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## Current condition and forecasts of ENSO and IOD for ASO 2022

Issued on 1<sup>st</sup> July 2022 by Seasonal forecasting Division of the Department of Meteorology, Sri Lanka.

### 1. El Nino and La Nina update

The tropical Pacific atmosphere is consistent with La Niña conditions. Although, negative Niño3.4 decreased substantially in June, with Niño3.4 = -0.7C , a majority of models predict SSTs to remain below-normal at the level of a weak La Niña through the Northern Hemisphere summer and into early winter 2022-23. Further, La Niña is favored to continue through 2022 with the odds for La Niña decreasing into the Northern Hemisphere late summer (60% chance in July-September 2022) before increasing through the Northern Hemisphere fall and early winter 2022 (62-66% chance). (source-CPC-USA) (Fig.3a).

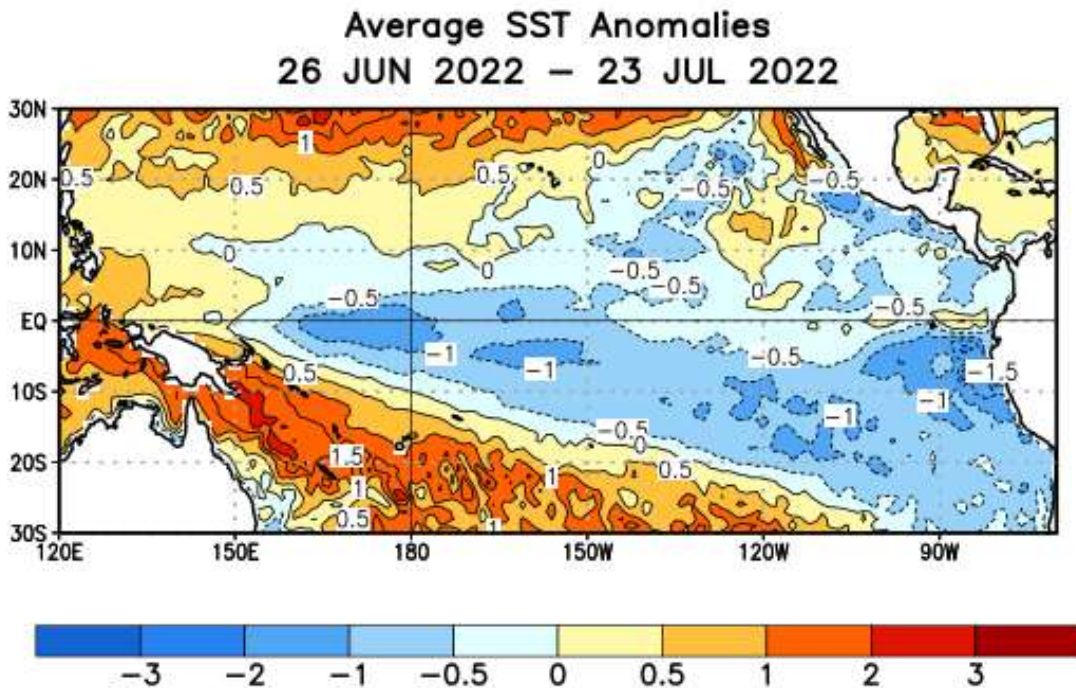


Fig 1: Observed Average sea surface temperature (SST) anomalies (°C)

## Weekly SST Anomalies (DEG C)

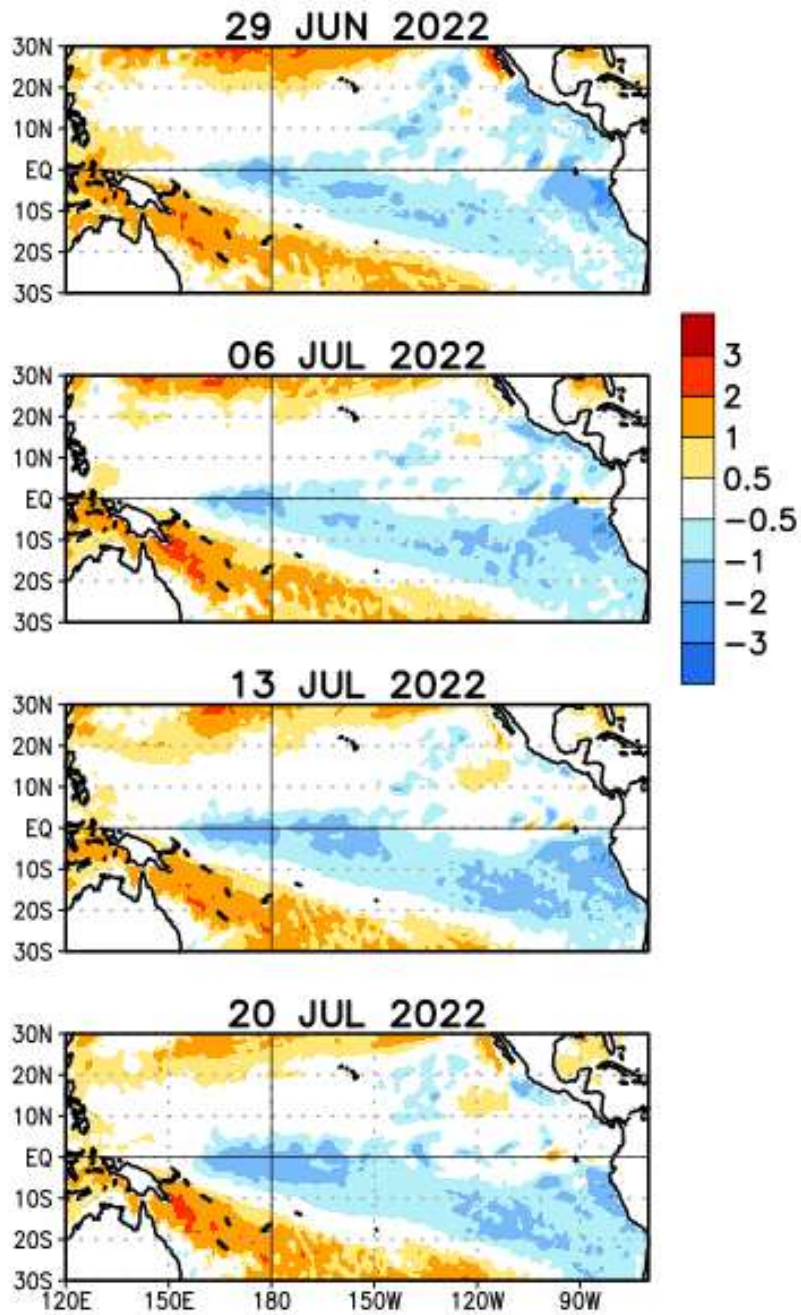


Fig 2: Weekly Observed Average sea surface temperature (SST) anomalies (°C)

Early-July 2022 CPC/IRI Official Probabilistic ENSO Forecasts

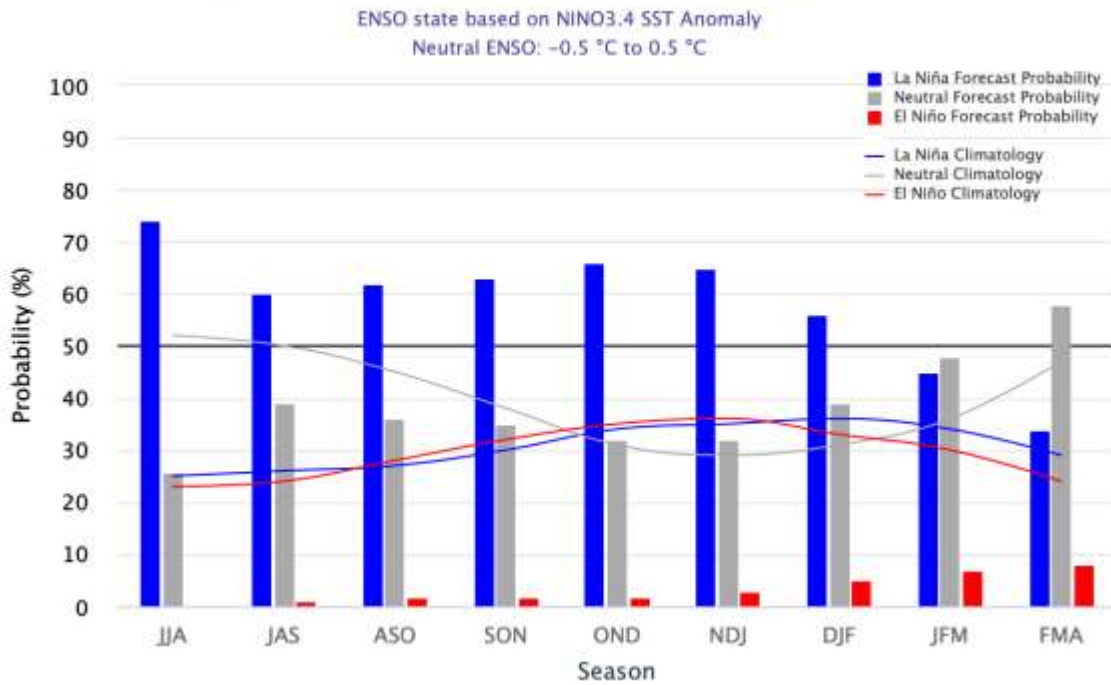


Fig 3a: ENSO forecast from Climate Prediction Center (CPC)/ IRI Forecast

1.1.1 Impacts of La-Nina on monthly rainfall anomaly during August, September and October

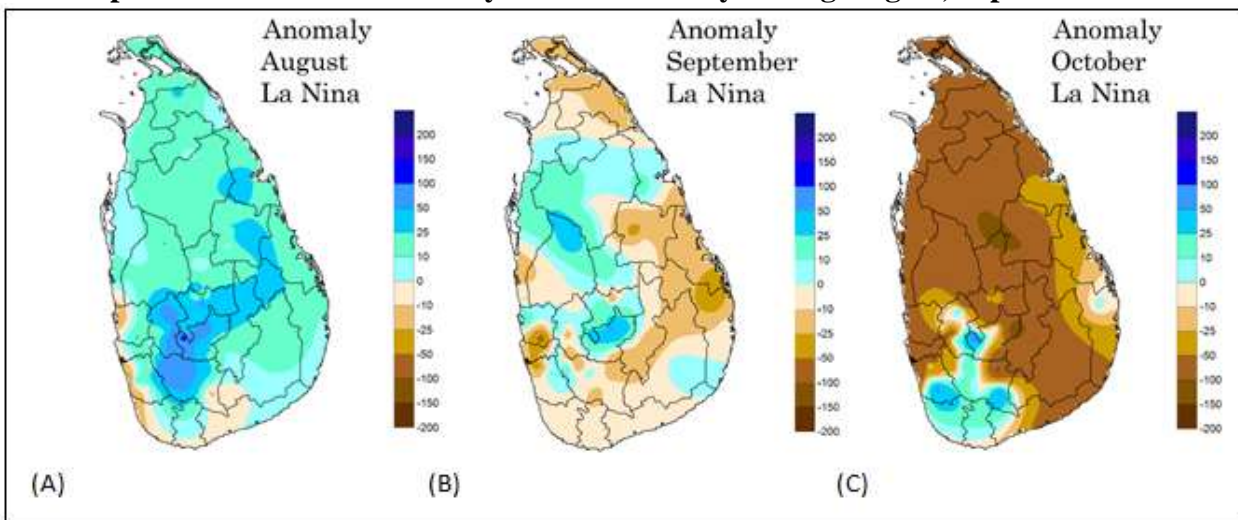


Fig 3b: Monthly Rainfall Anomaly maps of the months of August (A), September (B) and October (C) during La-Nina years (Hapuarachchi et al 2016)

Previous studies conducted by the Department of Meteorology, identified that, during La-Nina years, above or near normal rainfalls over most parts of the country during the months of August (Fig 3b). During the month of September below normal rainfalls are observed in most parts of the country except some parts in Puttalam, Kurunegala, Anuradhapura, Mannar, Trincomalee, Mathale, Kandy and Nuwara Eliya districts where above normal rainfalls were observed. During the month of October below normal rainfalls are observed over the country except some areas in

southwestern part where above normal rainfalls are observed during the La-nina conditions were persistent.

## 2. The Indian Ocean Dipole (IOD) update

Overall, near or slightly above normal Sea surface temperatures (SSTs) were observed over the tropical Indian Ocean. However, the Indian Ocean Dipole (IOD) index has been very close to or exceeded negative IOD thresholds over the past six weeks and currently persists within neutral bounds. The latest Indian Ocean Dipole (IOD) index value for the week ending 17 July 2022 was  $-1.0\text{ }^{\circ}\text{C}$ . All five international climate models surveyed by the BoM, indicate a negative IOD event during the coming months and most of the models show strongest negative IOD in the month of September. (Source-Bureau of Meteorology, Australia).

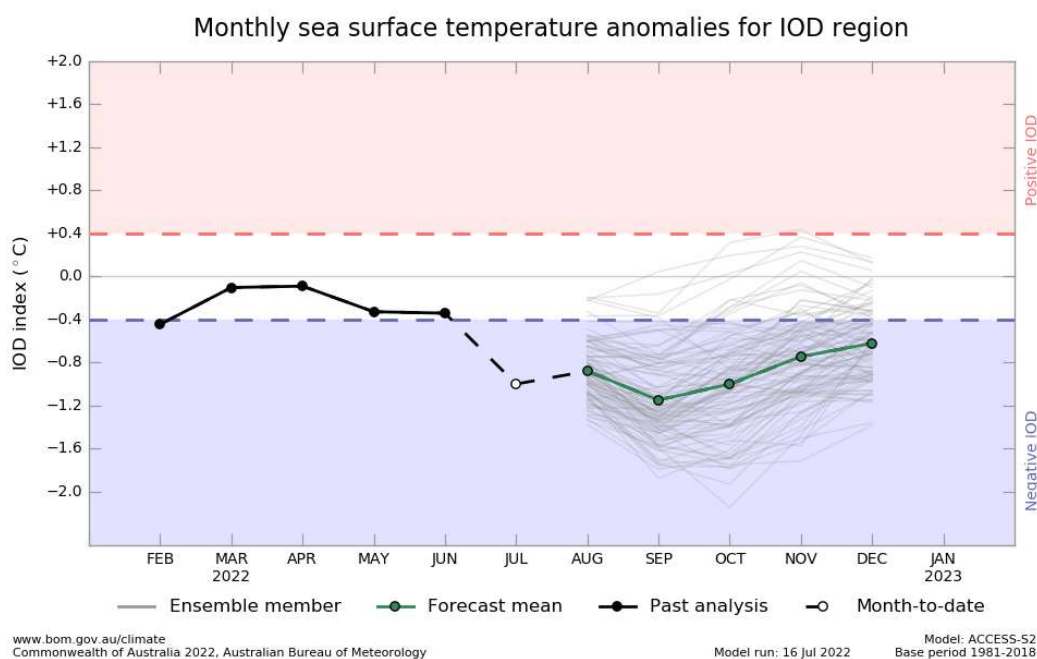


Figure 4a: IOD forecast from Australian Bureau of Meteorology

### 1.2.1 Impacts of negative IOD on monthly rainfall anomaly during August, September and October

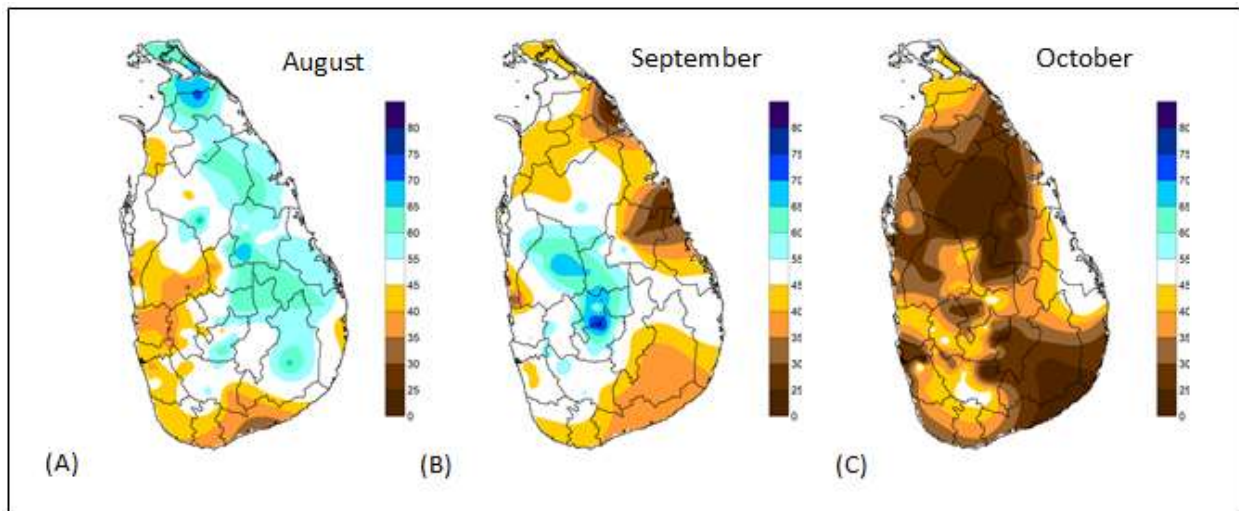


Fig 4b: Median Based Composite maps of Monthly Rainfall during August (A) September(B) and October (C) during Negative IOD years (Hapuarachchi et al 2018)

Previous studies conducted by the Department of Meteorology identified that there is a higher probability of getting below normal rainfall over some parts of Mannar, Puttalam, Kurunegala, Gampaha, Colombo, Kalutara, Galle, Matara, Rathnapura and Hambantota districts and near or above normal rainfall over other parts of the country under the negative IOD condition during the month of August. But in the month of September it is showing the higher probability of getting above normal rainfall in some parts in Kurunegala, Matale, Kandy and Nuwara Eliya districts and below normal rainfalls in Mannar, Vavuniya, Anuradhapura, Polonnaruwa, Jaffna, Mulativu, Trincomalee, Batticaloa, Galle, Matara, Hambantota and Monaragala districts (Fig 3b (B)). And there is a higher probability of getting below normal rainfall over most parts of the country during the month of October (Fig 3b (C)) under the negative IOD condition.