



The APEC CLIMATE CENTER
Climate Outlook for December 2015 – May 2016

BUSAN, 25 November 2015 – Synthesis of the latest model forecasts for December 2015 to May 2016 (DJFMAM) at the APEC Climate Center (APCC), located at Busan, Korea, indicates positive temperature anomaly across the tropical Pacific associated with the mature phase of El Niño to achieve its peak. The forecasts for DJF 2015 show the positive temperature anomalies to prevail over the globe. Above normal rainfalls are highly probable in the equatorial Pacific, while below normal precipitation is expected over the northern maritime continent and adjacent seas. The forecasts for MAM 2016 suggest weakening of the El Niño episode with weakening of the above-normal rainfall anomalies in the equatorial Pacific surrounded by the areas of below normal precipitation.

Current Climate Conditions

In September through early November, a developing El Niño persisted in the equatorial Pacific, with the El Niño-3.4 index exceeding 3.0 in November. Positive temperature anomalies prevailed over the globe, with slight negative temperature anomalies confined to the North Atlantic and West Europe, West Siberia, and western Pacific, southern South America and the Southern seas. The strongest positive seasonal mean temperature anomalies above 3°C were observed over the Arctic and central North America. Positive precipitation anomalies associated with El-Niño were spanned from the central to the eastern equatorial Pacific. Positive precipitation anomalies were also observed in Africa, south-western Asia, western Australia, the western coast of North America, subtropical South America. Strong negative precipitation anomalies were observed over the maritime continent and adjacent regions, with weaker negative precipitation anomalies being observed in the subtropical North and South Pacific, Amazonia, Europe.

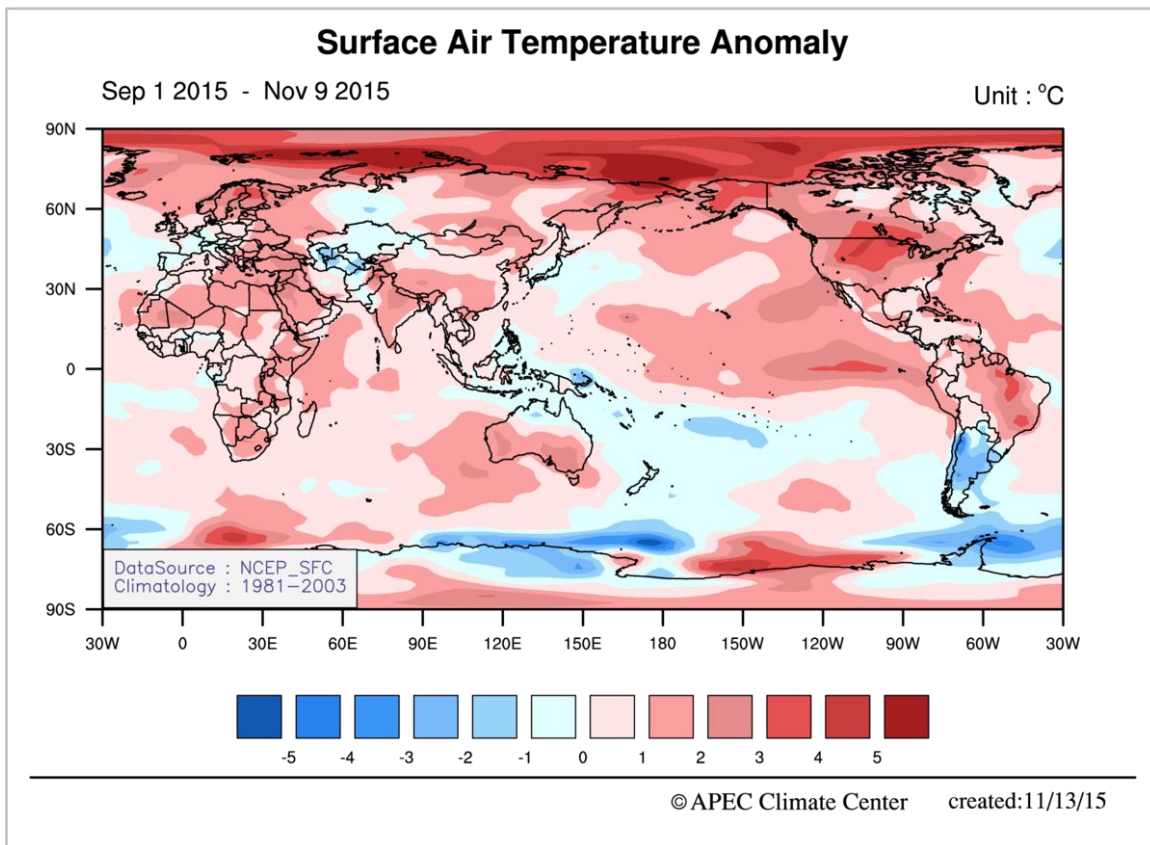


Fig. 1. Seasonal mean anomalies of the observed surface air temperature (1 September – 9 November 2015).

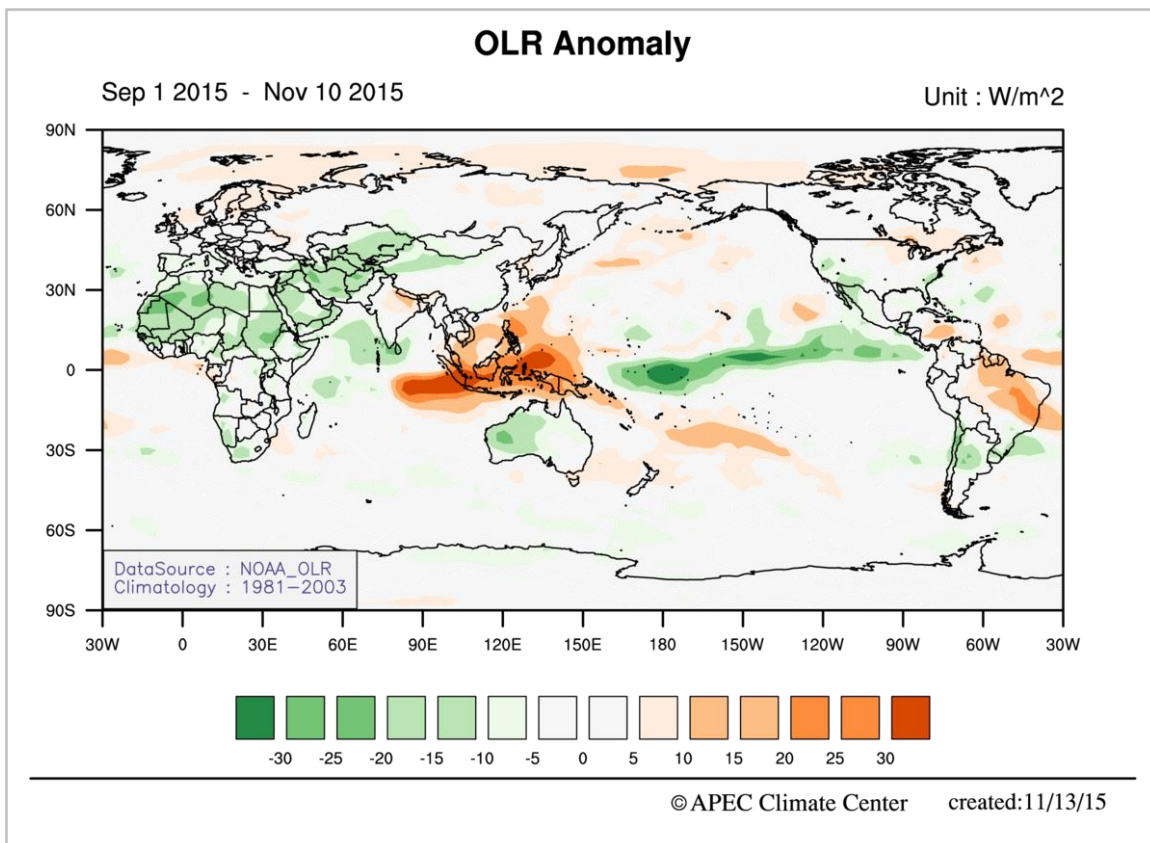


Fig. 2. Same as Fig. 1 but for outgoing longwave radiation (1 September – 10 November 2015).

Forecast

Sea Surface Temperature and ENSO Outlook:

El Niño is expected to be in its mature phase during the first half of the forecast period. Then, the positive SST anomalies in the central and eastern equatorial Pacific are expected to start weakening. The positive SST anomalies are throughout the whole Indian Ocean with no sufficient zonal gradient corresponding to the neutral phase of Indian Ocean Dipole.

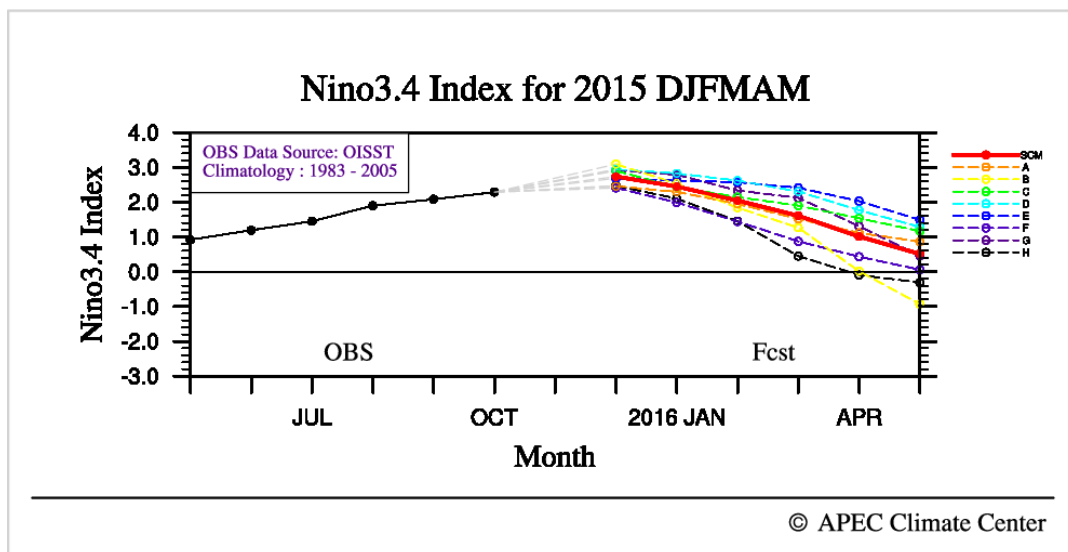


Fig. 3. Predicted Niño 3.4 Index. The predictions from the individual models are marked A, B, C, D, E, F, G, and H while that from the simple composite MME method is marked as SCM.

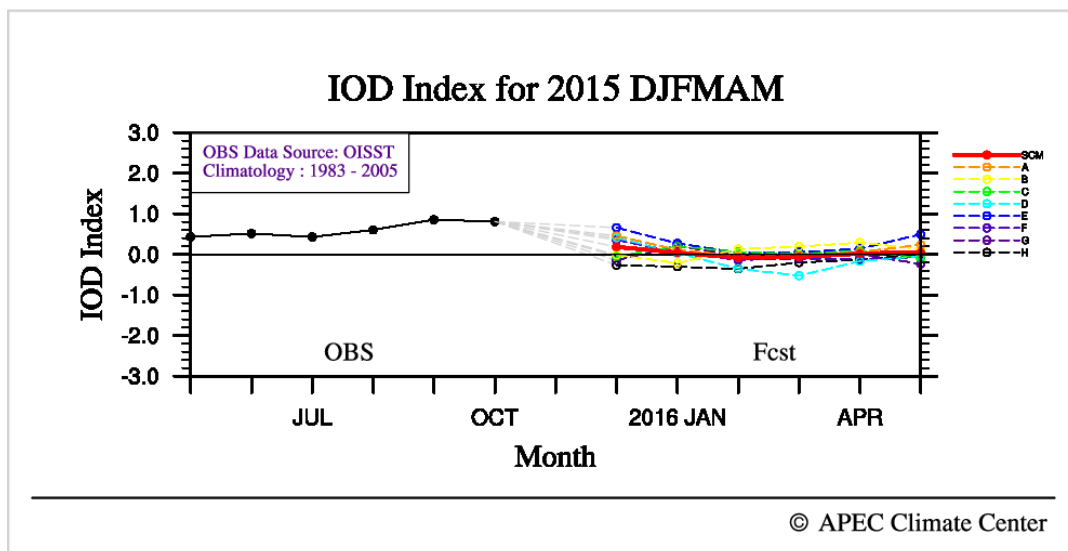


Fig. 4. Same as Fig. 3 but for the Indian Ocean Dipole mode index (IODMI).

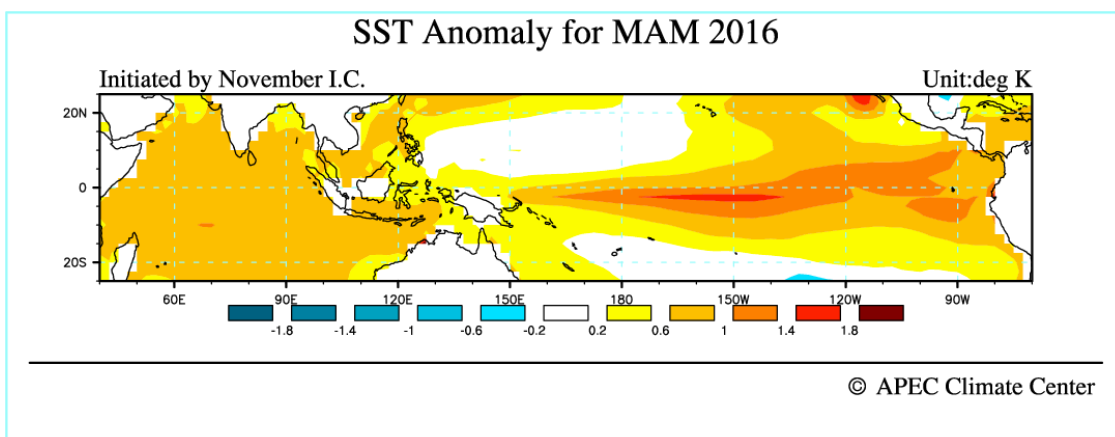
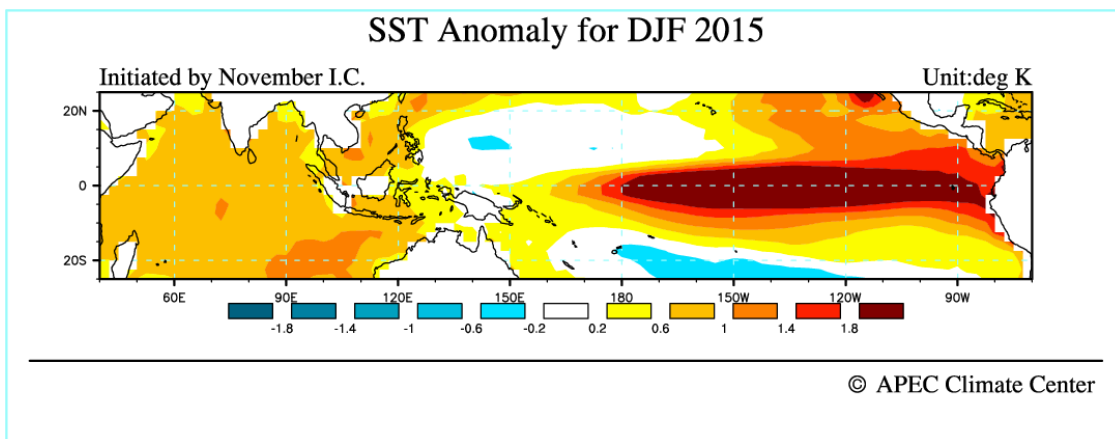


Fig. 5. Spatial distributions of forecasted SST anomalies for December 2015 – May 2016 over the tropical Indo-Pacific. Top panel shows SSTA forecast for December 2015 – February 2016 and bottom panel shows SSTA forecast for March – May 2016.

Temperature and Precipitation Outlook:

1. Forecast for December 2015 – February 2016

The APCC forecast indicates that the positive temperature anomalies will continue to prevail over much of the globe. Strongly enhanced probability for above normal temperature is predicted for the eastern and central tropical Pacific, western and eastern North Pacific, extratropical North America, Central and tropical South Americas, the tropical North Atlantic, Africa and the Indian Ocean, southern Asia. Enhanced probability for above normal temperature is expected for the Arctic. A warm tendency is expected for most of Eurasia. Below normal temperature is highly probable over the central North Atlantic, the subtropical South Pacific, southern North America. Strongly enhanced probability for above normal precipitation is predicted for the central and eastern equatorial Pacific and the Caribbean Sea. Most likely category is above normal for precipitation over the eastern North Pacific, extratropical South America, eastern Africa, northern Eurasia, most of the Indian and southern oceans. Strongly enhanced probability for below normal precipitation is predicted for the north-eastern part of maritime continent and adjacent seas, tropical North and South Pacific surrounding equatorial precipitation maximum, Amazonia. Below normal precipitation is also probable over the equatorial Atlantic, western coast and southern part of South America, Gulf of Guinea and southern Africa.

2. Forecast for March – May 2016

The wide spread positive temperature anomalies predicted for DJF are expected to persist. Above normal temperature is highly probable over the whole tropical belt. Also, above normal temperature is highly probable over northern North America, Arctic, western and eastern North and South Pacific. Probability for above normal temperature is enhanced over Eurasia. Enhanced probability for below normal temperature is predicted for central subtropical North and South Pacific. Probability of above normal precipitation is enhanced for the equatorial Pacific. Above normal precipitation is also highly probable over the western and eastern North Pacific, southern and northern North America, tropical and subtropical western North Atlantic, the middle latitudes of Eurasia. Strongly enhanced probability for below normal precipitation is predicted for the tropical and subtropical North and South Pacific, the Philippines, Amazonia and equatorial Atlantic. Probability for below normal precipitation is enhanced for the southern Indochina, northern North Atlantic, southern Africa.

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. It produces seasonal and monthly forecasts of climate conditions for all seasons around the globe. APCC collects seasonal forecasts from 16 institutes in the APEC region: the Australian Bureau of Meteorology, Meteorological Service of Canada, Beijing Climate Center China, Institute of Atmospheric Physics China, Japan Meteorological Agency Japan, Korea Meteorological Administration Korea, Pusan National University Korea, Met Office

United Kingdom, Euro-Mediterranean Center on Climate Change Italy, Hydrometeorological Research Center of Russia, Voeikov Main Geophysical Observatory of Russia, Central Weather Bureau Chinese Taipei, National Aeronautics and Space Administration USA, National Centers for Environmental Prediction USA, International Research Institute for Climate and Society USA, Center for Ocean-Land-Atmosphere Studies USA.

The APCC climate forecasts are based on model simulations from 16 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. The APCC forecasts are based not just on the magnitude of the seasonal changes that are predicted, but also take into account their simulated probability. Further details as well as the verification for the forecasts on a long term basis are available at <http://www.apcc21.org>. Historical verification of the forecast performance is based on a retrospective forecast period of all the models for the period 1983-2005.

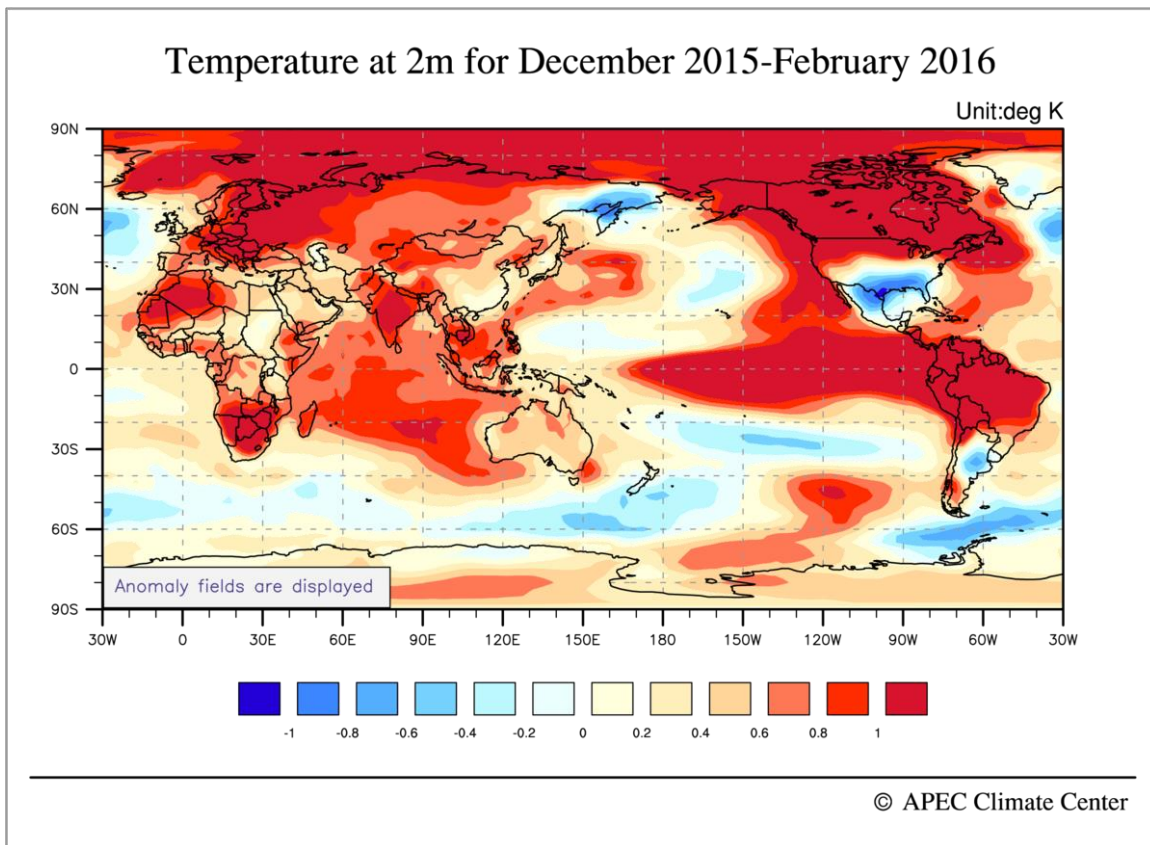


Fig. 6. Deterministic MME seasonal 2m temperature forecast for December 2015 - February 2016.

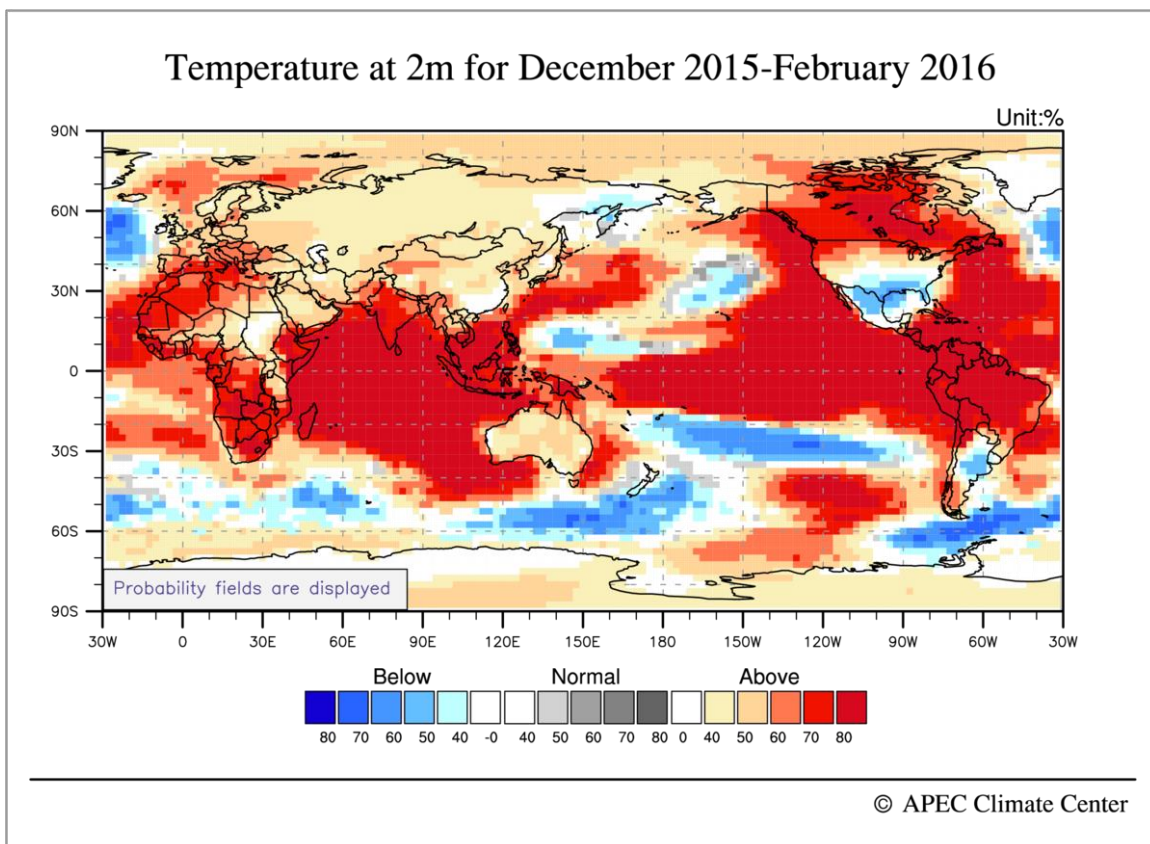


Fig. 7. Same as Fig. 6 but for the probabilistic MME.

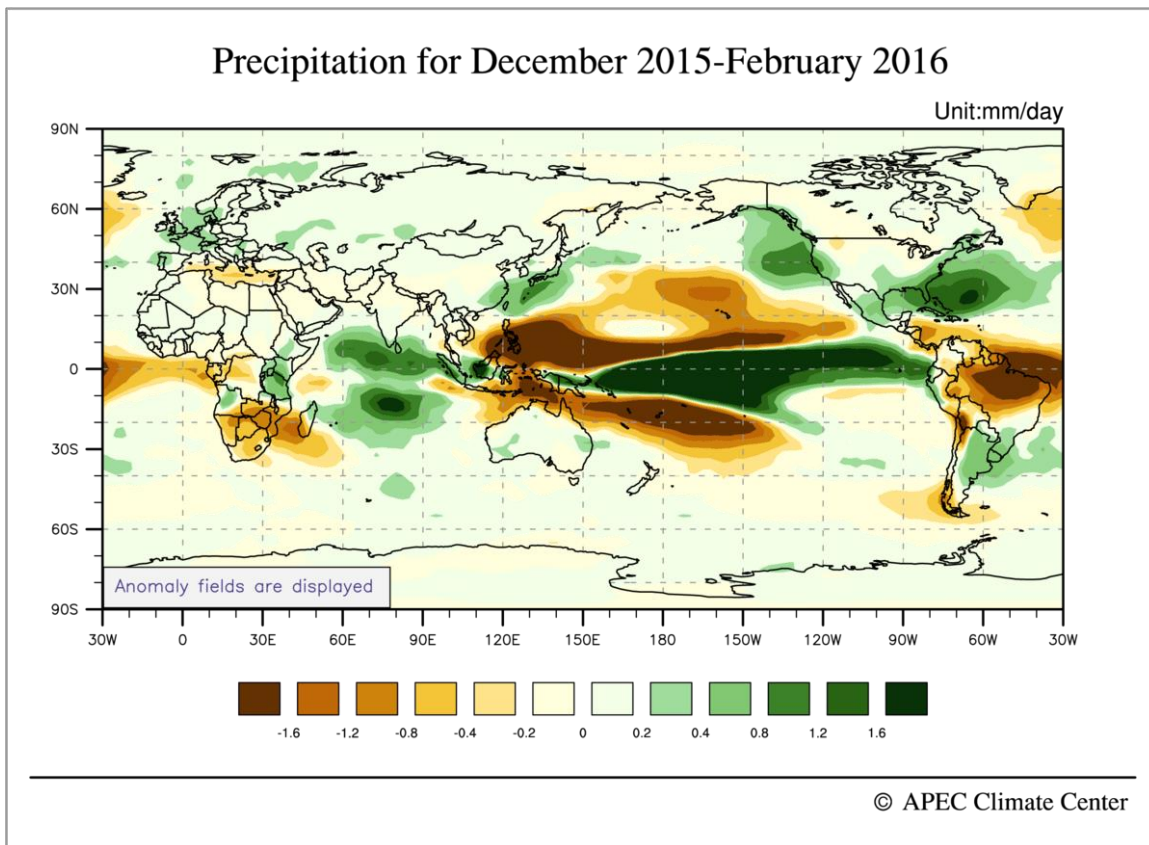


Fig. 8. Same as Fig. 6 but for precipitation.

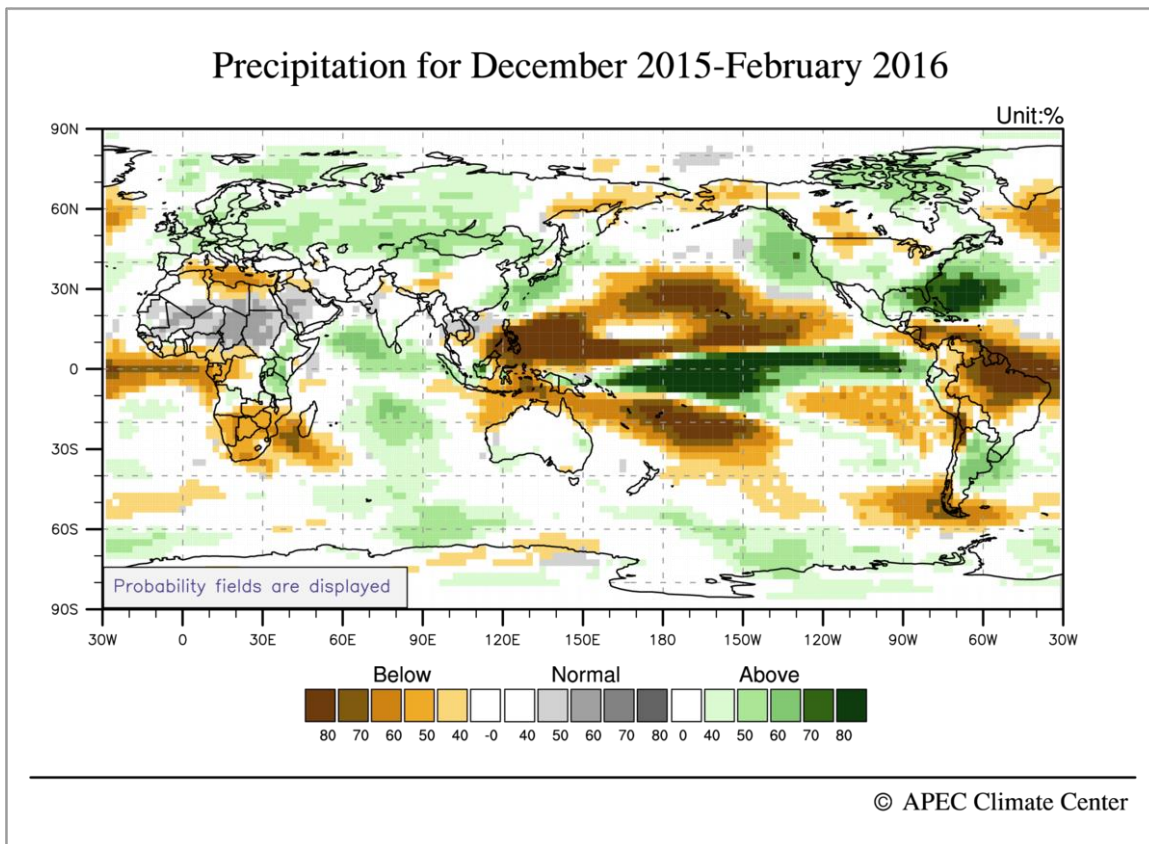


Fig. 9. Same as Fig. 7 but for precipitation.

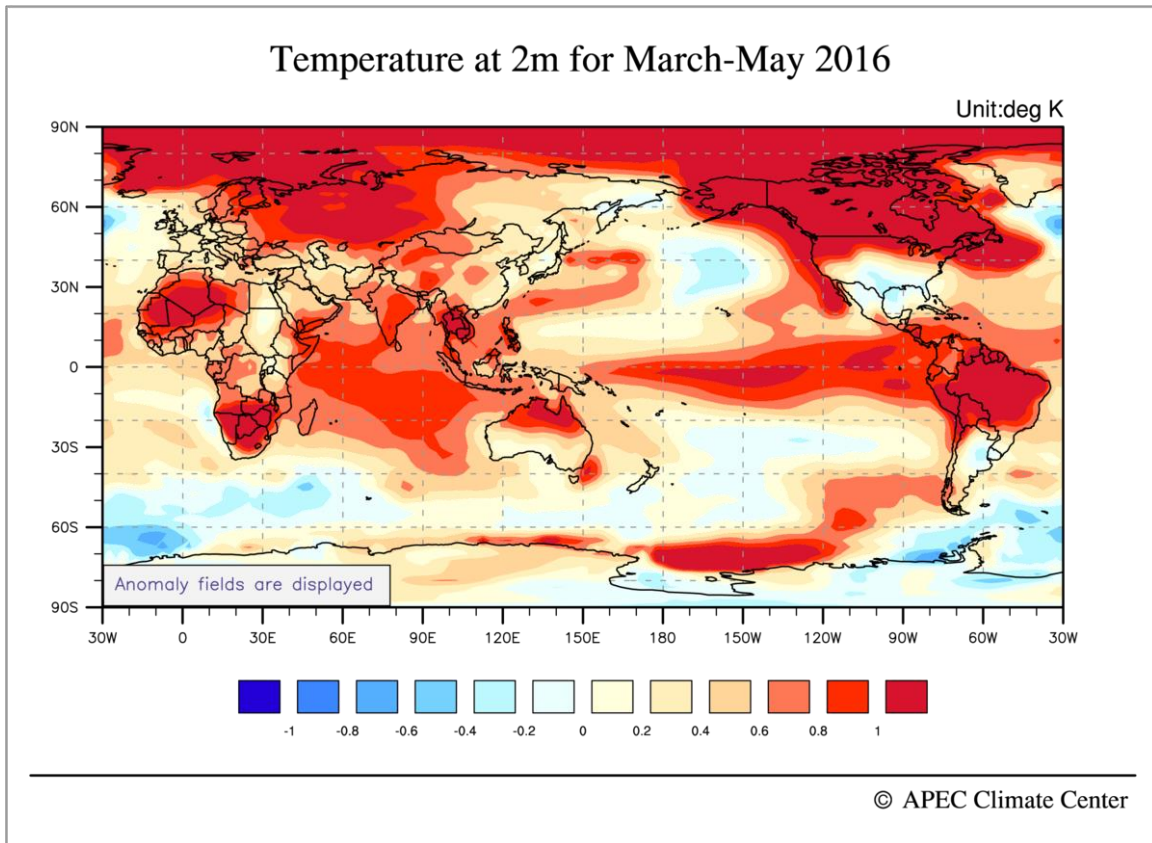


Fig. 10. Same as Fig. 6 but for March – May 2016.

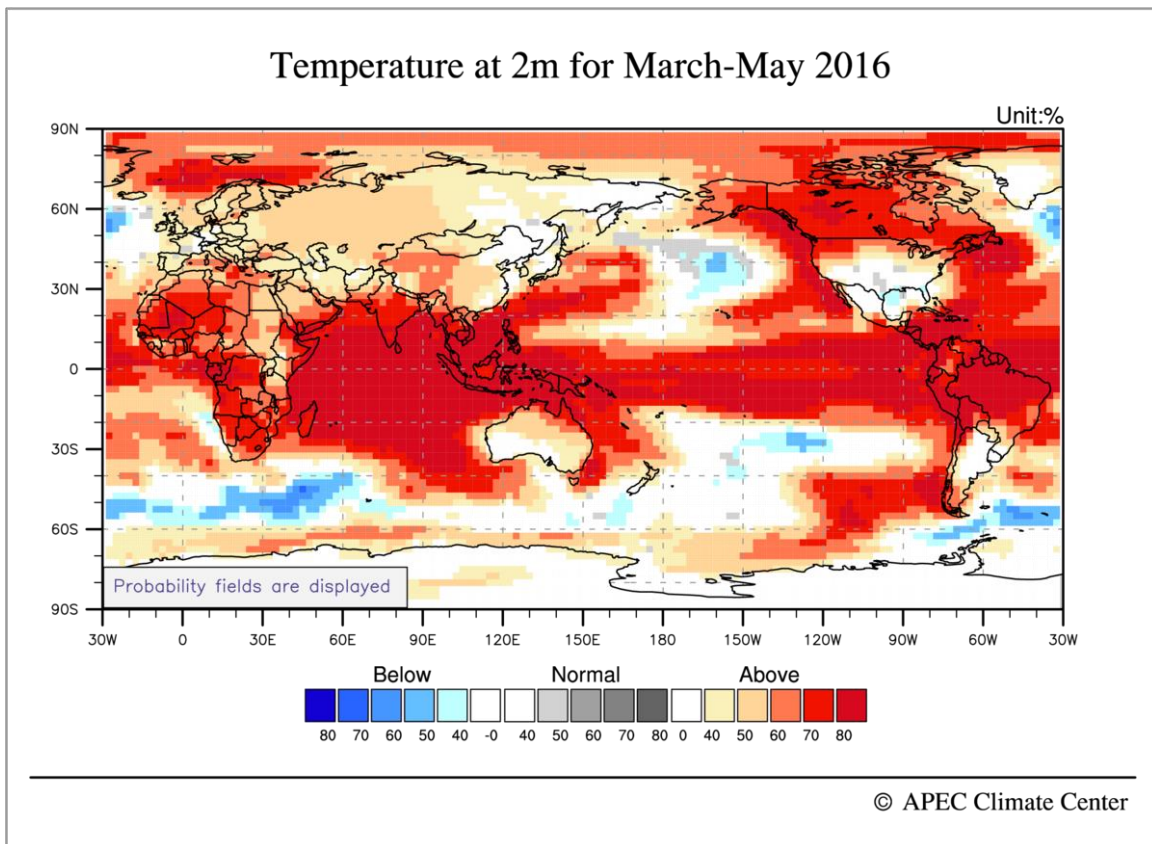


Fig. 11. Same as Fig. 10 but for the probabilistic MME.

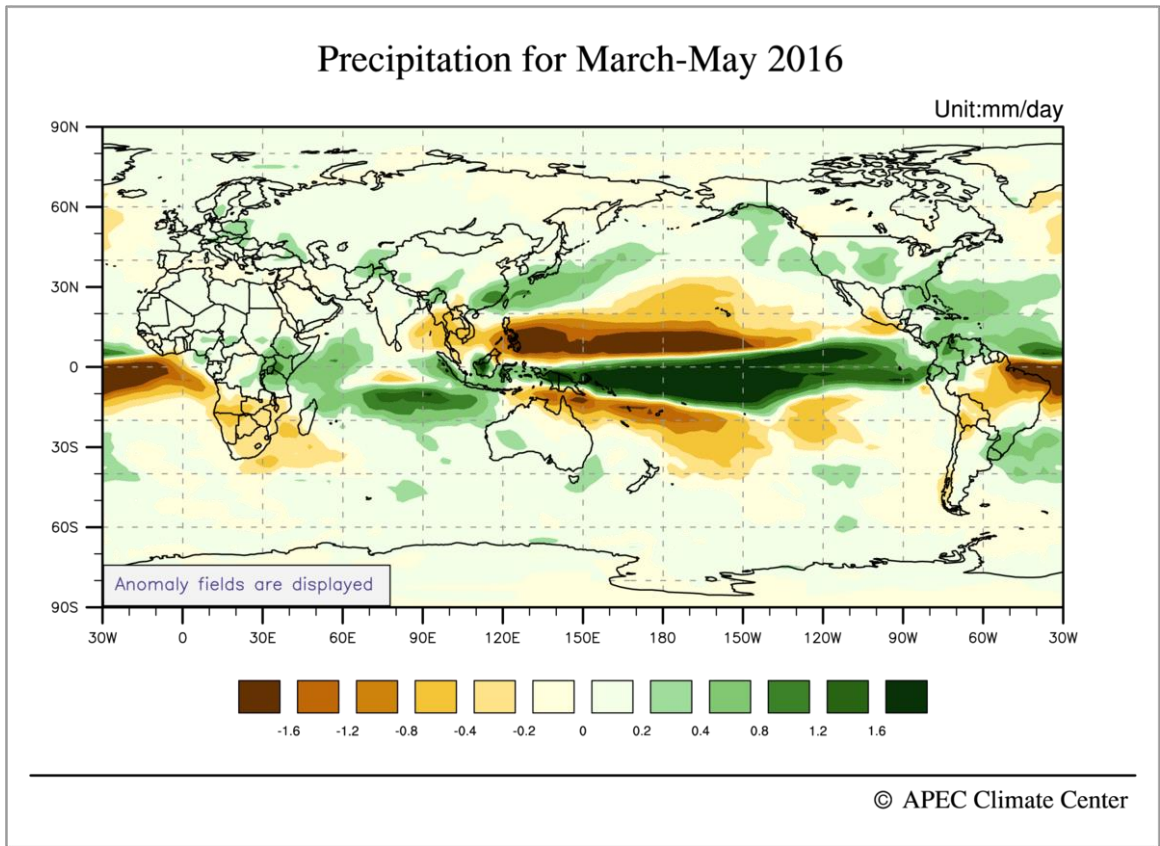


Fig. 12. Same as Fig. 10 but for precipitation.

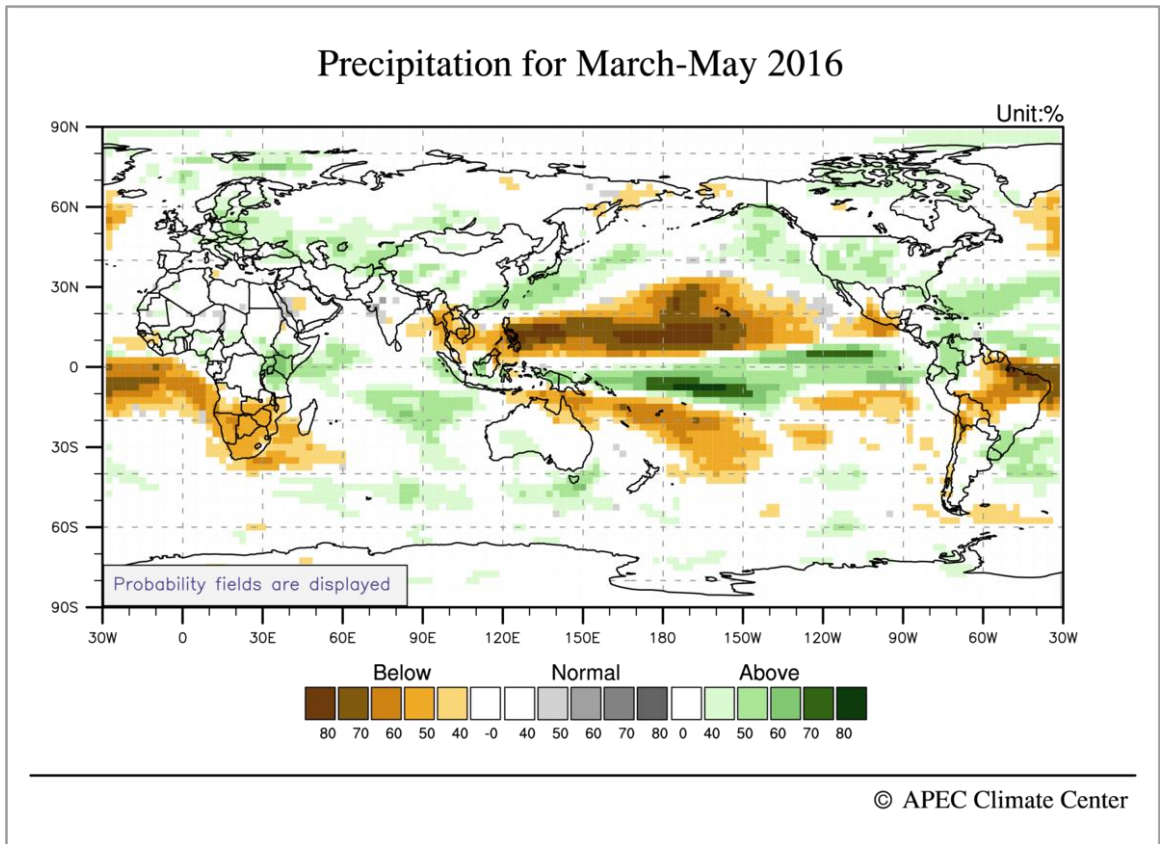


Fig. 13. Same as Fig. 11 but for precipitation.