H53C-01 MIDSUMMER DROUGHT IN MEXICO AND CENTRAL AMERICA AND ITS RELATIONSHIP WITH THE EASTERN PACIFIC GAP WINDS

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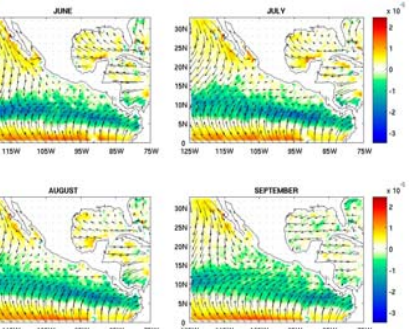
e low level circulation over the central region of the Northeastern Tropical Pacific P) is mainly directed westward from November to May and undergoes wind direction ges during summer, from weak westerlies in June to easterlies in July and August changing back to westerlies in September October. This circulation pattern during ummer is associated with the Tehuantepec and Papagayo wind jets, which slightly gthen favoured by the westward elongation and intensification of the Azores nuda High. There is a high correlation, in the seasonal, monthly and synoptic scales among the zonal winds over the central NETP, the Tehuantepec and gayo wind jets, the meridional pressure gradients in the Isthmus of Tehuantepec and the Caribbean Sea, and the precipitation rates in central-southern Mexico Central America, where the midsummer drought occurs. The westward low-circulation observed over the central-eastern region of the NETP during midsum that occurs simultaneously with the strengthening of the wind jets, induces west moisture fluxes in the lower layers of the atmosphere, displaces convergence a away from the coasts, and causes the relatively strong convergence in easternmost NETP to remain confined south of the area of influence of the wind and the associated westward winds over the central NETP. These factors play a n role in determining the midsummer drought in central-southern Mexico and Ce

SEASONAL SCALE



. Long-term monthly mean wind vectors and ivergence contours (s^{-1}) from QuikSCAT data 99 - Dec 2006).

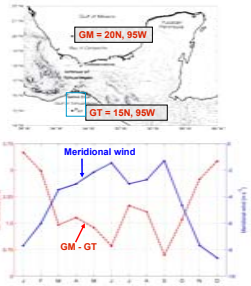


Fig. 2. Meridional wind component averaged over the Gulf of Tehuantepec (blue square in top map) and SLP differences between the Gulf of Mexico (GM) and the Gulf of Tehuantepec (GT).

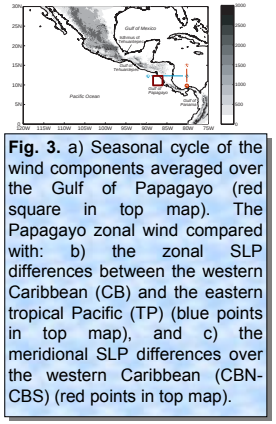


Fig. 3. a) Seasonal cycle of the wind components averaged over the Gulf of Papagayo (red square in top map). The Papagayo zonal wind compared with: b) the zonal SLP differences between the western Caribbean (CB) and the eastern tropical Pacific (TP) (blue points in top map), and c) the meridional SLP differences over the western Caribbean (CBN-CBS) (red points in top map).

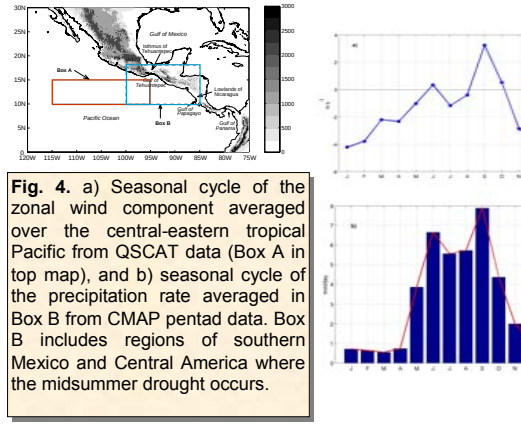


Fig. 4. a) Seasonal cycle of the zonal wind component averaged over the central-eastern tropical Pacific from QSCAT data (Box A in top map), and b) seasonal cycle of the precipitation rate averaged in Box B from CMAP pentad data. Box B includes regions of southern Mexico and Central America where the midsummer drought occurs.

SYNOPTIC SCALE

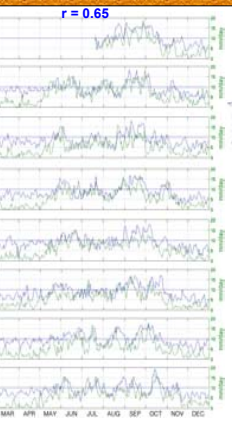


Fig.5. Time series of daily (left) and 30-day running (top) means of the zonal wind component in Box A (blue line) and the precipitation rate in Box B (green line). The correlation coefficients (r) are in the top of each figure.
Note: See Fig. 4 for location of Boxes A and B.

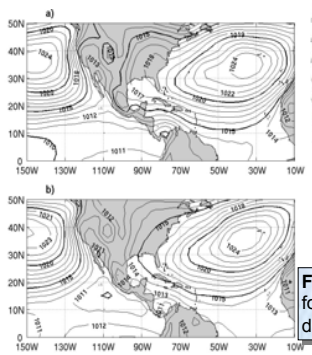


Fig. 6. SLP (hPa) scenarios during summer for: a) days when gap winds occur, and b) days when gap winds did not occur.

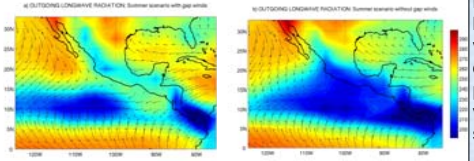


Fig. 7. Same as in 6 but for the Outgoing Longwave Radiation (Wm-2).

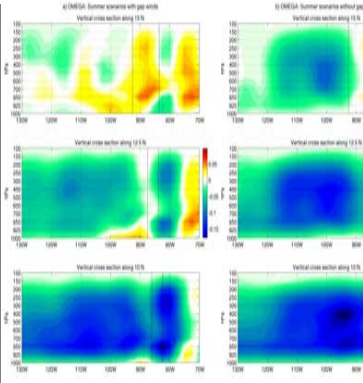


Fig. 8. Same as in 6 but for the vertical velocity (Omega = dp/dt, hPa/s). The panels show the vertical cross sections along 15N, 12.5N, and 10N from top to bottom. The vertical black lines in each panel mark the approximate West and East continental boundaries at the corresponding latitude.

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