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APCC Monthly Climate Outlook for October 2020 – March 2021

(Issued: Sep 21, 2020)

- ***During August 2020, negative sea surface temperature anomalies were observed over the central and eastern equatorial Pacific.***
- ***The latest APCC ENSO outlook suggests a 93% probability of La Niña with weak intensity during October – December 2020 and a 58% probability for the same conditions during January – March 2021.***
- ***Strongly enhanced probability for above normal temperatures is predicted for the eastern Arctic, western tropical North Pacific (excluding equatorial region), and the northwestern North Atlantic for October 2020 – March 2021.***
- ***Above normal precipitation is predicted for the Philippine Seas and below normal precipitation is expected for the western tropical Pacific, southern USA, and Mexico for October 2020 – March 2021.***

Current Climate Conditions

In August 2020, negative equatorial sea surface temperature (SST) anomalies were observed over the central and eastern equatorial Pacific. Suppressed tropical convection persisted along the western and central equatorial Pacific and wind anomalies at 850hPa were easterly along the equatorial Pacific, which is consistent with La Niña conditions. Negative monthly mean temperature anomalies were observed over eastern Russia, western China, western Canada, southern Africa, and the Antarctic Ocean. Positive monthly mean precipitation anomalies were observed over the Arabian Sea and the Sahel region. Negative anomalies spanned over central Russia, southern China, Nepal, the eastern Indian Ocean, western North Pacific, and western USA [Figs. 1, 2, and 3].

Discussion of Climate Forecast

SST and ENSO Outlook:

The prevailing ENSO phase is expected to be negative. Negative SST anomalies along the equatorial Pacific are predicted during October 2020 – March 2021. Along with these spatial distributions, all of ten dynamical coupled models predict negative Niño3.4 index for the whole forecast period. As a result, a Niño3.4 index from Multi-model ensemble is expected to be around -1^{o}C and gradually increase to -0.4^{o}C. In summary, based on the running 3-month mean Niño3.4 index, the APCC ENSO outlook suggests La Niña conditions (~93% probability) with weak intensity for October to December 2020 and the probability for the conditions is likely to decrease to 58% for January to March 2021 [Figs. 4 and 5].

Temperature and Precipitation Outlook:

1. Forecast for October – December 2020

Strongly enhanced probability for above normal temperatures is predicted for the Pacific (excluding central and eastern tropical Pacific, the northern North Pacific, and the eastern South Pacific), maritime continent, eastern and western Indian Ocean, Arabian Sea, Bay of Bengal, tropical and subtropical Atlantic, Caribbean Sea, and the Arctic. Enhanced probability for above normal temperatures is expected for Eurasia (excluding eastern China, the Indochinese Peninsula, Middle East, India, and Western and Southern Europe), northwestern and southern Africa, USA, Central America, and southern South America. Strongly enhanced probability for below normal temperatures is predicted for the central and eastern tropical Pacific. Enhanced probability for below normal temperature is expected for the Antarctic Ocean near the Date Line, Great Australian Bight, and some regions of southern Indian Ocean. Enhanced probability for above normal precipitation is predicted for the Arctic, South China and Philippine Seas, western subtropical South Pacific, and the southeastern South Pacific. Strongly enhanced probability for below normal precipitation is expected for the western equatorial Pacific. Enhanced probability for below normal precipitation is predicted for eastern China, Korean Peninsula, and Iran. A tendency for below normal precipitation is expected for southern USA, Mexico, the subtropical North Atlantic, Middle East, and the western and southern Indian Ocean. Strongly enhanced probability for near normal precipitation is predicted for the central and eastern equatorial Pacific. Enhanced probability for near normal precipitation is expected for the eastern Sahel [Fig. 6].

2. Forecast for January – March 2021

Strongly enhanced probability for above normal temperatures is predicted for the eastern Arctic, western tropical North Pacific (excluding equatorial region), subtropical North Pacific, northwestern North Atlantic, and Mexico. Enhanced probability for above normal temperatures is expected for the western Arctic, eastern Russia, the Arabian Sea, subtropical South Atlantic, and the tropical Atlantic. A tendency for above normal temperatures is predicted for Eurasia (excluding Central Asia), western and southern Africa, central Australia, USA, eastern Brazil, and Argentina. Enhanced probability for below normal temperatures is expected for the central equatorial Pacific. Enhanced probability for near normal temperatures is predicted for the eastern off-equatorial North Pacific and northern South America. Enhanced probability for above normal precipitation is expected for the Philippine Seas, subtropical North Pacific, and the western subtropical South Pacific. A tendency for above normal precipitation is predicted for the Arctic, Canada, and northern South America. Enhanced probability for below normal precipitation is expected for the western tropical Pacific, southern USA, and Mexico. Enhanced probability for near normal precipitation is predicted for the eastern equatorial Pacific and the Sahel region [Fig. 7].

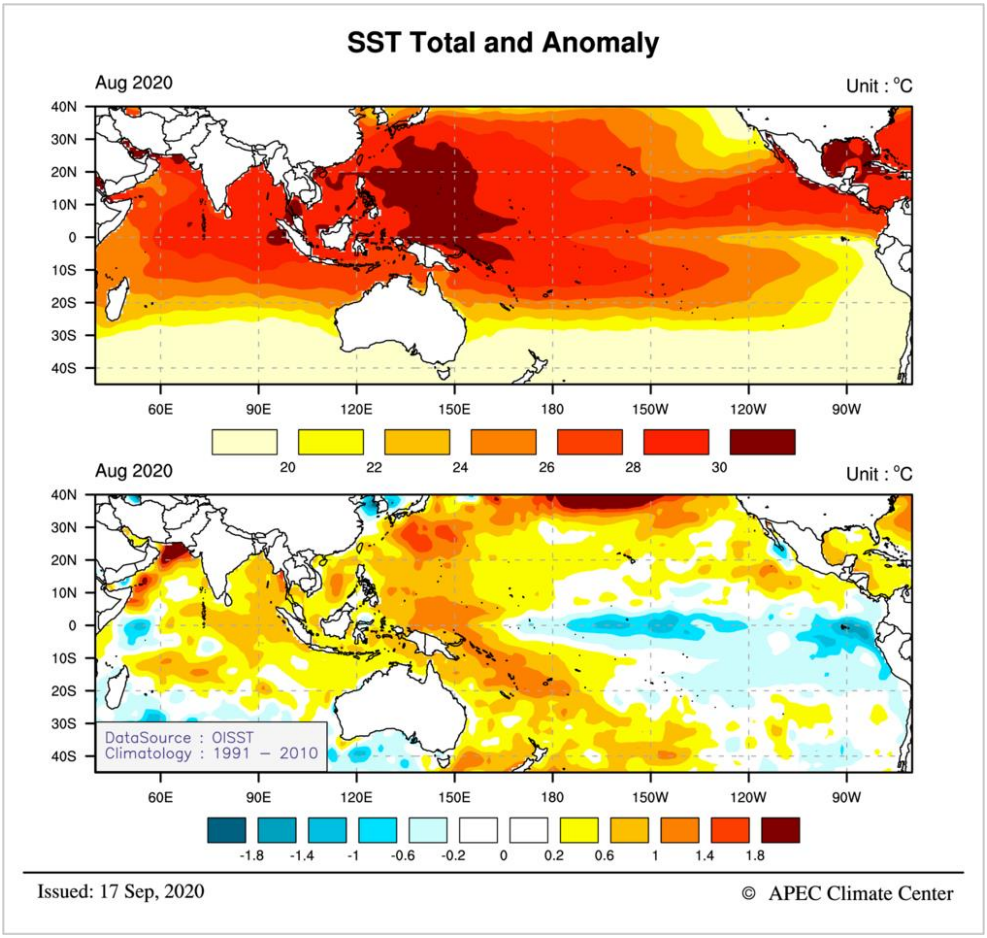

Fig. 1. Monthly mean observed sea surface temperatures (SSTs; top) and anomalies (bottom) for August 2020.

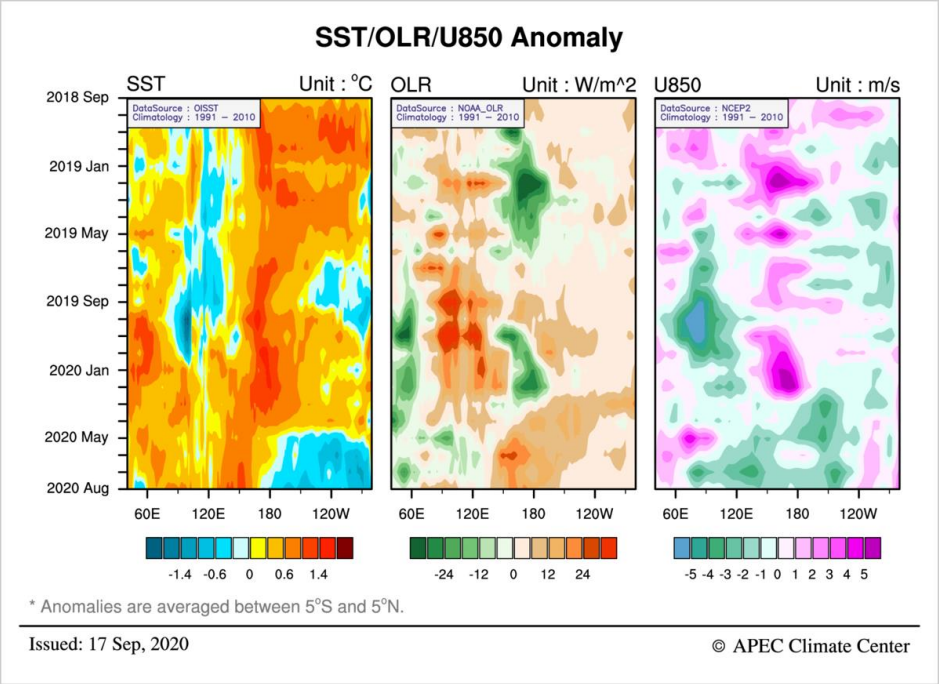

Fig. 2. Time-longitude cross section of the observed monthly mean SST anomalies, outgoing longwave radiation (OLR) anomalies, and zonal wind anomalies at 850hPa (U850) along the equator (5°S-5°N) in the Indian and Pacific Oceans (40°E-80°W) for September 2018 – August 2020.

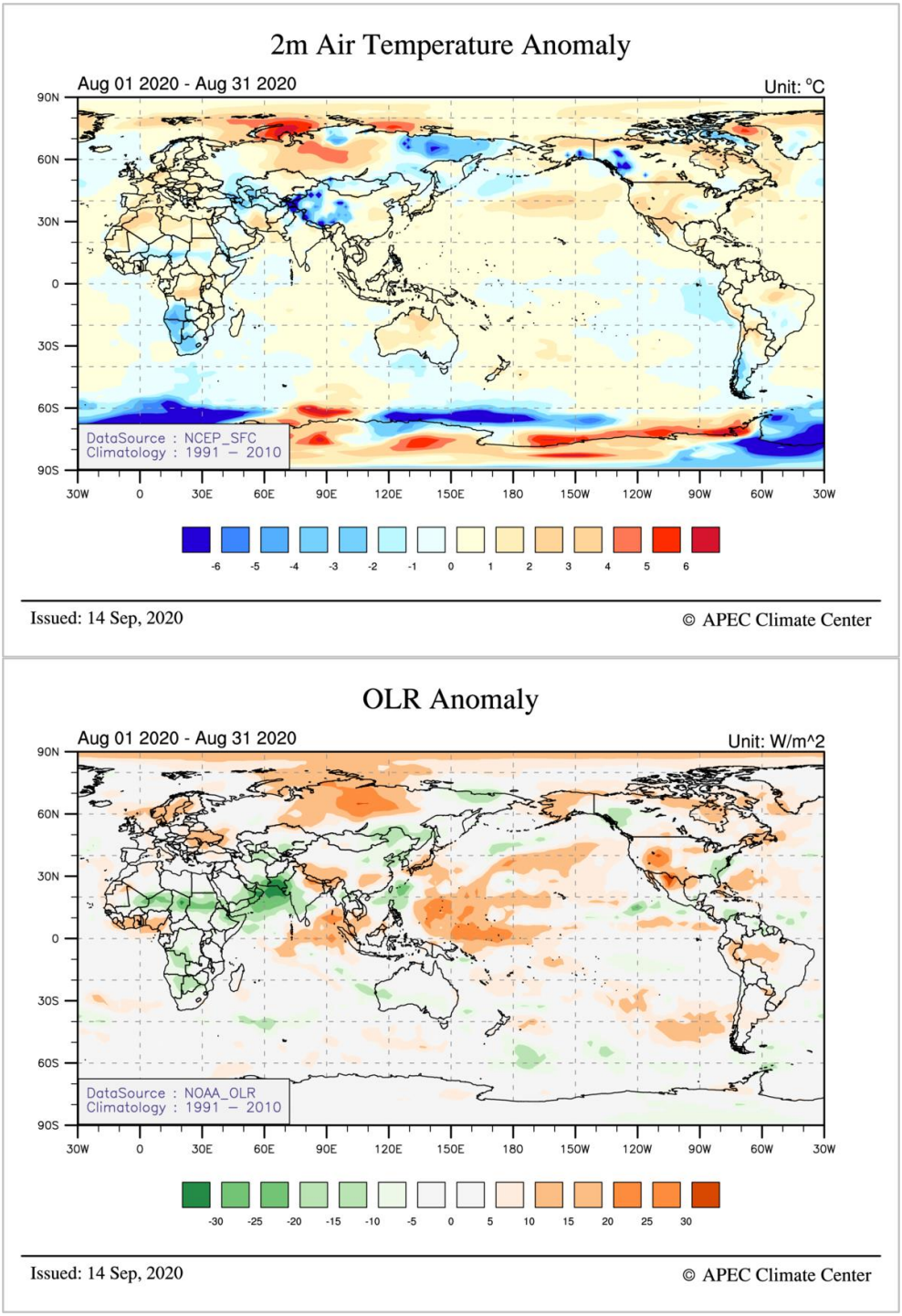

Fig. 3. Monthly mean anomalies of the observed 2m air temperature (top) and OLR (bottom) for August 2020.

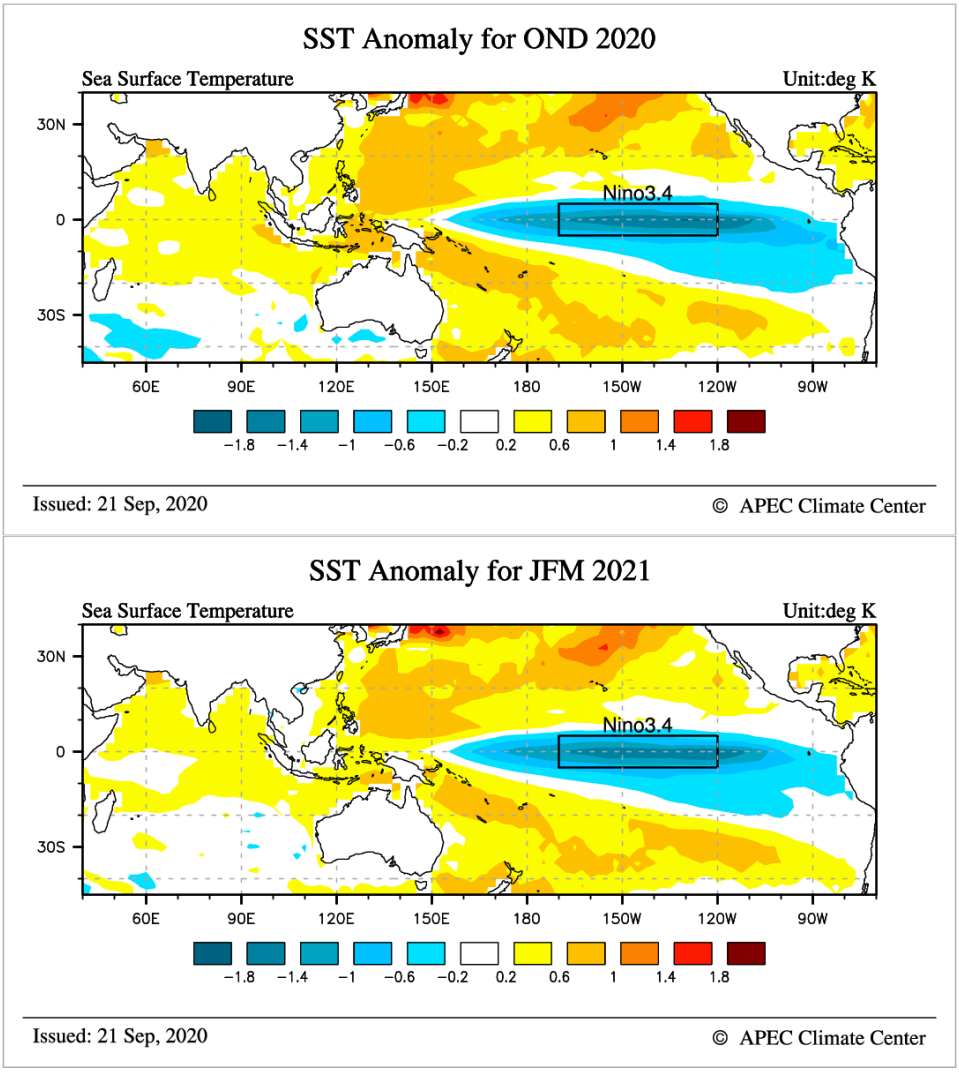

Fig. 4. Multi-model ensemble (MME) forecasts of SST anomalies for October – December 2020 (top) and January – March 2021 (bottom). Anomalies are computed with respect to the common base period of participating models in the APCC MME prediction (1991-2010).

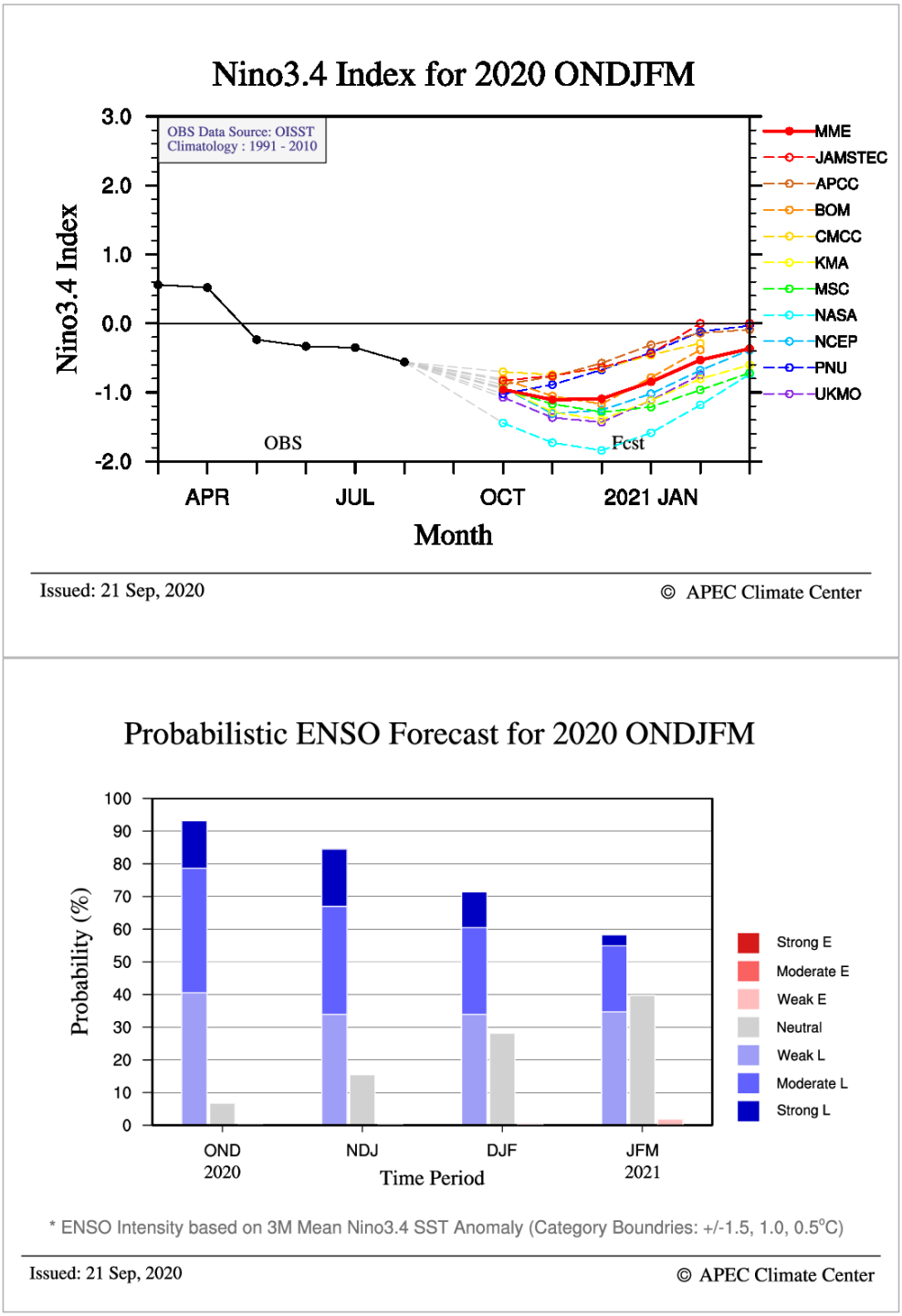

Fig. 5. Predicted monthly mean Niño3.4 index from individual models and the MME for October 2020 – March 2021 (top). Probabilistic MME forecasts of the status and intensity based on 3-month mean Niño3.4 index for four overlapping 3-month mean periods (bottom). Anomalies are computed with respect to the common base period of participating models in the APCC MME prediction (1991-2010).

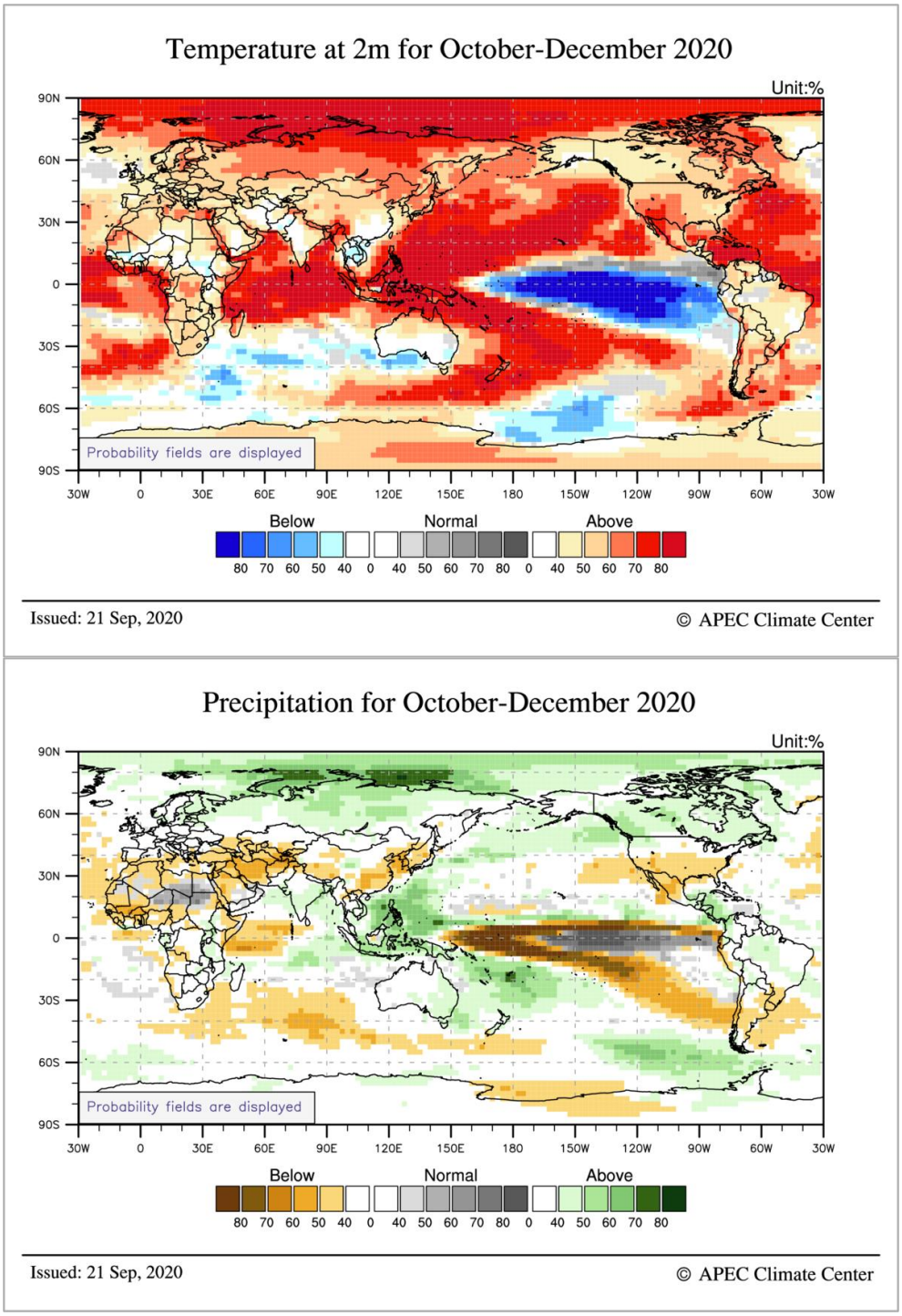

Fig. 6. Probabilistic MME forecasts of 2m temperature (top) and precipitation (bottom) for October – December 2020. Normal conditions are computed with respect to the common base period of participating models in the APCC MME prediction (1991-2010).

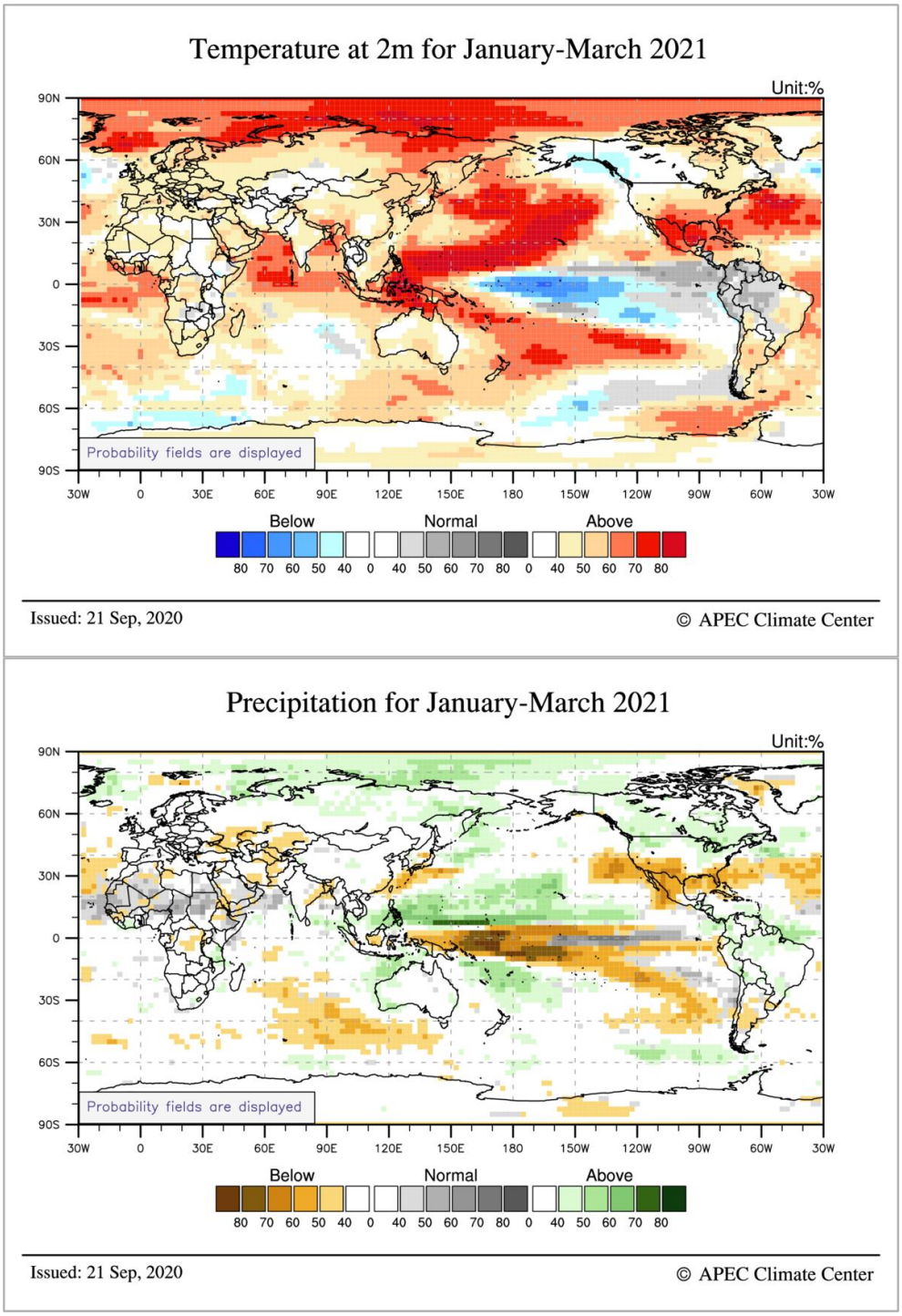

Fig. 7. Probabilistic MME forecasts of 2m temperature (top) and precipitation (bottom) for January – March 2021. Normal conditions are computed with respect to the common base period of participating models in the APCC MME prediction (1991-2010).

* More information on current climate conditions is available at:

http://www.apcc21.org/ser/high.do?lang=en

* More information on prediction and verification results is available at:

http://www.apcc21.org/ser/outlook.do?lang=en

This outlook is prepared by the Climate Prediction Department in the Climate Services and Research Division, APCC.

If you would like to subscribe to our Climate Outlook or have any questions, please e-mail mme@apcc21.org.

Acknowledgements

The APEC Climate Center is a major APEC science facility, which was established in November 2005 during the leaders meeting of the Asia-Pacific Economic Forum in Busan, Korea. The APCC climate forecasts are based on model simulations from 14 prominent climate forecasting centers and institutes in the APEC region. These forecasts are collected and combined using state-of-the-art schemes to produce a statistically 'consensual' forecast. APCC collects seasonal forecasts from 14 institutes in the APEC region: the Australian Bureau of Meteorology (BoM), Meteorological Service of Canada (MSC), Beijing Climate Center China (BCC), Japan Meteorological Agency Japan (JMA), APEC Climate Center Korea (APCC), Korea Meteorological Administration (KMA), Pusan National University Korea (PNU), Met Office United Kingdom (UKMO), Euro-Mediterranean Center on Climate Change Italy (CMCC), Hydrometeorological Research Center of Russia (HMC), Voeikov Main Geophysical Observatory of Russia (MGO), Central Weather Bureau Chinese Taipei (CWB), National Aeronautics and Space Administration USA (NASA), and the National Centers for Environmental Prediction USA (NCEP).