

# Supplementary Material for

## Observed Zonal Variations of the Relationship Between ITCZ Position and Temperature Contrast

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This file contains six supplementary tables which show the strength of the interannual relationship between ITCZ position and interhemispheric SST contrast for the seasonal cycle (S1), annual mean (S2), and four climate indices (S3-S6). All of the climate indices are raw and not detrended.

	$\bar{R}$	$\sigma_R$	$\bar{m}$	$\sigma_m$	$\bar{b}$	$\sigma_b$
<b>Global</b>	0.98	0.01	2.95	0.2	-1.09	0.53
<b>Indian</b>	0.83	0.06	3.86	0.41	-8.96	0.95
<b>Pacific</b>	0.95	0.03	3.27	0.35	2.45	0.59
<b>Atlantic</b>	0.94	0.02	1.75	0.18	2.78	0.38
<b>W. Pacific</b>	0.9	0.04	2.71	0.39	4.86	0.93
<b>C. Pacific</b>	0.83	0.08	3.91	1.1	-0.72	1.11
<b>E. Pacific</b>	0.9	0.05	2.71	0.77	4.07	1.28

**Table S1.** 21-year mean and standard deviation of regression outputs for the seasonal relationship between  $P_C$  and  $\Delta SST$  in each region.  $\bar{R}$ ,  $\bar{m}$  and  $\bar{b}$  are the mean R-value, regression slope and regression intercept, respectively;  $\sigma_x$  is the standard deviation of each output.  $\sigma_m$  quantifies the interannual variability of the sensitivity of the ITCZ position to the SST contrast. Higher values, such as that of the Central Pacific, indicate greater year-to-year variability.

	<b>R</b>	<b>m</b>	<b>b</b>
<b>Global</b>	0.67	3.97	-2.1
<b>Indian</b>	0.07*	0.53*	-1.48*
<b>Pacific</b>	0.72	4.49	2.68
<b>Atlantic</b>	0.61	1.05	3.31
<b>W. Pacific</b>	0.46	3.74	5.83
<b>C. Pacific</b>	0.52	5.16	-0.05
<b>E. Pacific</b>	0.68	2.54	4.14

**Table S2.** Linear regression of annual-mean  $P_C$  and  $\Delta SST$  over 21 years in each region. Correlation coefficients are lower than over the seasonal cycle, owing to small differences in  $\Delta SST$ . Regression slopes differ from the seasonal relationship. Starred values are not statistically significant, as in the Indian basin; all other values are significant.

	<b>R</b>	<b>m</b>	<b>b</b>
<b>Global</b>	0.20*	0.19*	1.80*
<b>Indian</b>	0.39*	0.42*	-0.32*
<b>Pacific</b>	0.35*	0.52*	1.79*
<b>Atlantic</b>	0.14*	0.09*	4.12*
<b>W. Pacific</b>	0.17*	0.25*	2.30*
<b>C. Pacific</b>	0.50	1.20	-2.84
<b>E. Pacific</b>	0.10*	0.15*	7.13*

**Table S3.** Linear regression of annual-mean Niño 3 index and  $P_C$  over 21 years in each region. Starred values are not statistically significant; all other values are significant. Except the Central Pacific, the relationship is not statistically significant.

	<b>R</b>	<b>m</b>	<b>b</b>
<b>Global</b>	0.17*	0.11*	1.78*
<b>Indian</b>	0.29*	0.22*	-0.30*
<b>Pacific</b>	0.28*	0.28*	1.76*
<b>Atlantic</b>	0.07*	0.03*	4.11*
<b>W. Pacific</b>	-0.11*	-0.10*	2.28*
<b>C. Pacific</b>	0.52	0.85	-2.91
<b>E. Pacific</b>	0.18*	0.18*	7.12*

**Table S4.** Linear regression of PDO index and  $P_C$  over 21 years in each region. Starred values are not statistically significant; all other values are significant. Except the Central Pacific, the relationship is not statistically significant.

	<b>R</b>	<b>m</b>	<b>b</b>
<b>Global</b>	0.42*	0.05*	0.98*
<b>Indian</b>	0.24*	0.02*	2.24*
<b>Pacific</b>	0.42*	0.07*	0.21*
<b>Atlantic</b>	-0.15*	-0.04*	0.77*
<b>W. Pacific</b>	-0.11*	-0.10*	2.28*
<b>C. Pacific</b>	0.52	0.65	-2.91
<b>E. Pacific</b>	0.18*	0.18*	7.12*

**Table S5.** Linear regression of IOD index and  $P_C$  over 21 years in each region. Starred values are not statistically significant; all other values are significant. Except the Central Pacific, the relationship is not statistically significant.

	<b>R</b>	<b>m</b>	<b>b</b>
<b>Global</b>	-0.44	-2.29	2.13
<b>Indian</b>	0.11*	0.65*	-0.39*
<b>Pacific</b>	-0.48	-3.92	2.36
<b>Atlantic</b>	0.44	1.51	3.88
<b>W. Pacific</b>	-0.70	-5.40	3.11
<b>C. Pacific</b>	-0.13*	-1.70*	-2.65*
<b>E. Pacific</b>	-0.32*	-2.55*	7.51*

**Table S6.** Linear regression of AMO index and  $P_C$  over 21 years in each region. Starred values are not statistically significant; all other values are significant. The relationship is statistically significant over the Atlantic and the Pacific, particularly the Western Pacific where the slope is negative.