WEATHER CLIMATE WATER

WORLD METEOROLOGICAL ORGANIZATION

GLOBAL SEASONAL CLIMATE UPDATE

TARGET SEASON: January-February-Marh 2025

Prepared: 20 December 2024

Summary

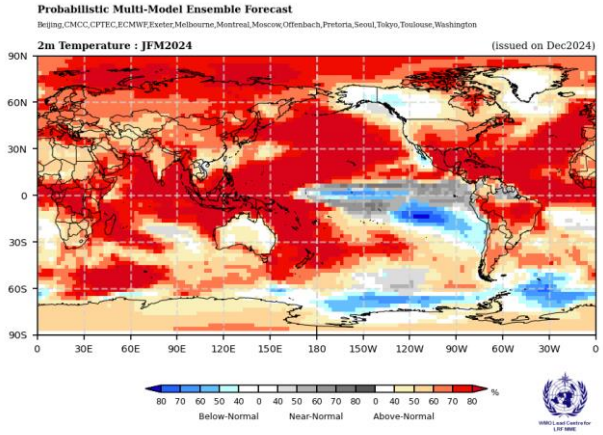
During September-November 2024, the observed sea surface temperature (SST) anomalies in global oceans, in general, were above average. In the Pacific, all four Niño indices were near-zero. Overall, the SST state in the equatorial central and eastern Pacific was ENSO-neutral. The observed Indian Ocean Dipole (IOD) anomaly was also near-zero. Both the North Tropical Atlantic (NTA) and South Tropical Atlantic (STA) SST index anomalies were above-zero and reflected continuation of widespread warmth in the tropical Atlantic.

Sea-surface temperature anomalies in the Niño 3.4 and Niño 3 regions are predicted to decline slightly during January-March 2025 but stay in ENSO-neutral conditions. Farther west in the Niño 4 region, the sea-surface temperature anomaly is also predicted to stay near-zero. The strength of the IOD index is also predicted to be near-zero. In the equatorial Atlantic, SSTs are predicted to stay positive in both the northern (NTA) and the southern (STA) regions during the season with a prediction for larger positive anomalies for NTA.

Building on the anticipated persistence of above-normal sea-surface temperatures across most ocean basins outside the near-equatorial eastern Pacific Ocean, the prediction is for above-normal temperatures over most land areas for the JFM 2025 period. A few exceptions to this widespread warmth include land areas in the vicinity of the Bering Sea and the Gulf of Alaska, Baja California. Extensive areas of large increases in probabilities for above-normal temperatures include almost the entire South America below the equator, the Caribbean, Central America, southwest and extreme northeast parts of North America, between 10° S – 10° N over Africa extending into the southern regions of Arabian Peninsula, northeast region of the Indian subcontinent, 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 Europe, between 30° – 60° N over Asia, and northern and southern regions of 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 near-average sea surface temperatures, below- or near-normal temperatures are expected. In general, there is no clear signal over Australia, Greenland, and the northwest part of North America.

Even though sea surface temperatures in the central and eastern Pacific are predicted to be near-average, due to the enhanced east-to-west SST gradient in the equatorial Pacific, like during a La Niña, the predicted rainfall patterns for January-March 2025 are like the typical 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, parts of eastern Asia, and over the Greater Horn of Africa extending into the Indian Ocean to 90° E. Enhanced probabilities for above-normal rainfall are anticipated over the region centred over the Maritime Continent extending southward 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 southern parts of the Indian subcontinent, and a belt along 60° S in the Southern Hemisphere. Other regions of enhanced probabilities for above-normal rainfall include a band off the coast of eastern Asia, extending north-eastward to the Bering Sea and the Gulf of Alaska.

Surface Air Temperature, JFM 2025



Precipitation, JFM 2025

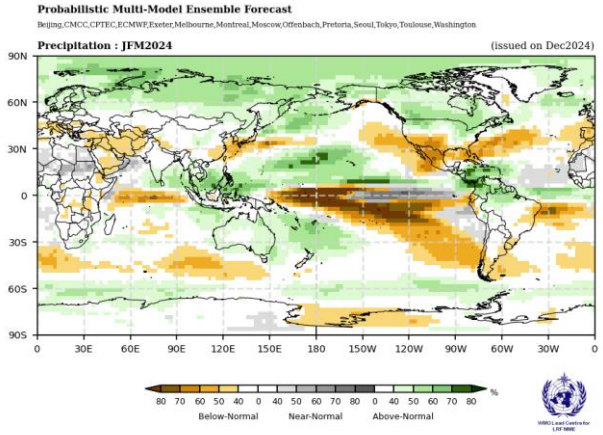
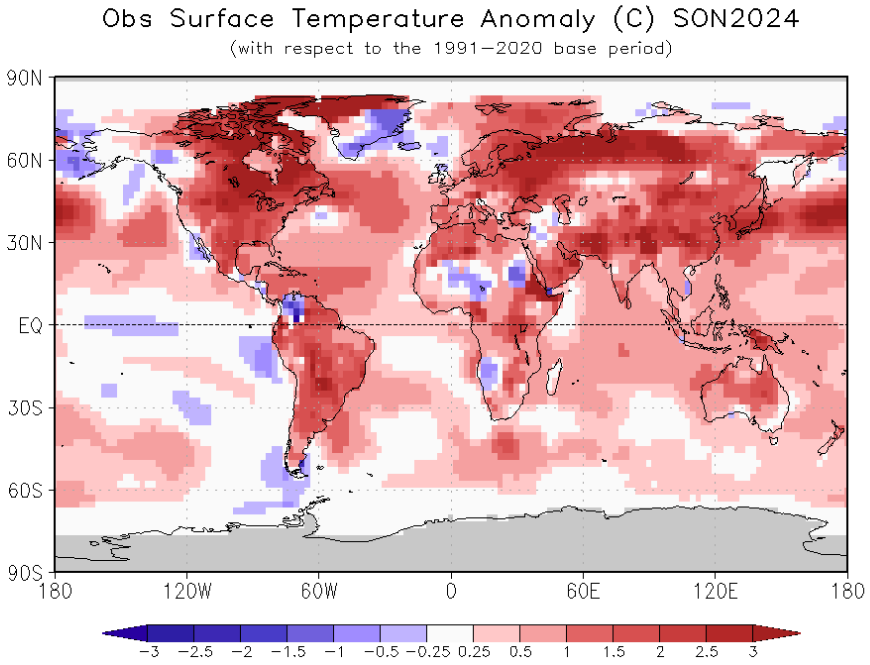


Figure 1. Probabilistic forecasts of surface air temperature and precipitation for the season January-March 2025. The tercile category with the highest forecast probability is indicated by shaded areas. The most likely category for below-normal, above-normal, and near-normal is depicted in blue, red, 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.



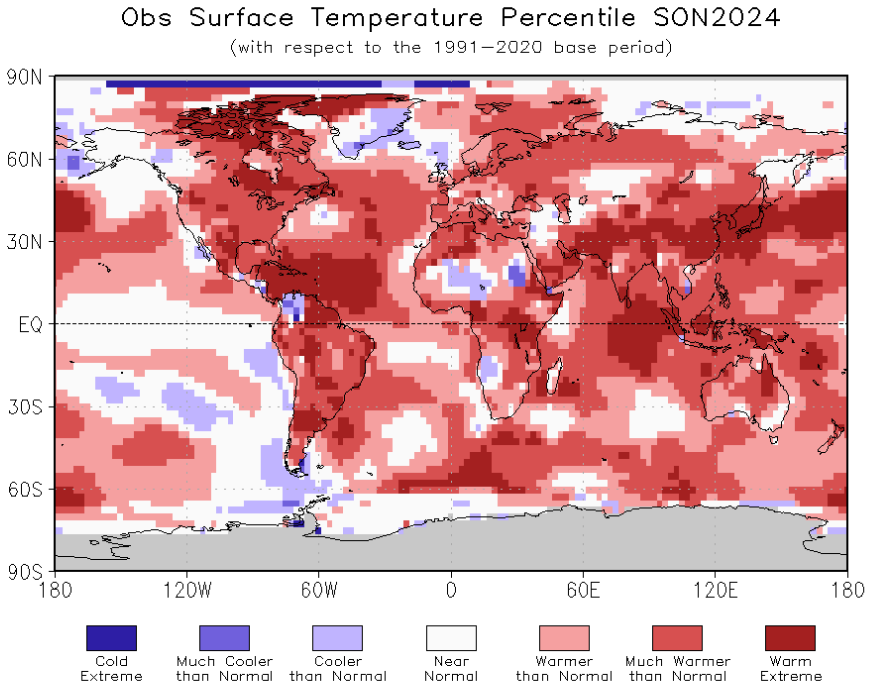
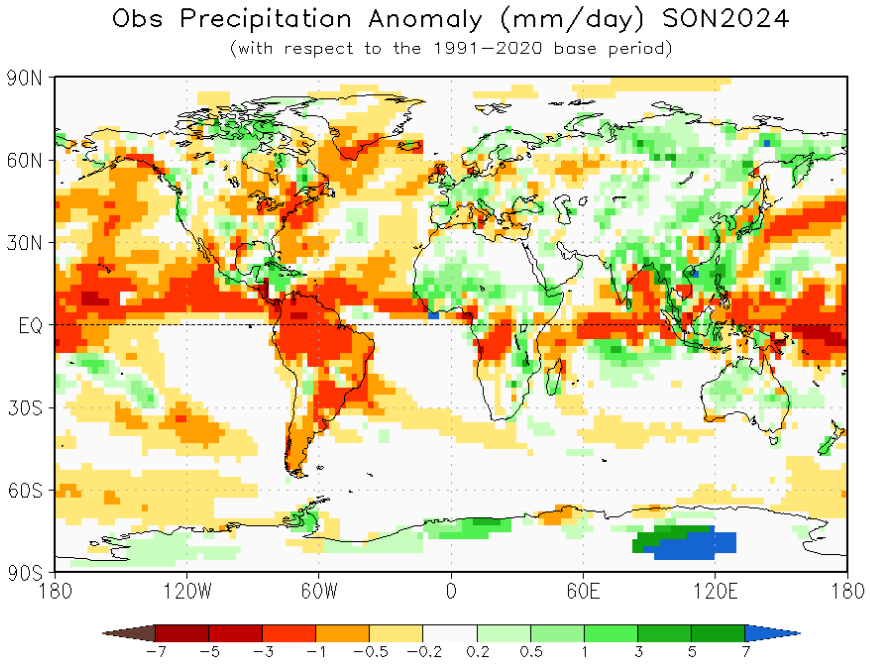


Figure 2. Observed September-November 2024 near-surface temperature anomalies relative to 1991–2020 (top). The Cooler than Normal, Near Normal, and Warmer than Normal shadings on the percentile map (bottom) indicate that seasonal mean anomalies were in the bottom, middle, and upper tercile of the 1991–2020 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).



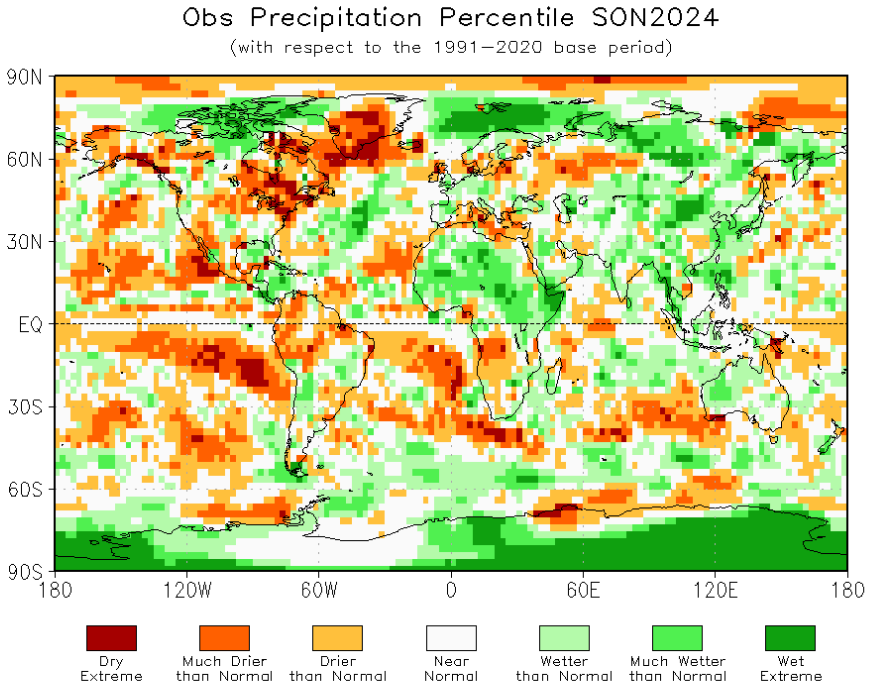
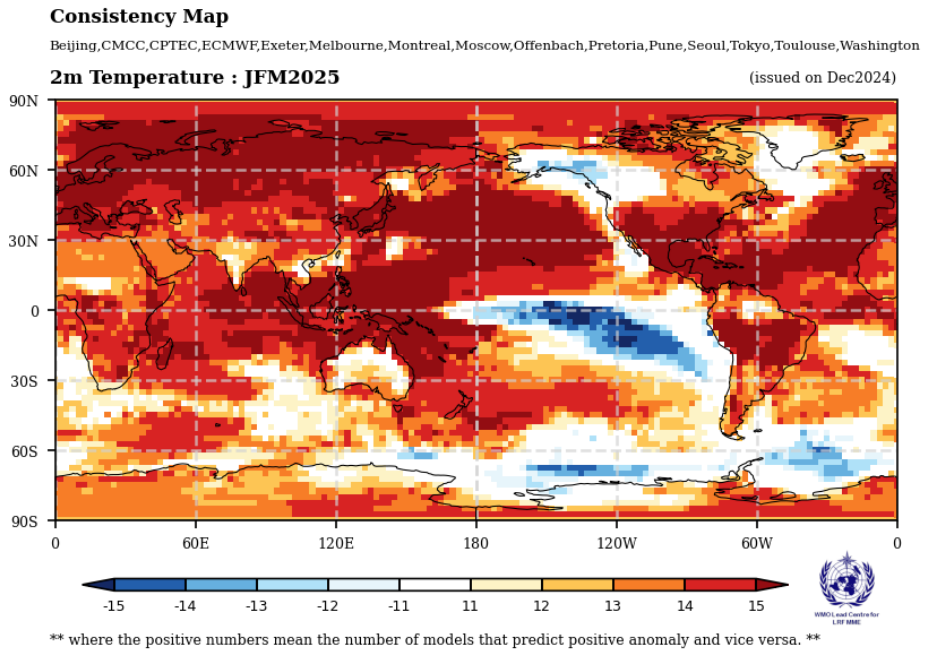


Figure 3. Observed precipitation anomalies for September-November 2024, relative to 1991–2020 base period (top). The Drier than Normal, Near Normal and Wetter than Normal shadings on the percentile map (bottom) indicate that seasonal mean anomalies were in the bottom, middle, and upper tercile of the 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).



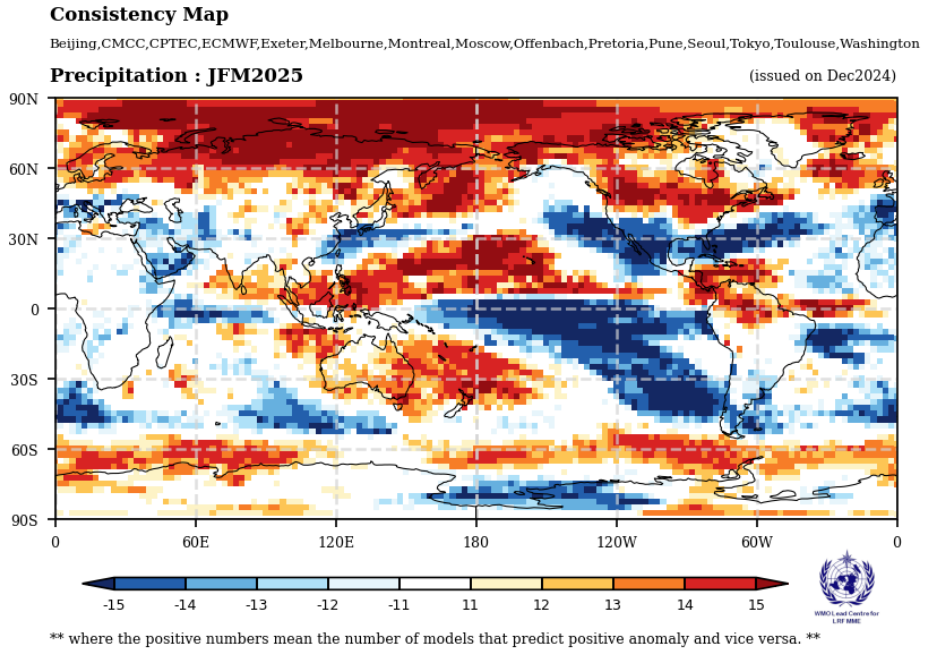


Figure 4. Consistency maps for the sign of ensemble mean anomalies of January-March 2025 seasonal mean for (top) surface air temperature, and (bottom) rainfall (bottom) from different model forecasts. The consistency map is constructed using the following procedure: At each grid point the number of models with positive or negative anomaly are counted and the number that is larger in plotted on the map. For example, if the number of models with positive (negative) anomaly is larger than the respective 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 between models.