

## Tropical Atlantic variability leading tropical Pacific sea level pressure anomalies in CCSM4

There is mounting evidence that tropical Atlantic warm events in sea surface temperature (SST) lead by several months to tropical Pacific positive sea level pressure (SLP) anomalies. In this presentation multi-decadal coupled climate simulations are analyzed to identify tropical Atlantic modes of variability (TAV) that have an impact on tropical Pacific SLP. The analyses are based on 20<sup>th</sup> century simulations of the Community Climate System Model version 4 (CCSM4). The main modes of tropical Atlantic SST variability are obtained from rotated empirical orthogonal functions (rEOFs). In CCSM4 the main patterns of TAV are well represented, including the northern tropical Atlantic (NTA), southern tropical Atlantic (STA) and the southern subtropical Atlantic (SSA) patterns. The STA variability is captured by two distinct patterns: a pattern with greater loadings along the Equator (STA-EQ), and another pattern with anomalies centered in the Benguela region (STA-BG). Out of these main TAV patterns in CCSM4, the STA-EQ anomalies are significantly correlated to tropical Pacific SLP positive anomalies creating an inter-basin gradient in SLP anomalies. This relationship peaks when the STA-EQ anomalies lead the tropical Pacific by about 9 months, similar to that observed in recent decades.