WEATHER   CLIMATE   WATER

GLOBAL SEASONAL CLIMATE UPDATE

TARGET SEASON: May-June-July 2023
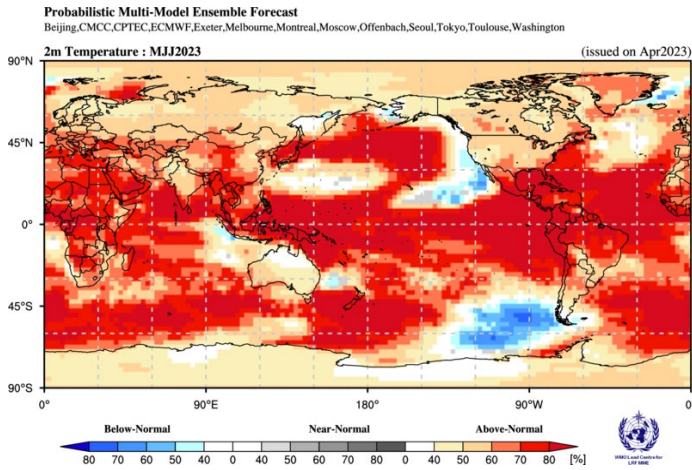
Prepared: 26 April 2023

Summary

During January-March 2023, the observed Pacific Niño sea-surface temperature (SST) anomalies in the central and eastern Pacific were near-normal, while in the far east near the South American coast, they were above-normal. The observed SST conditions in the equatorial Pacific were characterized by ENSO neutral conditions. The Indian Ocean Dipole (IOD) over the observed period was weakly positive. Both the North Tropical Atlantic (NTA) and the South Tropical Atlantic (STA) SST index were also weakly positive.

For the May-July 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 weak El Niño conditions.

As warmer-than-average SSTs are generally predicted over oceanic regions, they contribute to widespread prediction of above-normal temperatures over land areas. Without exception, positive temperature anomalies are expected over all land areas in the Northern and Southern Hemisphere. The largest increase in probabilities for above-normal temperatures generally extend around the globe within the 30° S and 30° N band that includes the Maritime continent, Central America, the Caribbean, northern regions of South America, Africa, and the Arabian Peninsula, and further, over these regions the model consistency is high. There are enhanced probabilities for above-normal temperatures over most of Asia, Europe, North America, and southern regions of South America. Over these regions, however, the probabilities for above-normal temperature are only weakly or moderately increased. 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.

With the prediction of weak El Niño conditions in the central and eastern tropical Pacific, the probability of above-normal rainfall is enhanced along a narrow band that stretches across the equatorial Pacific and extends from 150° E to the western coast of South America. Towards north and south of this equatorial band of above-normal rainfall, probability for below-normal rainfall is increased and also extends in the east-west direction. Farther west over the Indonesian Peninsula, there is an increase in the probability for below-normal rainfall that extends into the equatorial eastern Indian ocean to about 60° E where it extends northward into the Indian subcontinent. In the southern Indian Ocean, another branch of below-normal rainfall starting at 60° E extends south-eastward to cover almost the entire Australia, and then from the southern Austrian around 45° S stretches westward back in the southern Indian Ocean to 45° E. Probabilities for below-normal rainfall are also enhanced over the northeast South America, and southern regions of Central America extending eastward to cover regions of southern Caribbean. Weakly enhanced probabilities for above-normal rainfall are predicted over the eastern parts of the Maritime continent and over western and northern Africa. In the southern oceans, a zonal band of above-normal rainfall is predicted around 60° S.

Surface Air Temperature, MJJ 2023

Probabilistic Multi-Model Ensemble Forecast
Beijing,CMCC,CPTEC,ECMWF,Exeter,Melbourne,Montreal,Moscow,Offenbach,Seoul,Tokyo,Toulouse,Washington

Precipitation, MJJ 2023

Probabilistic Multi-Model Ensemble Forecast
Beijing,CMCC,CPTEC,ECMWF,Exeter,Melbourne,Montreal,Moscow,Offenbach,Seoul,Tokyo,Toulouse,Washington
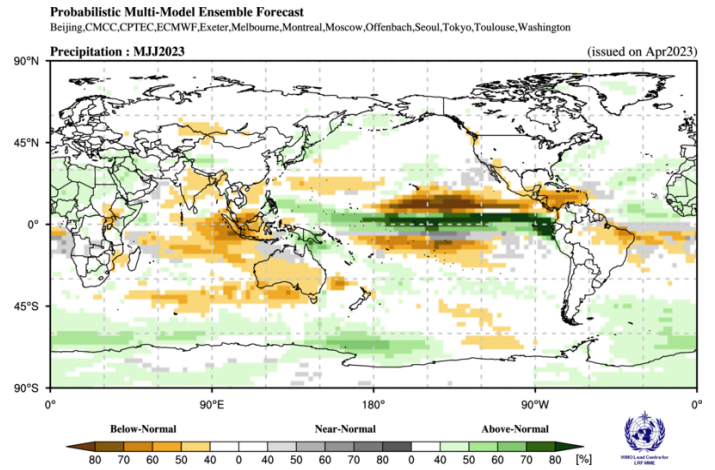

Figure 1. Probabilistic forecasts of surface air temperature and precipitation for the season May-July 2023. The tercile category with the highest forecast probability is indicated by shaded areas. The most likely category for below-normal, above-normal and near-normal is depicted in blue, red and grey 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.
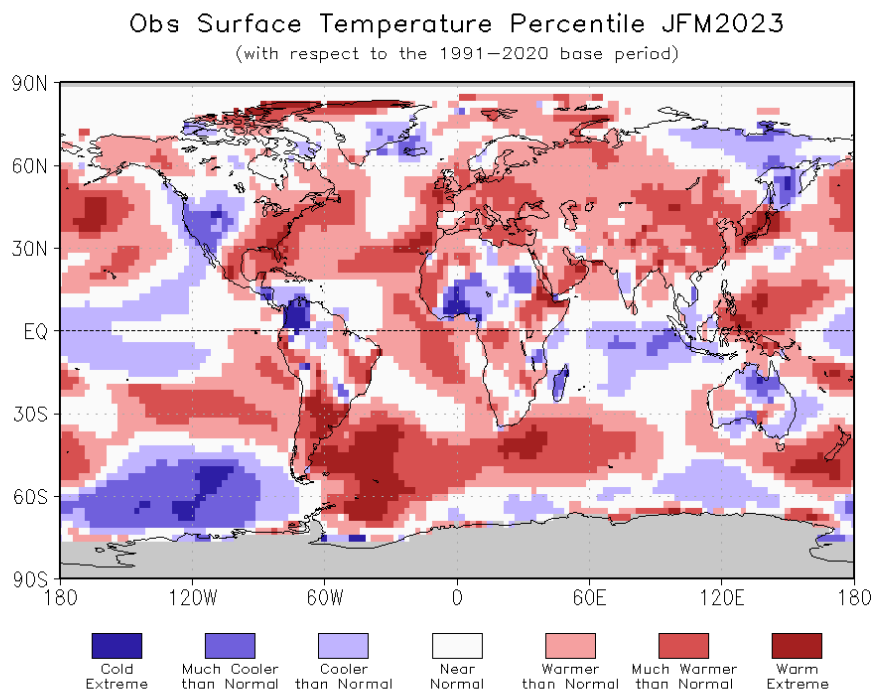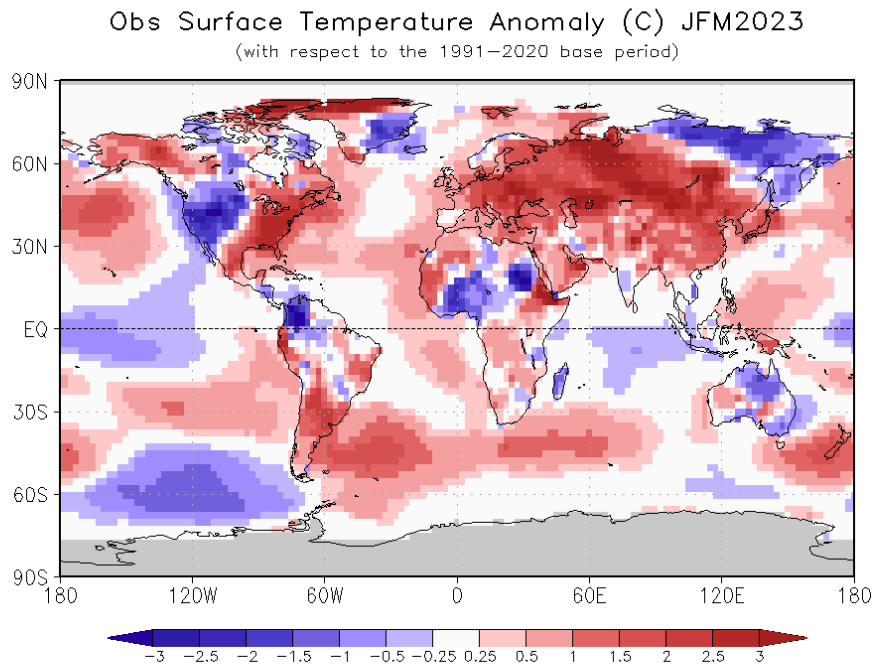
Figure 2. Observed January-March 2023 near-surface temperature anomalies relative to 1991–2020 (top). The Cooler than Normal, Near Normal, and Warmer than Normal shadings on the percentile map (bottom) indicate that seasonal mean anomalies were in the bottom, middle, and upper tercile of the 1991-2020 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).

Obs Precipitation Anomaly (mm/day) JFM2023
(with respect to the 1991–2020 base period)

Obs Precipitation Percentile JFM2023
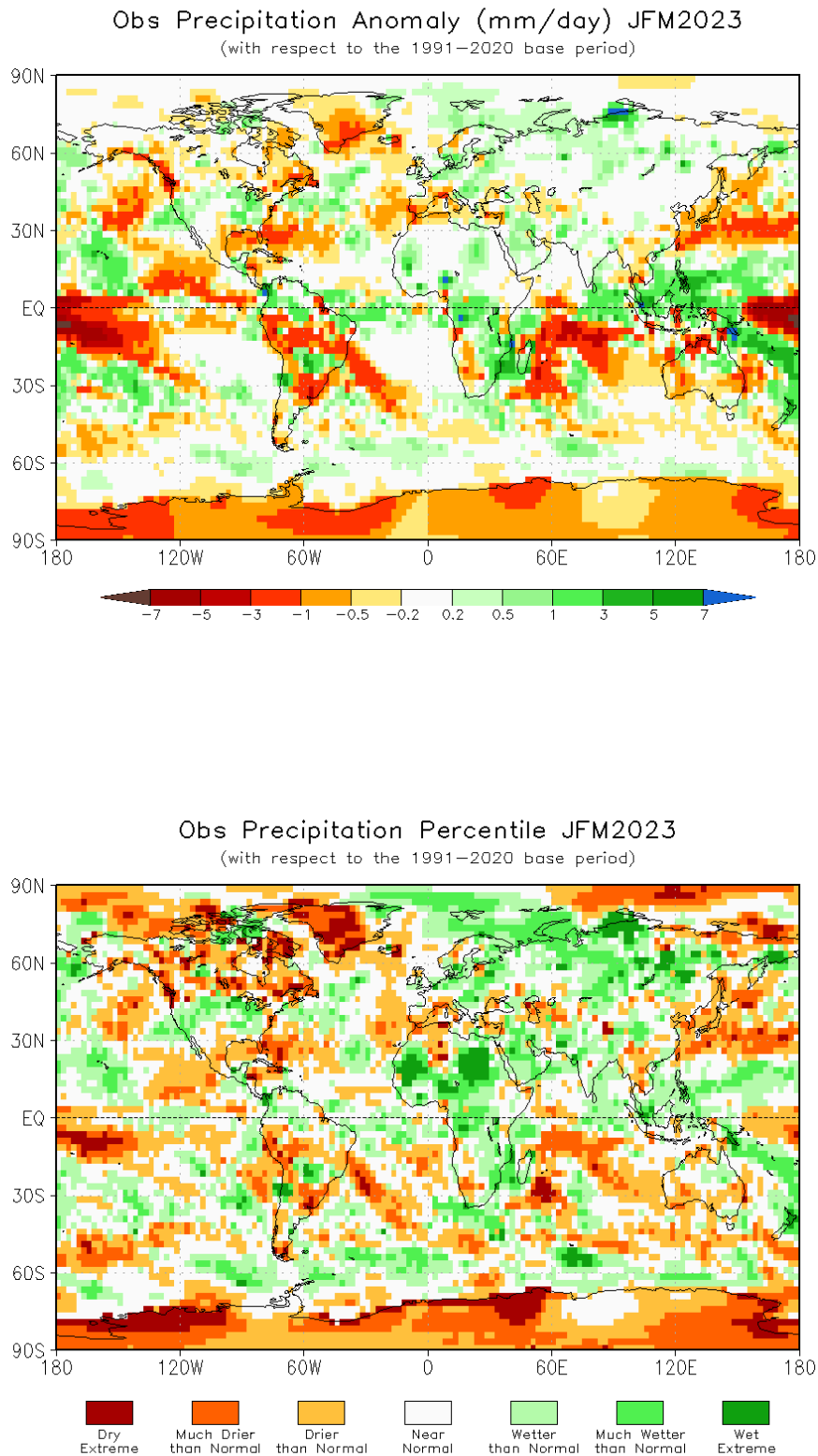(with respect to the 1991–2020 base period)

Figure 3. Observed precipitation anomalies for January-March 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).