

Table 1. The eight strongest (+) phase years within the period 1950-2010 are selected for each index. Using HURDAT, the number of tropical storms (TS), hurricanes (HR), major hurricanes (MH, categories 3-5), accumulated cyclone energy (ACE), and number of United States landfalling hurricanes (USL) are averaged for each index's eight-year composite. For VWS, the VWS anomalies in June – November (JJASON) are averaged over the main development region (MDR, 85°W – 15°W, 10°N – 20°N) for each index's eight-year composite. The values in parenthesis are those after the influence of MDR SST is removed by using the method of linear regression. Any value larger or smaller than the climatological mean with above the 90% significance is in bold.

Index	TS (#)	HR (#)	MH (#)	ACE ($10^4 kt^2$)	USL(#)	VWS (ms^{-1})
CPW	11 (11)	6 (6)	2 (2)	97.0 (91.3)	2 (2)	0.3 (0.4)
EMI	10 (10)	6 (6)	2 (2)	96.9 (99.9)	2 (2)	0.1 (0.1)
TNI	14 (12)	8 (7)	3 (3)	120.1 (105.9)	2 (2)	-0.3 (0.0)
PMM	11 (11)	7 (7)	3 (3)	103.3 (104.0)	1 (1)	0.2 (0.2)
NINO3	8 (8)	3 (3)	1 (1)	53.6 (51.7)	1 (1)	1.4 (1.5)
Climatology	11	7	3	106.3	2	0.0

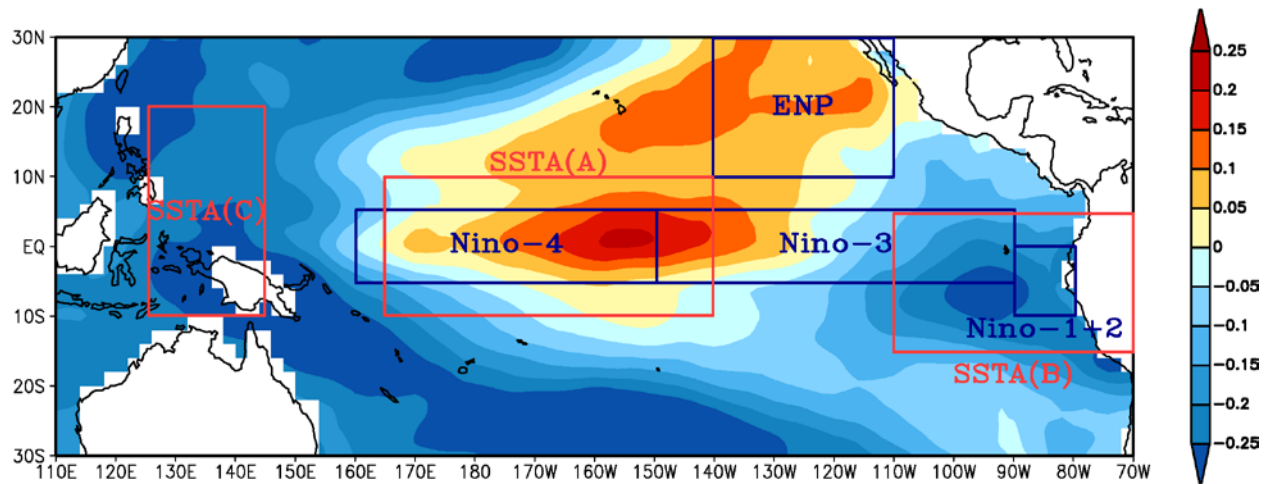


Figure 1. Location of the SST regions referenced for the definitions of four non-canonical El Niño patterns. The background is the 2nd mode of the empirical orthogonal function (EOF2) analysis of the tropical Pacific SST anomalies. The unit is °C.

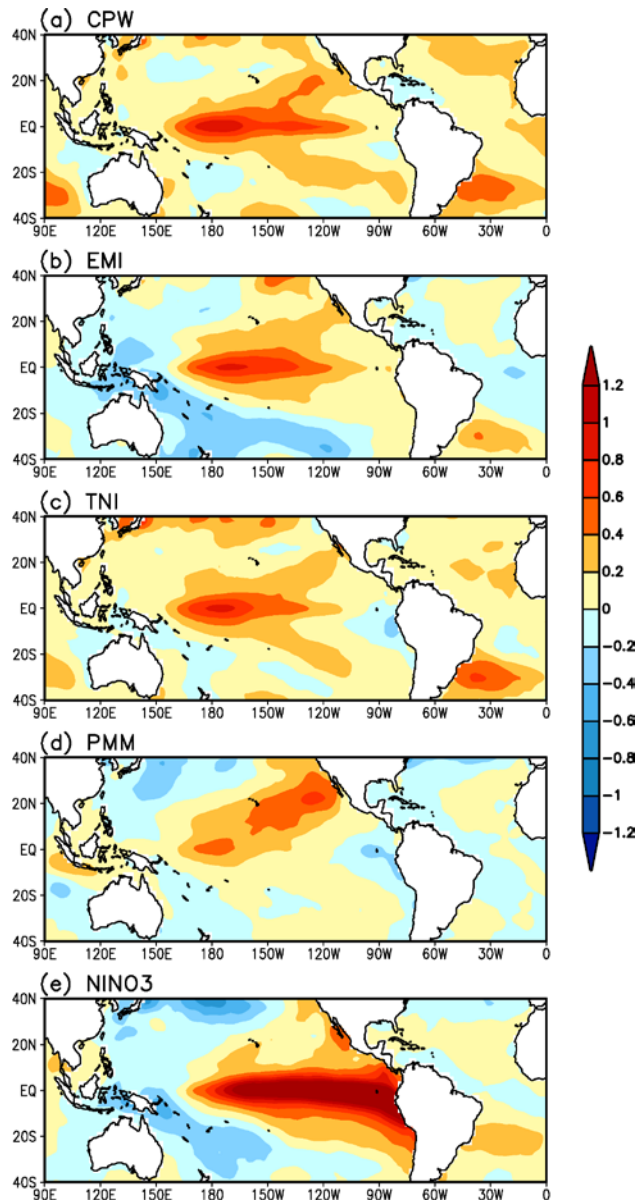


Figure 2. Composites of SST anomalies in JJASON for the eight strongest (+) phase CPW, EMI, TNI, PMM and NINO3 years. The unit is $^{\circ}\text{C}$.

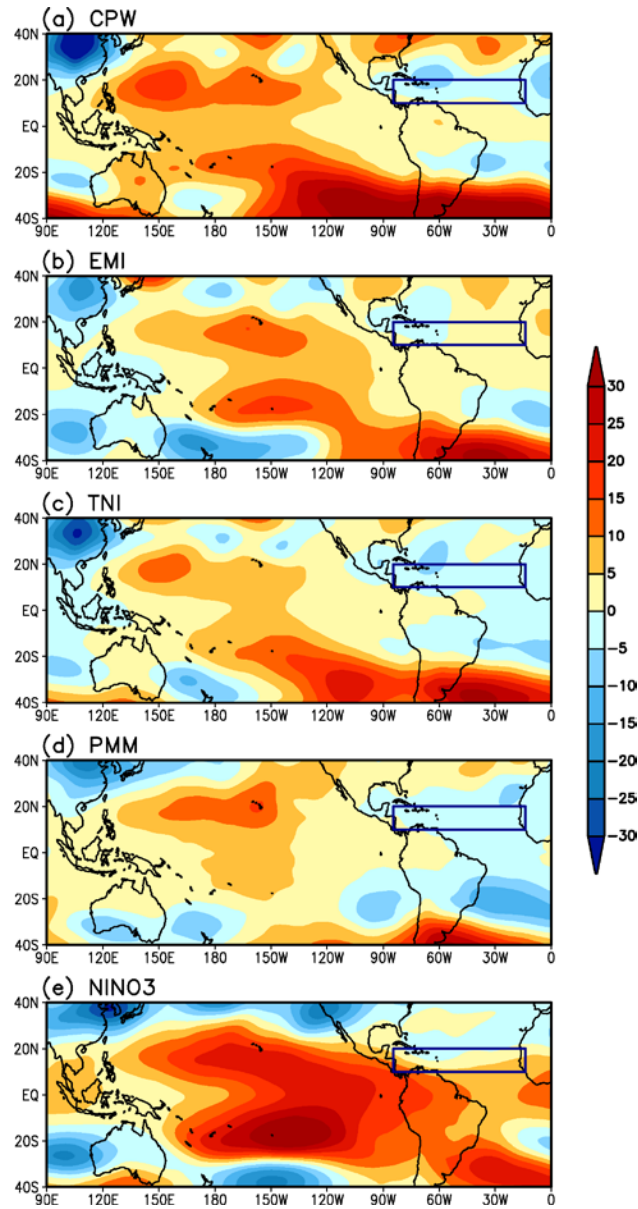


Figure 3. Composites of geopotential thickness (200 minus 850 hPa) anomalies in JJASON for the eight strongest (+) phase CPW, EMI, TNI, PMM and NINO3 years. The influence of MDR SST is removed prior to making these composites by using the method of linear regression. The unit is gpm.

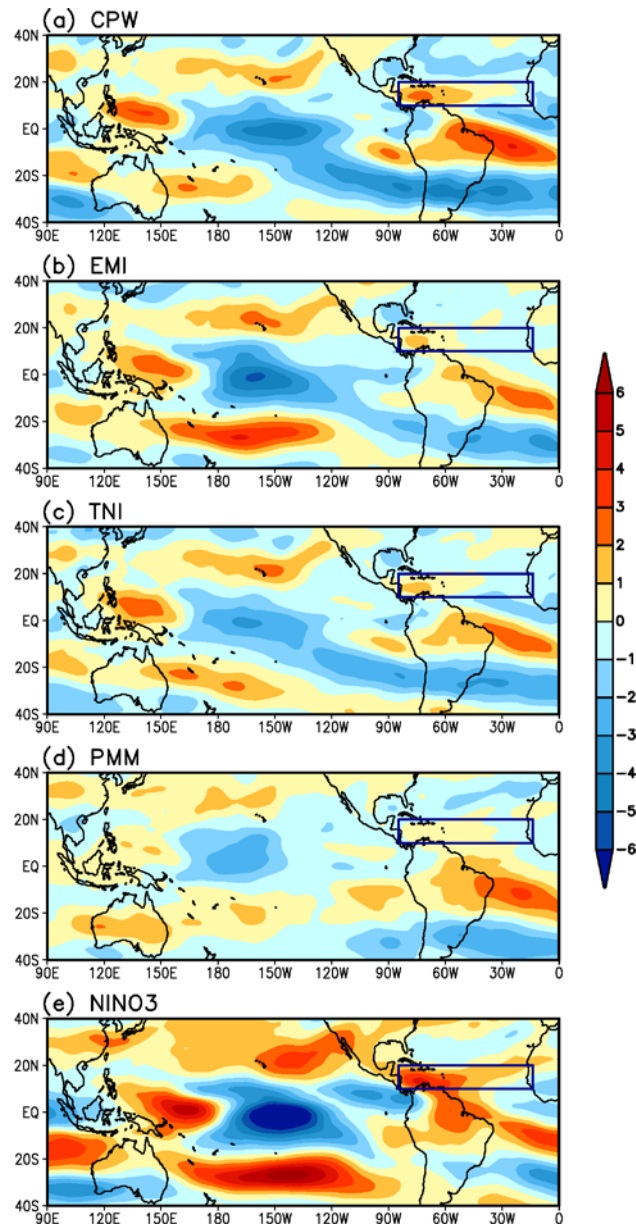


Figure 4. Composites of vertical wind shear (200 minus 850 hPa) anomalies in JJASON for the eight strongest (+) phase CPW, EMI, TNI, PMM and NINO3 years. The influence of MDR SST is removed prior to making these composites by using the method of linear regression. The unit is m s^{-1} .