COMITÉ MULTISECTORIAL ENCARGADO DEL ESTUDIO NACIONAL DEL FENÓMENO EL NIÑO (ENFEN)

ENFEN EXTRAORDINARY STATEMENT N° 01-2015

Ocean warming associated to the arrival of a downwelling oceanic Kelvin wave

The Multisectoral Committee for the National Study of El Niño (ENFEN) permanently monitors the meteorological, oceanographic, biological-fishery and hydrological conditions and, due to recent developments, it has been considered relevant to inform the society the following:

ENFEN indicated in the Official Statement N° 16-2015 that the downwelling oceanic Kelvin wave formed in late July was strengthened by westerly wind anomalies in the central Pacific, and presented positive anomalies in the thermocline depth and in the Mean Sea Level (MSL) to the east of 95°W and that this downwelling wave is not as attenuated as in the past two months. It was expected that the wave "would arrive to the Peruvian coast in late September and early October and would contribute to maintain the current warming and may even increase it."

As of September 18th, there was a sharp increase in the anomalies of the sea surface temperature (SST) off the coast of Paita, from +2 °C to +6 °C. This increase, so far, has not been observed in other central and southern stations. This warming would be related, according to the satellite data, to a core that is restricted to 200 km off the coast of Piura. This information also indicates that the average anomaly in the Niño 1+2 region (10 °S-0 °N, 90 °W -80 °W) maintains values slightly above +2 °C, well below the +3,5 °C observed in September 1997, although above the values in 1972 and 1982. On the other hand, the absolute SST in the coast to the south of Tumbes remains below 25°C, so, except perhaps at this point, it is not expected that the current warming will produce significant rainfall.

Related to the above, the subsurface temperature in the fixed station off Paita on September 22nd showed that the anomalies of +6 °C extended to a depth of 40 m, while values over +4 °C extended to 70 m; similar conditions were observed as far as 100 km from the coast, with an intensification of a subsurface flux to the south. Also, in the last ten days the MSL anomaly in Paita increased to a maximum value of +25 cm on September 22nd. This indicates that the downwelling Kelvin wave has arrived to the coast of Peru as expected, although the high impact on the SST would indicate that the mechanisms responsible for the recent attenuation of warm Kelvin waves are no longer active. In particular, the South Pacific High and alongshore winds associated were weak in the last month, which could have contributed to the enhanced SST anomalies. However, this system had intensified recently and could reduce the warming produced by the wave. Thus, it is expected that increased anomalies persist for some days and that the propagation of this warm wave along the coastline will produce progressive warming but with lesser magnitude to the south.

The implications of the above for the probabilistic forecast of the magnitude of El Niño for the 2015-2016 austral summer will be discussed in the following Official Statement to be issued on October 6th, 2015.

Multisectoral Committee for the National Study of El Niño (ENFEN)

Callao-Perú, September 25th, 2015