El Nino-Southern Oscillation (ENSO) Update September 2015

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EL NIÑO STRENGTHENS: STRONGEST AFTER 1997-1998 EVENT

Assessment of the Current El Niño State:

The current 2015 El Niño event in the tropical Pacific ocean continues to be a well-established event with the most recent Niño 3.4 sea surface temperature (SST) weekly anomalies peaking at 2.0 ^{0} C (figure 1.0), indicative of a strong El Niño. This means that the event has increased in intensity during the most recent four (4) weeks. All the El Niño forecast model outputs that have been assessed, suggest that further warming in the Central Tropical Pacific is very likely and strengthening of the event is expected for the remainder of 2015, with the possibility of the event reaching its peak during November/December 2015 or in early 2016 (January).

The latest weekly values for the current event has already matched and surpassed the 2009-2010 and 2002-2003 El Niño events at their peaks, which puts the current event as the second strongest El Niño event over the last 20 years with only the 1997-1998 event being stronger. The current event has the potential of being one of the strongest El Niño events during the last 35 years. This is based on the consensus among the El Niño dynamical forecast models which favour the average warming in the Niño 3.4 area to reach 2.5 °C above average by November/December 2015 (figure 2.0). Our analysis does not depart significantly from this consensus forecast and suggests that the anticipated warming is very likely given the recently observed low-level westerly wind burst (in mid-august) in western tropical Pacific(figure 3.0).

Figure 1.0 Figure 2.0 Figure 3.0

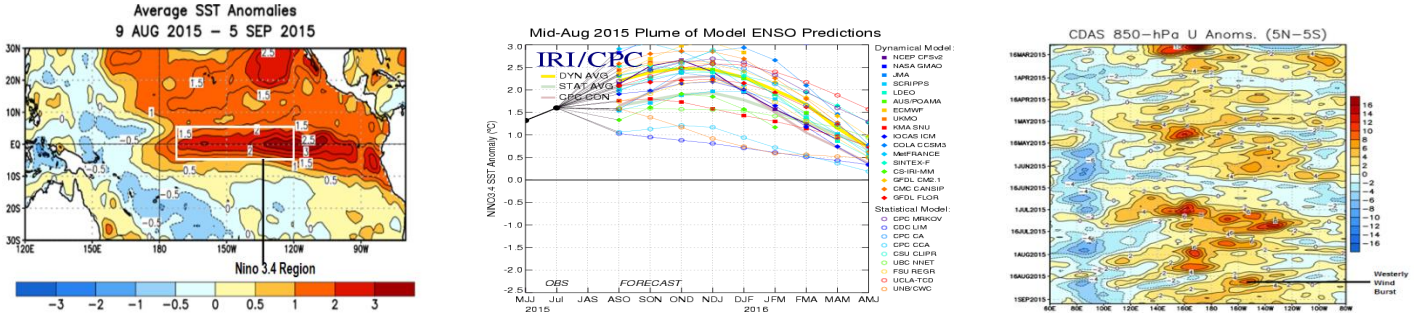

Figure 1: SST Departures (^{0}C) in the Niño 3.4 region during the last four weeks. Figure 2: IRI/CPC Pacific Niño 3.4 SST Model Outlook. Figure 3: Low Level Wind Anomalies Showing Westerly Wind Burst. Adopted from: http://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml

Furthermore, the atmospheric features associated with the El Niño remain strong and strongly coupled to the oceanic warming, with significant low-level westerly wind anomalies continuing from the western to east-central equatorial Pacific, along with anomalous upper-level easterly winds, enhanced convection and precipitation evident in the central Tropical Pacific Ocean region.

Current Influence of El Niño on Trinidad and Tobago's climate

The presence of El Niño tends to affect rainfall negatively in the region. Current analysis show that there is evidence to suggest the current event is already affecting Trinidad and Tobago's wet season rainfall with Tobago's rainfall being most severely affected. During August 2015, SSTs east of Trinidad and Tobago remain cooler than average, sea level pressures in the area remain higher than average, low level wind speeds have increased with near average to above average anomalies evident, vertical wind shear remain stronger than average, and since July positive upper-level velocity potential anomalies associated with upper-level convergence have persisted near Trinidad and Tobago. When occurring together, these signature features are associated in our region with the El Niño signal. Together these features have acted to suppress cloud development and rainfall near Trinidad and Tobago. These conditions are expected to persist and exert negative influences on the local rainfall behaviour and positive influences on temperatures over Trinidad and Tobago during the current wet season and into the 2016 dry season.

Historical Influences of El Niño on Trinidad and Tobago Climate

Historically, the El Niño climate phenomenon has been the major climatic influence that determines whether the local wet/dry seasons will be wetter/ drier or warmer/ cooler than average. Trinidad and Tobago tend to experience a drier wet season when an El Niño is present and an exceptionally dry, dry-season in the year following. However, the influence of different El Niño events on Trinidad and Tobago's rainfall and temperature are not identical. Notably, the last event in 2009-2010 negatively impacted local rainfall with large shortfalls during the late half of the 2009 wet season and drought conditions in the 2010 dry season, which followed.