

1- Recent studies show that the canonical El Nino has become less frequent and that a different kind of El Nino has become more common during the late twentieth century

2- CPW (also known as Modoki El Nino) is different from traditional El Nino because the SST warming is largely in the central equatorial Pacific region instead of in the eastern equatorial Pacific region

3- These two ENSO types may exhibit different teleconnections

4- Traditional El Nino pattern suppresses Atlantic cyclone activity (Gray et al. 1984, Goldenberg and Shapiro 1996)

5- Most recent studies suggest that CPW may not have an impact on TC genesis because the amplitude is too weak.

References:

- 1- Yeh et al. 2009: "El Nino in a changing climate Nature paper"
- 2- Kim et al. (2009), "Impact of shifting patterns of Pacific Ocean warming on North Atlantic tropical cyclones, Science, 325, 77–80, doi:10.1126/science.1174062.
- 3- Lee et al. (2010) "On the impact of central Pacific warming events on Atlantic tropical storm activity"
- 4- Larson, S., S.-K. Lee, C. Wang, E.-S. Chung, and D. Enfield, 2012. [Impacts of Non-canonical El Nino Patterns on Atlantic Hurricane Activity](#). *Geophysical Research Letters*, 39, L14706, doi:10.1029/2012GL052595.
- 5- Goldenberg, S. B., and L. J. Shapiro (1996), Physical mechanisms for the association of El Niño and West African rainfall with Atlantic major hurricane activity, *J. Clim.*, 9, 1169–1187, doi:10.1175/1520-0442(1996)009<1169:PMFTAO>2.0.CO;2.
- 6- Gray, W. M. (1984), Atlantic seasonal hurricane frequency. Part I: El Niño and 30 mb Quasi-Biennial Oscillation influences, *Mon. Weather Rev.*, 112, 1649–1668, doi:10.1175/1520-0493(1984)112<1649:ASHFPI>2.0.