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Current condition and forecasts of ENSO and IOD for DJF 2022/23

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1. El Nino and La Nina update

The tropical Pacific atmosphere is consistent with La Niña conditions. All Niño indices indicate cooled and Negative. The latest weekly Niño3.4 value to 20 November 2022 was -0.7°C just below the La Niña threshold (-0.8°C). All surveyed climate models indicate sea surface temperatures in the central tropical Pacific (NINO3.4) will remain at La Niña levels during December, with a return to ENSO-neutral in January or February 2023. There is a 76% chance of La Niña during the Northern Hemisphere winter (December-February) 2022-23, with a transition to ENSO-neutral favored in February-April 2023 (57% chance. (source-CPC-USA) (Fig.3a).

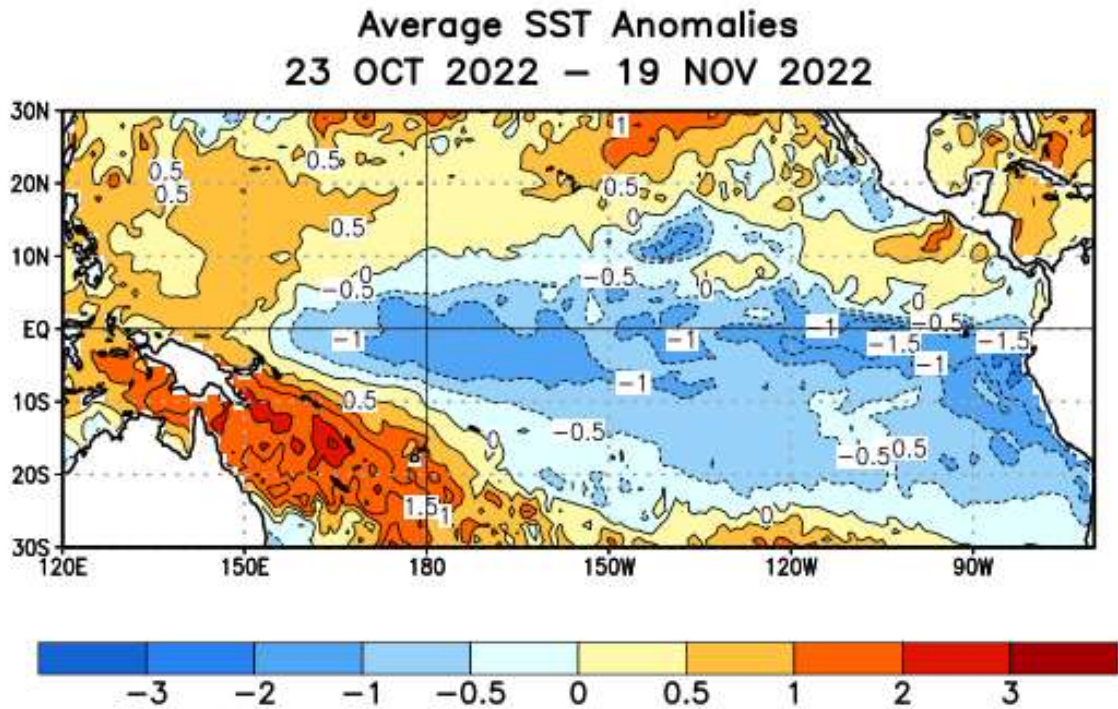


Fig 1: Observed Average sea surface temperature (SST) anomalies ($^{\circ}\text{C}$)

Weekly SST Anomalies (DEG C)

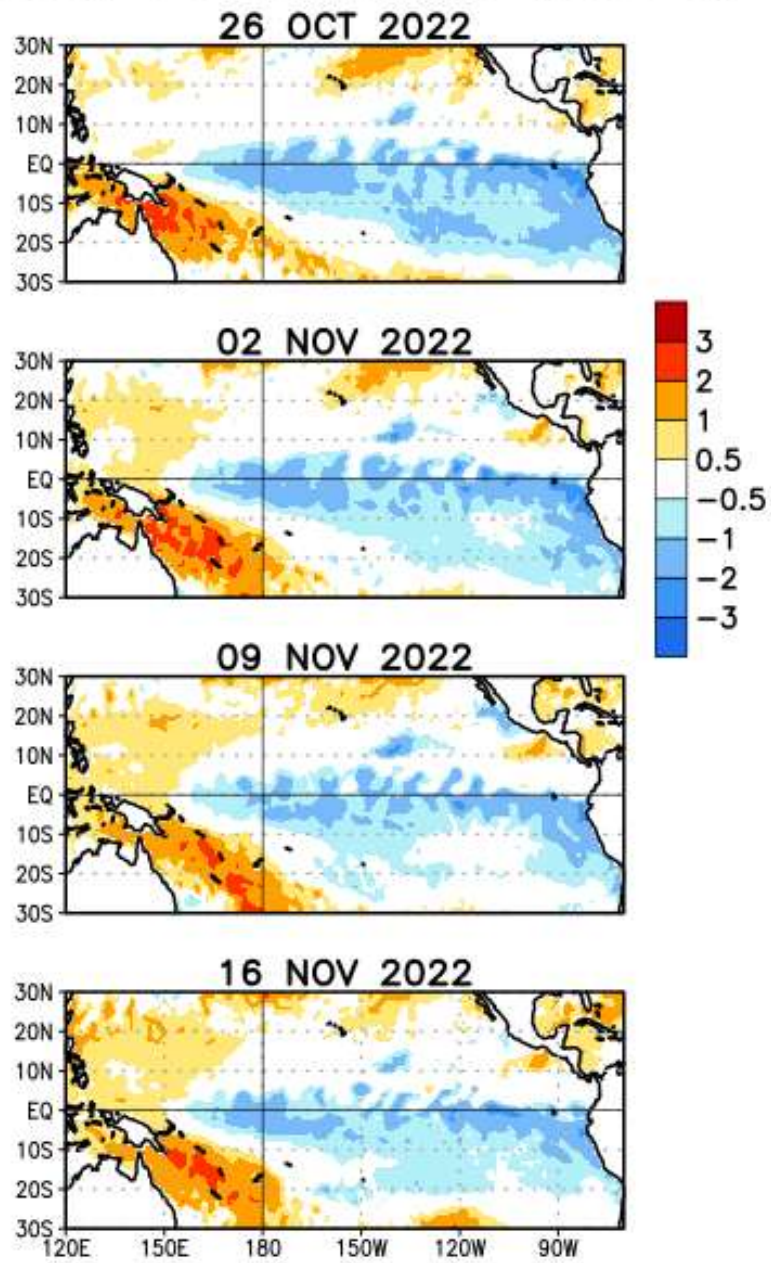


Fig 2: Weekly Observed Average sea surface temperature (SST) anomalies (°C)

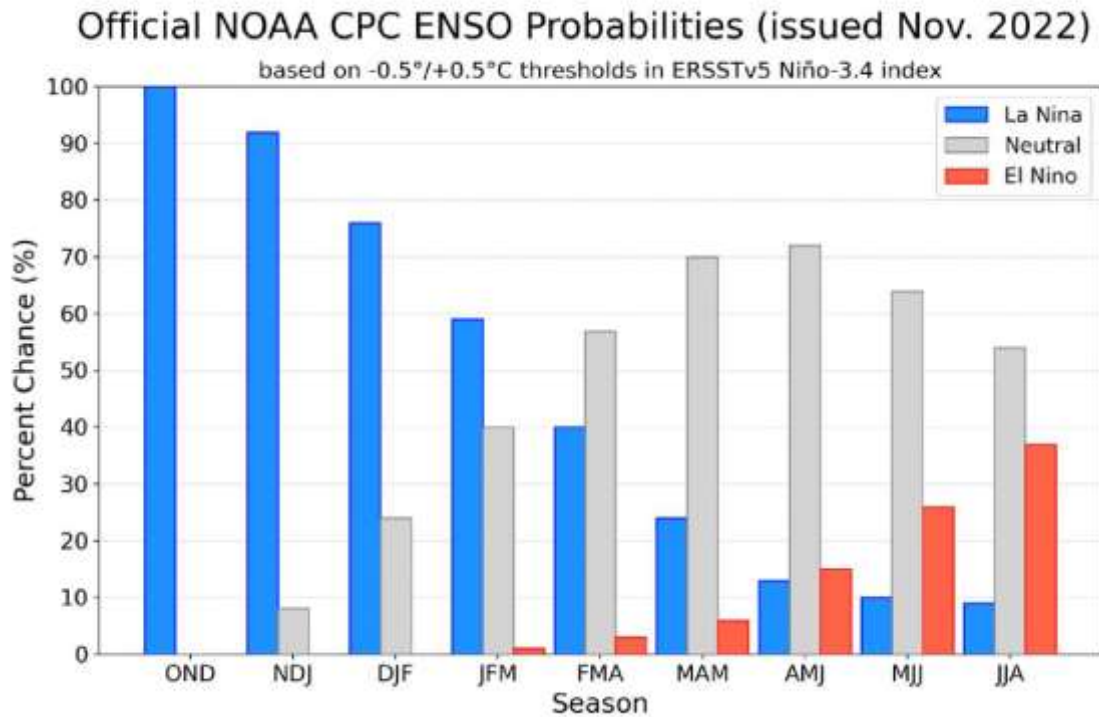


Fig 3a: ENSO forecast from Climate Prediction Center (CPC)/ IRI Forecast

1.1.1 Impacts of La-Niña on monthly rainfall anomaly during December, January and February

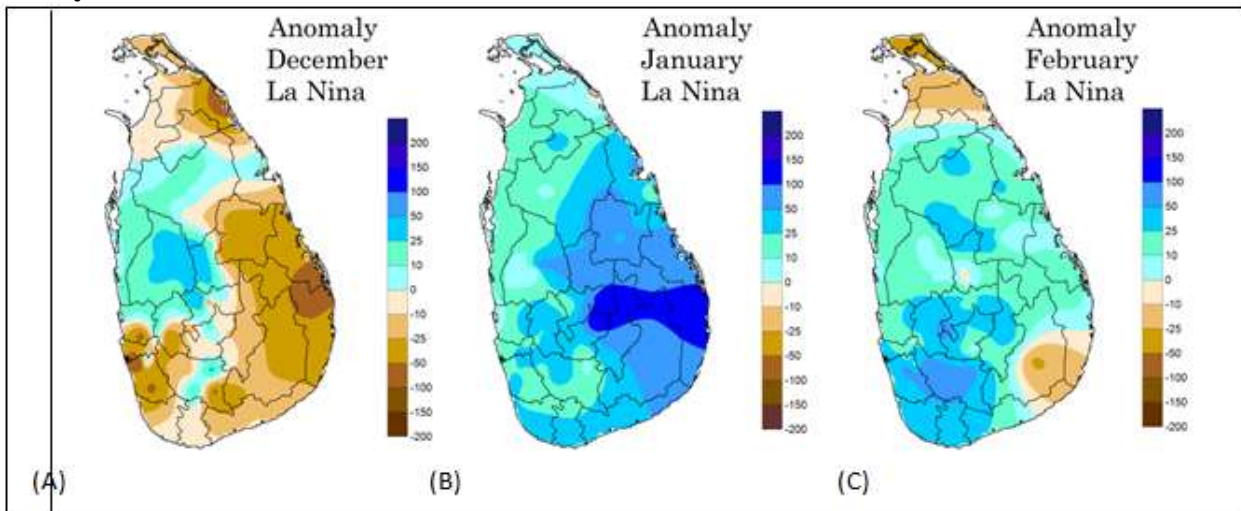


Fig 3b: Monthly Rainfall Anomaly maps of the months of December (A), January (B) and February (C) during La-Niña years (Hapuarachchi et al 2016)

Previous studies conducted by the Department of Meteorology, identified that, during La-Niña years, below normal rainfalls were observed over most of the parts of the Western, Sabaragamuwa, Southern, Uva, Eastern and Northern provinces and in Polonnaruwa district. Above normal rainfalls were observed over remaining areas of the country during the month of December (Fig 3a). During the month of January above normal rainfalls were observed most of the parts of the country (Fig 3b). During the month of February below normal rainfalls were observed over most parts of the Northern

Province and some areas of Monaragala, hambantota and Ampara districts. Above normal rainfalls were observed over remaining areas of the country (Fig 3c) when La-nina conditions were persistent.

2. The Indian Ocean Dipole (IOD) update

Slightly above normal Sea surface temperatures (SSTs) were observed over the eastern Indian Ocean, Bay of Bengale and slightly below normal Sea Surface temperatures (SSTs) were observed in the western Indian Ocean and the equatorial belt of the Indian Ocean. However, the Indian Ocean Dipole (IOD) is proceeding negative limits. The latest IOD index value for the week ending 20 November was $-0.1\text{ }^{\circ}\text{C}$. This is the third consecutive week where the IOD index has fallen within the neutral range; persistent IOD index values below $-0.4\text{ }^{\circ}\text{C}$. (Source-Bureau of Meteorology, Australia).

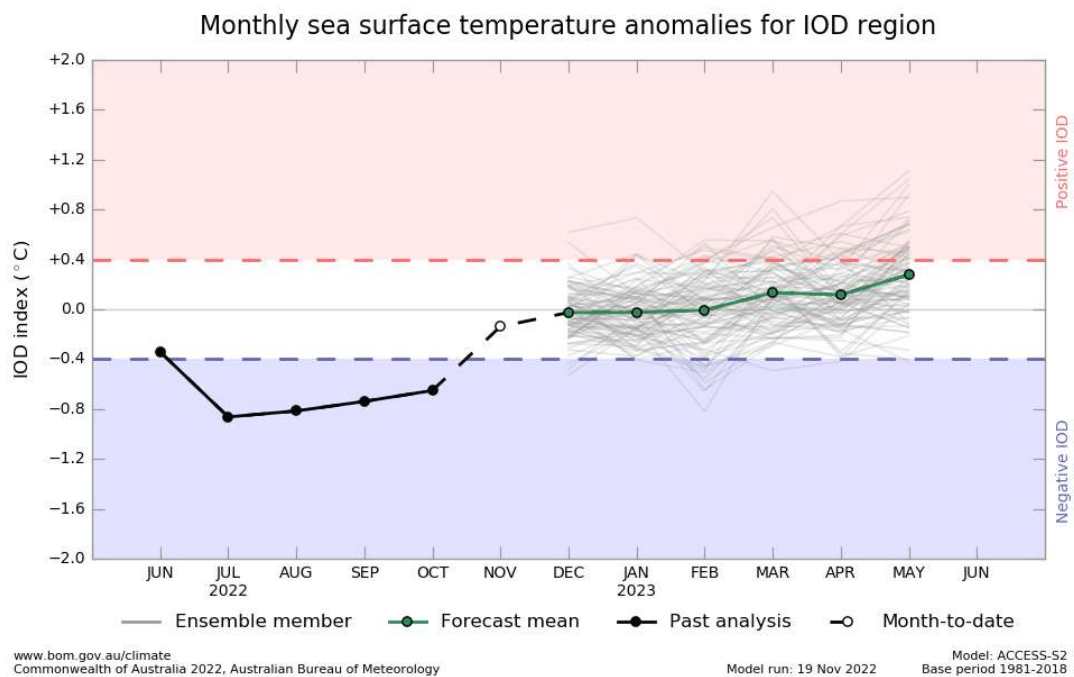


Figure 4a: IOD forecast from Australian Bureau of Meteorology