WEATHER CLIMATE WATER

WORLD METEOROLOGICAL ORGANIZATION

GLOBAL SEASONAL CLIMATE UPDATE

TARGET SEASON: July-August-September 2023

Prepared: 26 June 2023

Summary

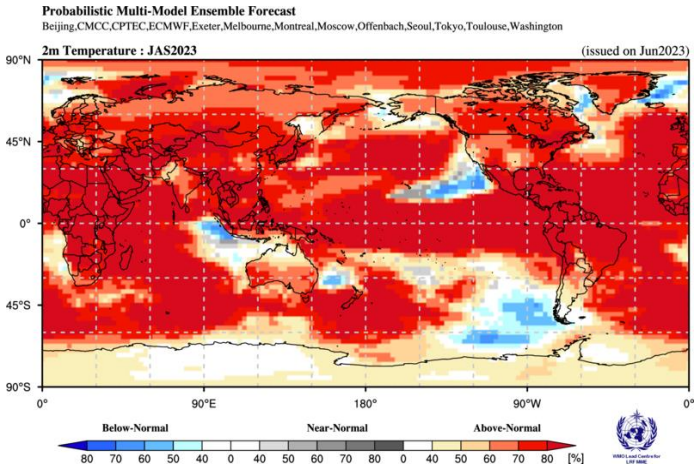
During March-May 2023, Pacific Niño sea-surface temperature (SST) index in the eastern Pacific (Niño 1+2) were above-normal while the other three indices in the central Pacific were near-normal. The observed SST conditions in the equatorial Pacific were characterized by an ENSO neutral state. The Indian Ocean Dipole (IOD) had a positive value. The North Tropical Atlantic (NTA) SST index and the South Tropical Atlantic (STA) SST index were also positive.

For the July-September 2023 (JAS 2023) season, the near-normal sea-surface temperature anomalies in the Niño 3.4 and Niño 3 regions in the central and eastern Pacific are predicted to transition to moderate El Niño conditions.

As warmer-than-average SSTs are generally predicted over oceanic regions for the JAS 2023 season, they contribute to widespread prediction of above-normal temperatures over land areas. Without exception, above-normal temperature anomalies are expected over all land areas in the Northern and Southern Hemisphere. The largest increase in probabilities for above-normal temperatures extend around the globe within the 50° S and 50° N band that includes the Maritime continent, Central America, the Caribbean, northern regions of South America, Africa, the Arabian Peninsula, east and southeast Asia, and northern regions of North America. Over these regions the model consistency is high. There are also enhanced probabilities for above-normal temperatures over other regions of Asia and North America, Europe, and southern regions of South America. Over these regions, however, the probabilities for above-normal temperature have a moderate increase. Strongly enhanced probabilities for above-normal temperatures are predicted in a band from north of Australia, extending to the south-eastern South Pacific, and in an arc extending over New Zealand to the vicinity of Tasmania. Many of the southwest Pacific islands lie within this band of above-normal temperatures. From the Maritime Continent east of 120° E, an area with the likelihood of above-normal temperature extends into the central Pacific, where it arcs northward, and at about 45° N stretches continuously from the west coast of North America to the east coast of Asia.

Predictions for rainfall in the JAS 2023 season are similar to some of the canonical rainfall impacts of El Niño. Probabilities for above-normal rainfall are enhanced over a narrow band along and just north of the equator from the Philippines extending across the equator to the west coast of South America. This anomalously wet area extends discontinuously westward and with weaker signal and is most evident in south-east Asia, the Indian subcontinent, and along the southern part of West Africa, extending most of the way across the Atlantic Ocean. Across most of the Pacific Ocean south of about 25° N, and immediately to the north of the equatorial wet band, rainfall is predicted to be below-normal. This area of dryness extends eastward across much of the northern part of South America north of about 10° S, southern parts of Central America and the southern Caribbean, and the west coast of Central America. There is another band of predicted below-normal rainfall in the Central South Pacific east of the Dateline and extending in a narrowband to a little beyond 120° W. Over the south-central and western parts of the Maritime continent, below-normal rainfall is also predicted. This area extends along the equator almost to the east coast of Africa, but also to the south and east, so that most of Australia and the northern part of New Zealand have increased probabilities of below-normal rain. The probability of below-normal rainfall is also increased over inland parts of East Africa. Over much of the rest of Africa north of the equator and over southern parts of Europe, the probabilities for above-normal rainfall are weakly to moderately increased. Outside of the tropics, there are no large-scale strong indications of anomalous rainfall over land.

Surface Air Temperature, JAS 2023



Precipitation, JAS 2023

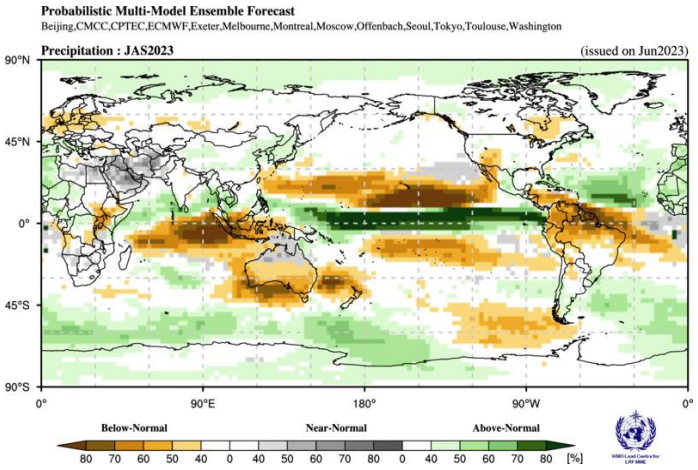
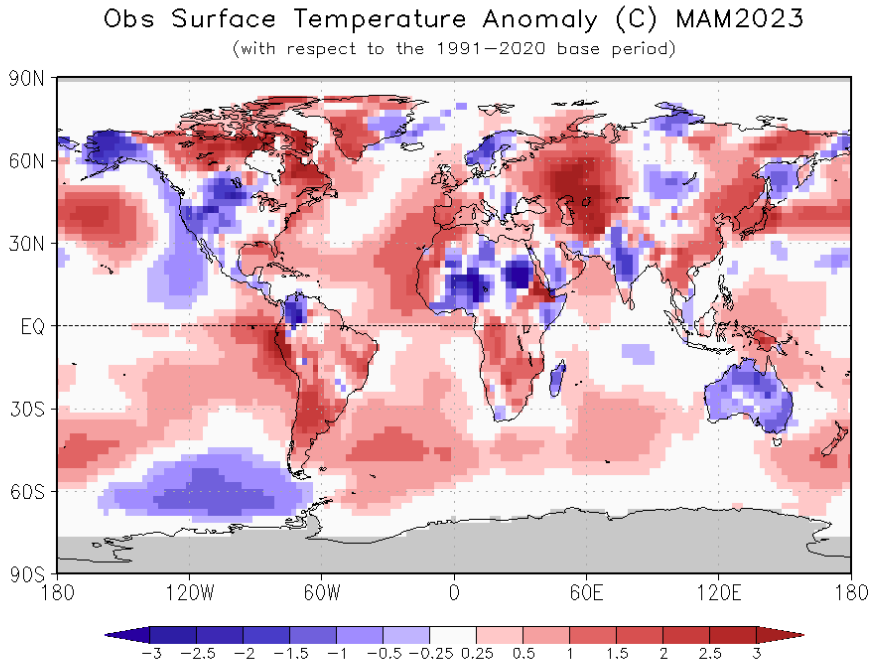


Figure 1. Probabilistic forecasts of surface air temperature and precipitation for the season July-September 2023. The tercile category with the highest forecast probability is indicated by shaded areas. The most likely category for below-normal, above-normal, and near-normal is depicted in blue, red, 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.



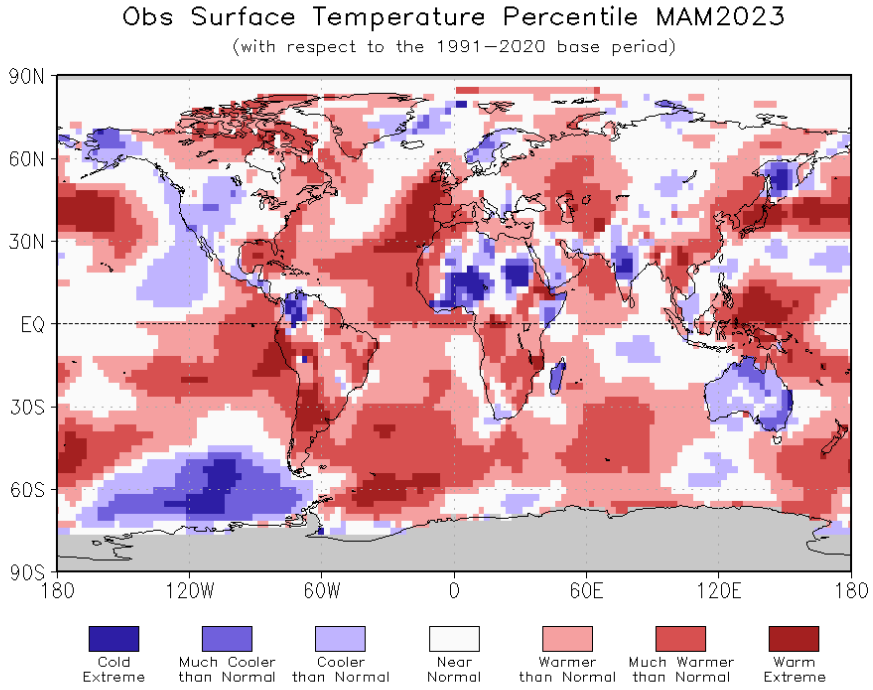
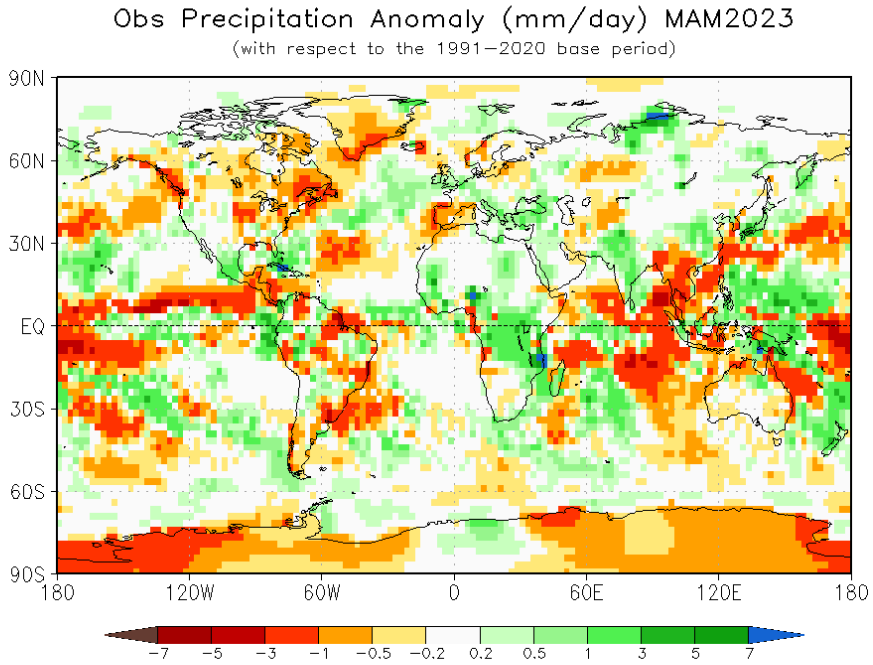


Figure 2. Observed March-May 2023 near-surface temperature anomalies relative to 1991–2020 (top). The Cooler than Normal, Near Normal, and Warmer than Normal shadings on the percentile map (bottom) indicate that seasonal mean anomalies were in the bottom, middle, and upper tercile of the 1991–2020 distribution, 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).



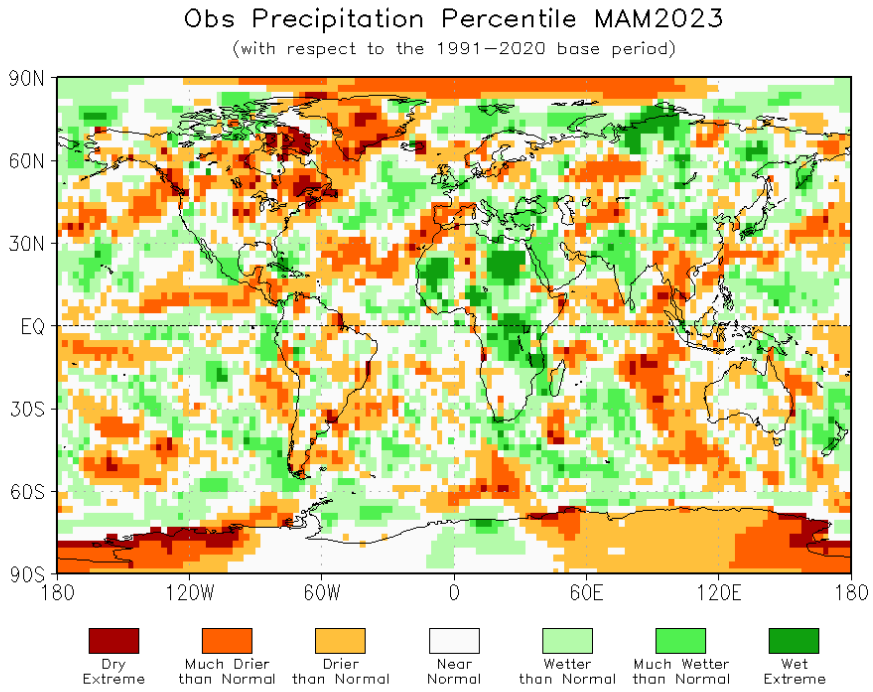


Figure 3. Observed precipitation anomalies for March-May 2023, relative to 1991–2020 base period (top). The Drier than Normal, Near Normal and Wetter than Normal shadings on the percentile map (bottom) indicate that seasonal mean anomalies were in the bottom, middle, and upper tercile of the 1991–2020 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).