CM2-VHR4	Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici (CMCC)	25	26	0.25
CNRM-CM6-1-HR	Centre Europeen de Recherche et de Formation Avancee en Calcul Scientifique (CERFACS)	50	91	0.25
EC-Earth3P-HR	Royal Netherlands Meteorological Institute (KNMI); Swedish Meteorological and Hydrological Institute (SMHI); Barcelona Supercomputing Center (BSC); Consiglio Nazionale delle Ricerche (CNR)	50	91	0.25
ECMWF-IFS-HR	European Centre for Medium-Range Weather Forecasts (ECMWF)	25	91	0.25
HadGEM3-GC31-HM	Met Office Hadley Centre (MOHC)	50	85	0.08
MPI-ESM1-2-XR	Max Planck Institute for Meteorology (MPI-M)	50	95	0.4

Table S2. The pattern correlation coefficients (PCC) of the spatial distribution of TC genesis location between the model simulations and observed data in the region 100–180°E, 0–40°N during June-July (JJ), August-September (AS), and October-November (ON).

	PCC of TC genesis location		
	JJ	AS	ON
Ens-AGCM	0.65	0.82	0.65
Ens-CGCM	0.53	0.82	0.66

References

Adler, R., Sapiano, M., Huffman, G., Wang, J.-J., Gu, G., Bolvin, D., et al. (2018). The Global Precipitation Climatology Project (GPCP) Monthly Analysis (New Version 2.3) and a Review of 2017 Global Precipitation. *Atmosphere, 9*(4), 138. https://doi.org/10.3390/atmos9040138