



WORLD
METEOROLOGICAL
ORGANIZATION



GLOBAL SEASONAL CLIMATE UPDATE

TARGET SEASON: October-November-December 2024

Prepared: 20 September 2024



Summary

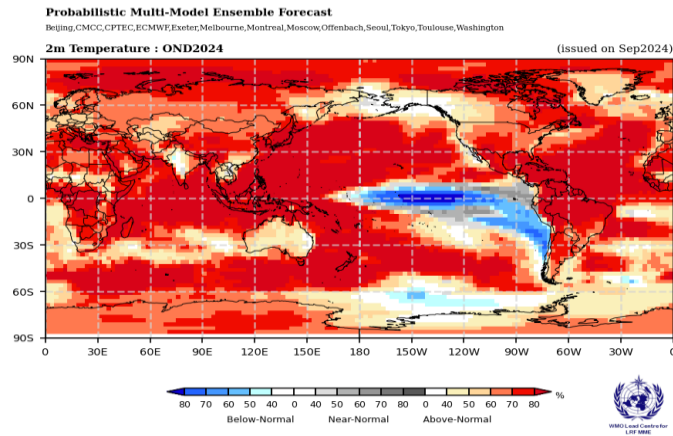
During June-August 2024, the Pacific Niño sea-surface temperature (SST) index in the eastern Pacific (Niño 1+2) was below-normal. Of the other three Niño indices only the Niño 4, the westernmost index, was above normal while SST conditions in the equatorial central and eastern Pacific were near-zero. Overall, the SST conditions in the equatorial central and eastern Pacific reflected ENSO-neutral conditions. The observed Indian Ocean Dipole (IOD) was near-zero. Both the North Tropical Atlantic (NTA) and South Tropical Atlantic (STA) SST indices were above-normal and reflected widespread warmth in the tropical Atlantic. In general, the observed SST anomalies in global oceans were positive.

Above-normal sea-surface temperature anomalies in the Niño 3.4 and Niño 3 regions are predicted to decline during October-December 2024 and are predicted to become weak La Niña conditions. Farther west in the Niño 4 region, the sea-surface temperature anomaly is also predicted to decline and become negative. The strength of the Indian Ocean Dipole (IOD) index is predicted to return to near normal. In the equatorial Atlantic, SSTs are predicted to be above-normal in both the northern (NTA) and the southern (STA) regions during the season with larger positive anomalies for NTA.

Consistent with the anticipated continuation of widespread above-normal sea-surface temperatures in all ocean basins outside of the near-equatorial eastern Pacific Ocean, there is prediction of above-normal temperatures over almost all land areas. Exceptions to this widespread warmth included land areas in the vicinity of the Bering Sea and the Gulf of Alaska, interior western region of the Indian subcontinent, and Southeast Asia. Extensive areas of large increases in probabilities for above-normal temperatures include almost the entire South America, the Caribbean, Central America, southwest and extreme northeast parts of North America, northern regions and between 30°S - 10°N over Africa, Arabian Peninsula, northeast parts of the Indian subcontinent extending northward into mountainous regions, the Maritime continent, New Zealand, and the Arctic regions north of 60°N. Regions with moderate to weaker increase in probabilities for above-normal temperatures include Australia, Europe, between 40° - 60° N over Asia, Greenland, western coastal regions in southern Africa, and narrow belt along 15°N in Africa. In coastal areas of southern South America and extending north along the west coast to just north of the equator and into the eastern Pacific, consistent with the predicted emergence of weak La Niña, below-normal temperatures are expected.

Predictions for rainfall are consistent with the expected impacts of La Niña. Enhanced probabilities for near- or below-normal rainfall are predicted over a narrow band along or just north and south of the equator extending eastward from 150°E to the western coast of South American. Below the equator, there is an additional band of enhanced probabilities for below-normal rainfall starting from 150° W and extending south-eastwards to reach the western coast of South America and crossing into the southern Atlantic. Enhanced probabilities for below-normal rainfall are also predicted over the northeast South America extending into the Atlantic, North America below 45°N, the Arabian Peninsula extending north-eastward into Central Asia, over the Greater Horn of Africa extending into the Indian Ocean to 90°E, and parts of eastern Asia. Enhanced probabilities for above-normal rainfall are anticipated over the region centred over the Maritime Continent extending to cover Australia and extending further into the western Pacific to 150°W. southern regions of Central America and the Caribbean, Arctic regions north of 60°N, the Indian subcontinent, and regions below 60°S in the Southern Hemisphere. Other regions of enhanced probabilities for above-normal rainfall include a band across equatorial Africa along 10°N and off the coast of eastern Asia extending north-eastward Bering Sea and the Gulf of Alaska.

Surface Air Temperature, OND 2024



Precipitation, OND 2024

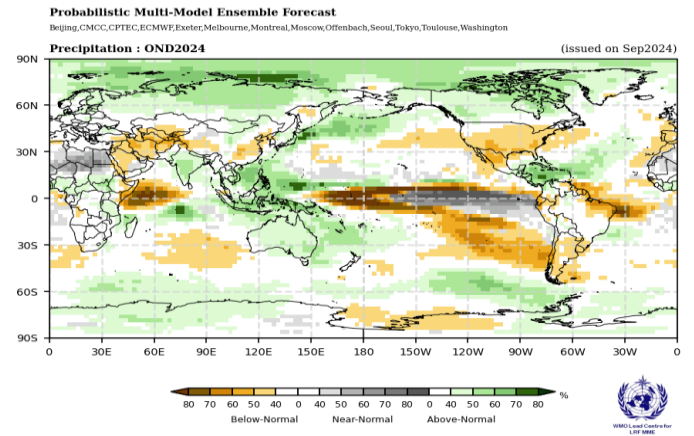


Figure 1. Probabilistic forecasts of surface air temperature and precipitation for the season October-December 2024. The tercile category with the highest forecast probability is indicated by shaded areas. The most likely category for below-normal, above-normal, and near-normal is depicted in blue, red, and grey shadings respectively for temperature, and orange, green and grey shadings respectively for precipitation. White areas indicate equal chances for all categories in both cases. The baseline period is 1993-2009.

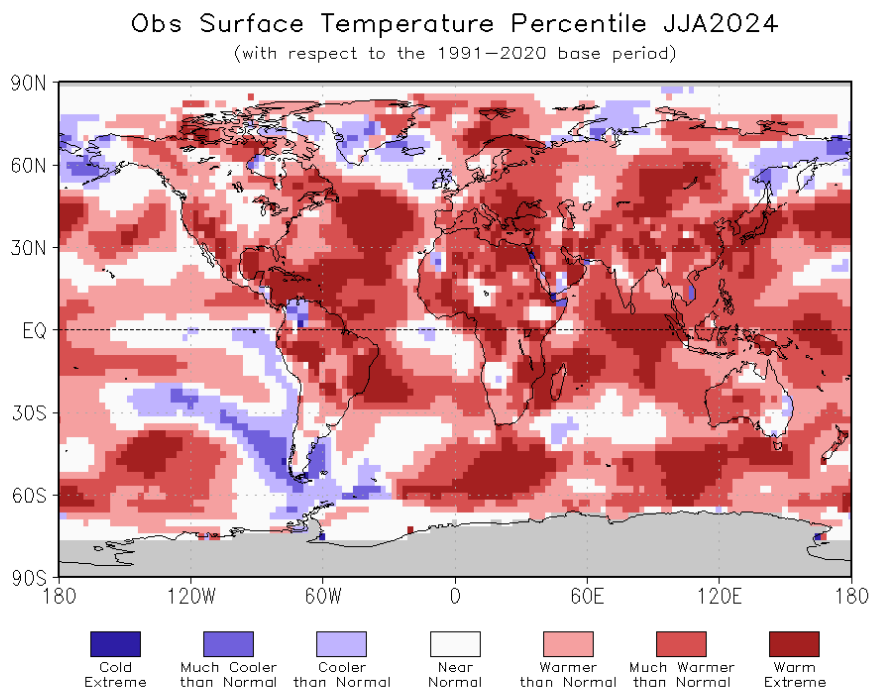
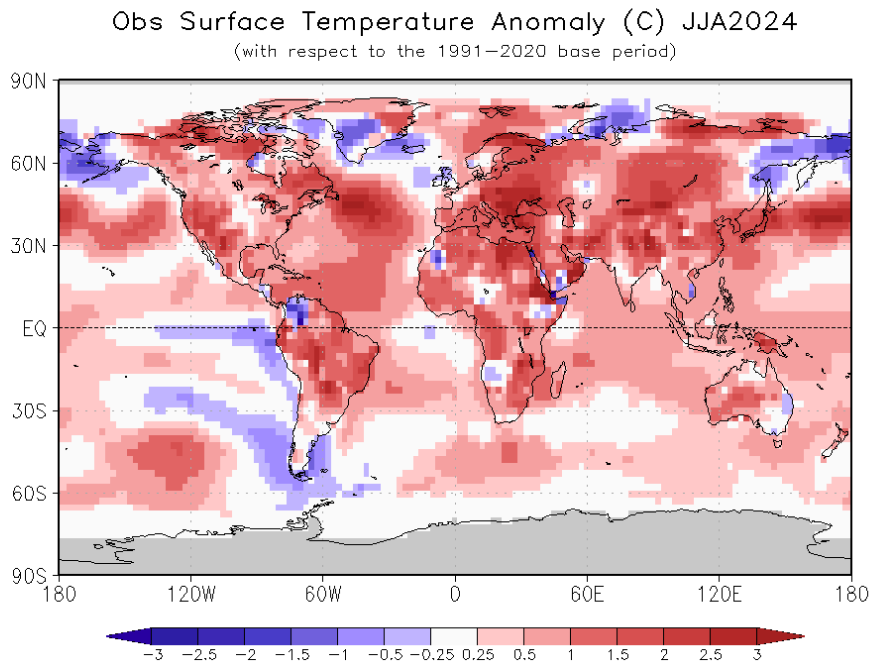


Figure 2. Observed June-August 2024 near-surface temperature anomalies relative to 1991-2020 (top). The Cooler than Normal, Near Normal, and Warmer than Normal shadings on the percentile map (bottom) indicate that seasonal mean anomalies were in the bottom, middle, and upper tercile of the 1991-2020 distribution, respectively. Regions with anomalies in the lowest and highest decile (or 10%) of the distribution are marked as Much Cooler than Normal and Much Warmer than Normal, respectively. The Cold Extreme and Warm Extreme shadings indicate that the anomalies exceeded the coldest and warmest temperature values of the 1991-2020 period for the season. Grey shading indicates areas where observational analysis was not available. (Source: U.S. Climate Prediction Center).

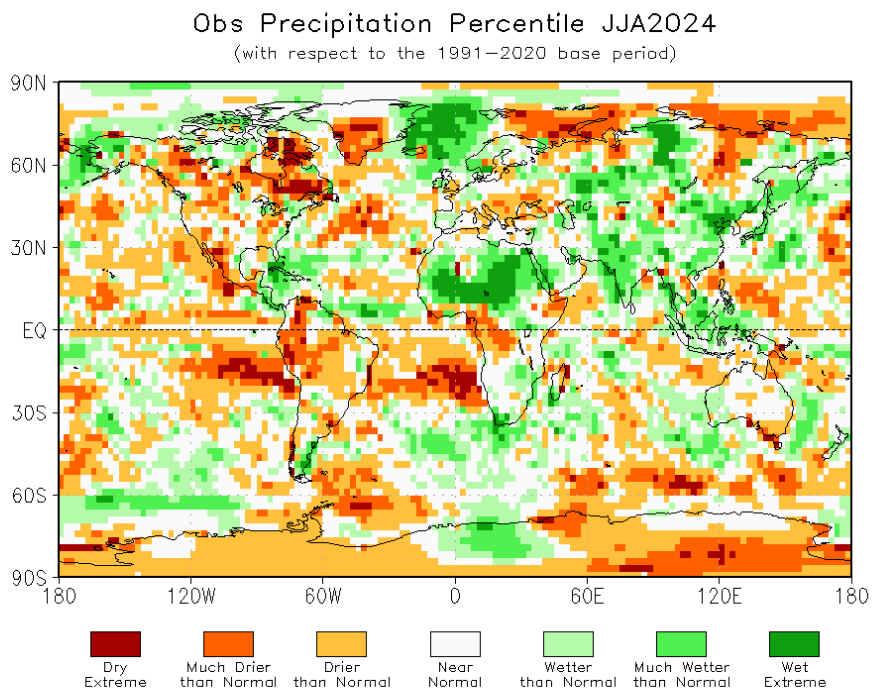
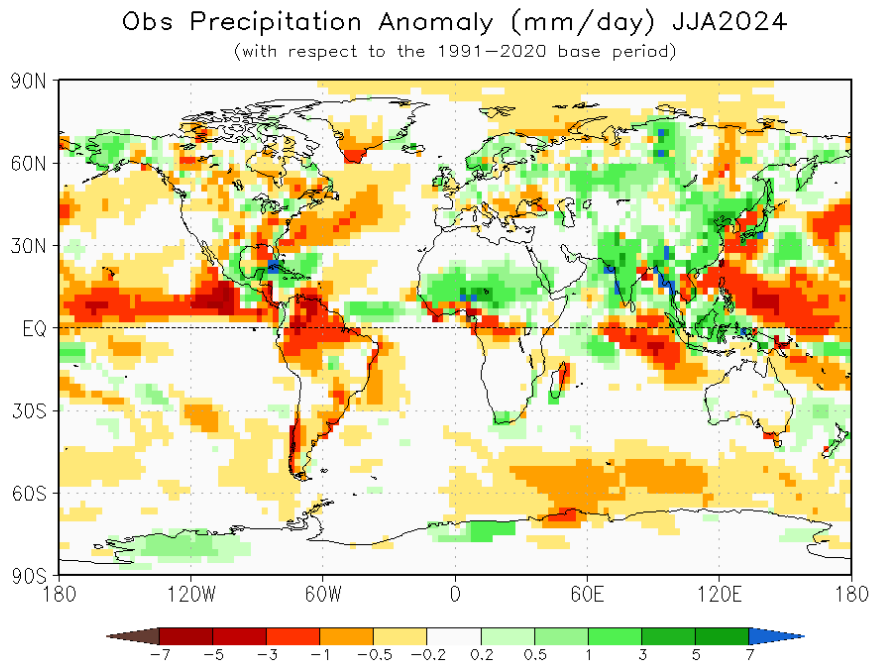


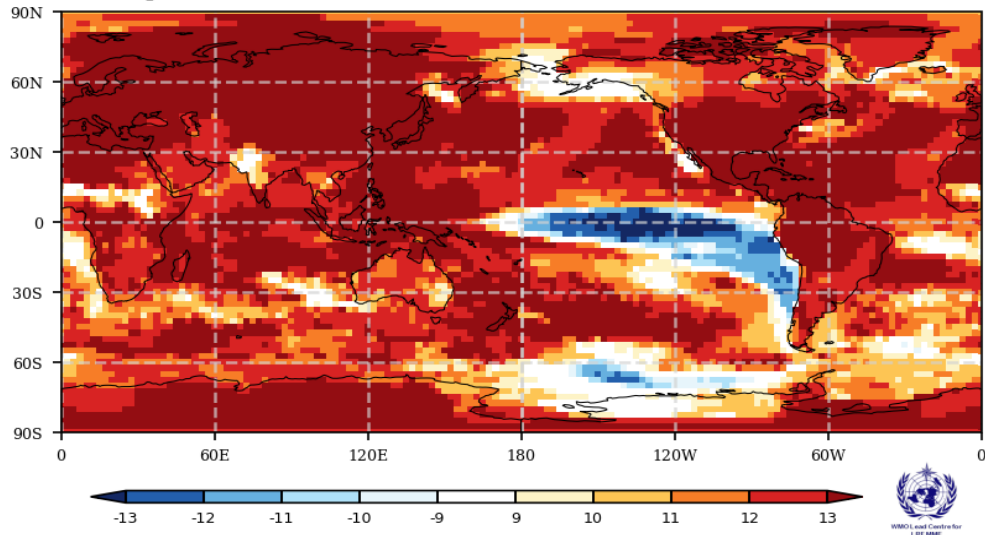
Figure 3. Observed precipitation anomalies for June-August 2024, relative to 1991-2020 base period (top). The Drier than Normal, Near Normal and Wetter than Normal shadings on the percentile map (bottom) indicate that seasonal mean anomalies were in the bottom, middle, and upper tercile of the 1991-2020 distribution, respectively. Regions with anomalies in the lowest and highest decile (or 10%) of the distribution are marked as Much Drier than Normal and Much Wetter than Normal, respectively. The Dry Extreme and Wet Extreme shadings indicate that the anomalies exceeded the driest and wettest values of the 1991-2020 period for the season. (Source: U.S. Climate Prediction Center).

Consistency Map

Beijing,CMCC,CPTEC,ECMWF,Exeter,Melbourne,Montreal,Moscow,Offenbach,Seoul,Tokyo,Toulouse,Washington

2m Temperature : OND2024

(issued on Sep2024)



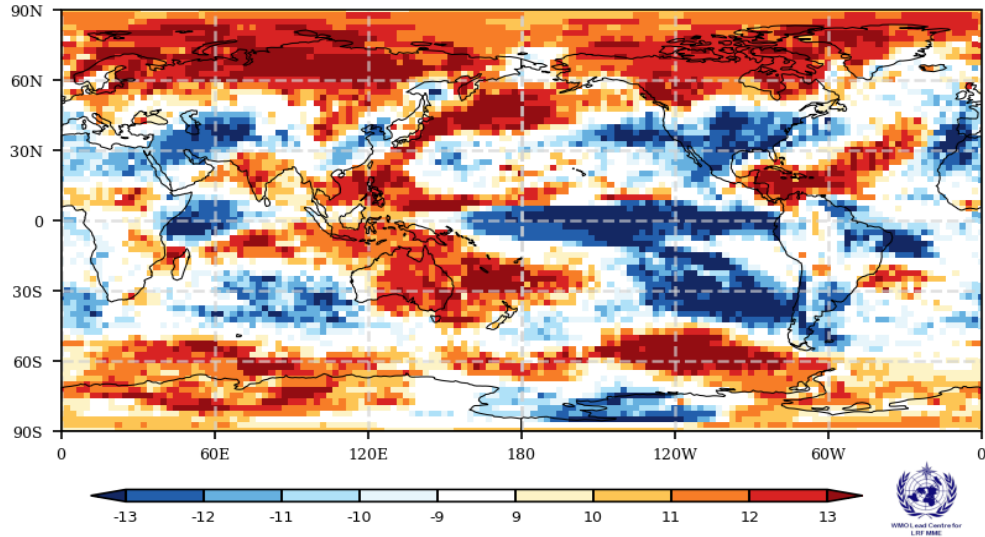
** where the positive numbers mean the number of models that predict positive anomaly and vice versa. **

Consistency Map

Beijing,CMCC,CPTEC,ECMWF,Exeter,Melbourne,Montreal,Moscow,Offenbach,Seoul,Tokyo,Toulouse,Washington

Precipitation : OND2024

(issued on Sep2024)



** where the positive numbers mean the number of models that predict positive anomaly and vice versa. **

Figure 4. Consistency maps for sign of ensemble mean anomalies for the seasonal mean of October-December 2024 for surface air temperature (top) and rainfall (bottom) from different model forecasts. The consistency map is obtained using the following procedure: At each grid point the sign of ensemble mean anomaly for each forecast model is checked against the multi-model ensemble mean anomaly. The number of models for which the sign matches is computed. For example, if the multi-model ensemble mean anomaly is positive (negative) then the number of forecast models for which ensemble mean is also positive (negative) is counted and the count is plotted on the map using the red (blue) scale. Darker (lighter) colours imply that there is a higher (lower) consistency in the sign of anomalies from different models.