WEATHER CLIMATE WATER

WORLD METEOROLOGICAL ORGANIZATION

GLOBAL SEASONAL CLIMATE UPDATE

TARGET SEASON: February-March-April 2023

Prepared: 26 January 2023

Summary

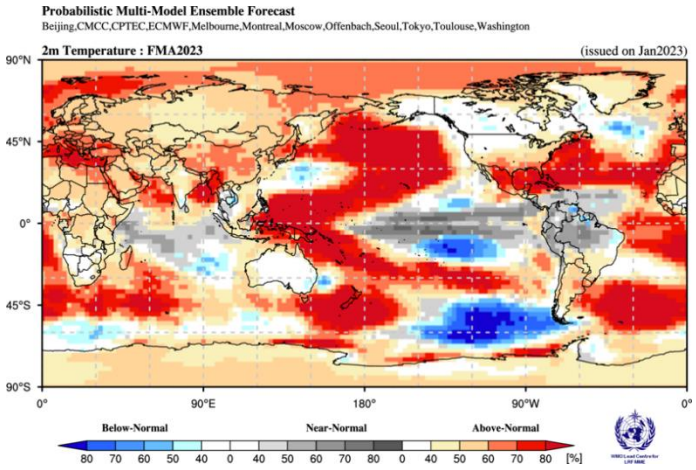
During October-December 2022, all four Pacific Niño sea-surface temperature (SST) indices in the central and eastern Pacific were below-normal. The observed SST conditions in the equatorial Pacific were characterized by a weak La Niña. The Indian Ocean Dipole (IOD) over the observed period was also negative. The North Tropical Atlantic (NTA) index was near-zero while the South Tropical Atlantic (STA) SST index was positive.

For the February-April 2023 season, near-normal sea-surface temperature anomalies in the Niño 3.4 and Niño 3 regions are predicted and indicate a tendency for weak La Niña conditions to return towards near-average.

Although a possibility for return towards near-average SST is predicted for the equatorial central and eastern Pacific, warmer-than-average SSTs are generally predicted over other oceanic regions and contribute to widespread prediction of above-normal temperatures over land areas. Positive temperature anomalies are expected over most of the land areas in the Northern Hemisphere except for small patches over north-western North America, northernmost regions of South America, and southeast Asia. The largest increase in probabilities for above-normal temperatures are along the Arctic coast and southern regions of Europe, northern parts of central America, the Caribbean, the eastern Maritime Continent, and New Zealand. There are also small areas of strong probabilities for above-normal temperature over the eastern part of South Asia. There are enhanced probabilities for above-normal temperatures over most of Asia, Europe, Africa north of about 15° S, South American south of 10° S, and southern and eastern North America. However, over most land areas, 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, this area with the likelihood of above-normal temperature also extends into the central North Pacific, and at about 40° N stretches almost continuously from the west coast of North America to the east coast of Asia. Over much of the interior part of South America, normal temperatures are the most likely outcome. There is no clear signal for changes in probabilities over Australia.

Although SSTs in the central and eastern Pacific are predicted to decline with SSTs trending towards near-average conditions, a continued enhancement in the east-west SST gradient in equatorial Pacific leads to prediction of rainfall anomalies to be similar to some of the canonical rainfall impacts of La Niña. Probabilities for above-normal rainfall are enhanced over an area extending from north of Australia, primarily below the equator, into the Southwest Pacific to an area east of New Zealand, extending to about 140° W. Starting from southeast Asia around 100° E, there is an additional band of high probabilities for above-normal rainfall stretching north-eastward almost continuously to about 150° W. This area is broader in the western and central Pacific, and in the central Pacific it extends northwards where it expands to cover much of the Arctic, northern Asian, and north-western North America. Much of southern Africa and north-eastern regions of South America also have increased probabilities of above-normal rainfall. A likelihood for anomalously dry area is predicted in the equatorial Pacific extending from the eastern part of the Maritime continent extending southwards to the far southern part of South America. Probabilities for below-normal rainfall are high throughout this region north of about 25° S. Between about 160° and 100° W normal rainfall has the highest probability along the equator. Other areas with increased probabilities of below-normal rainfall include coastal regions of East Asia, easternmost region of Indian subcontinent, the northern part of Central America and southern North America, and north-western South America.

Surface Air Temperature, FMA 2023



Precipitation, FMA 2023

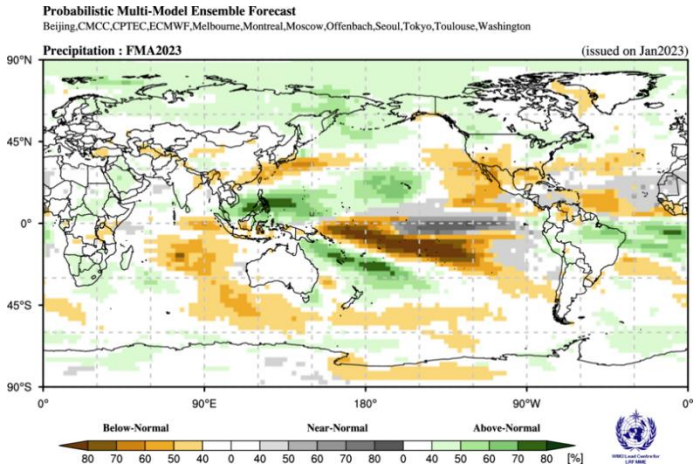
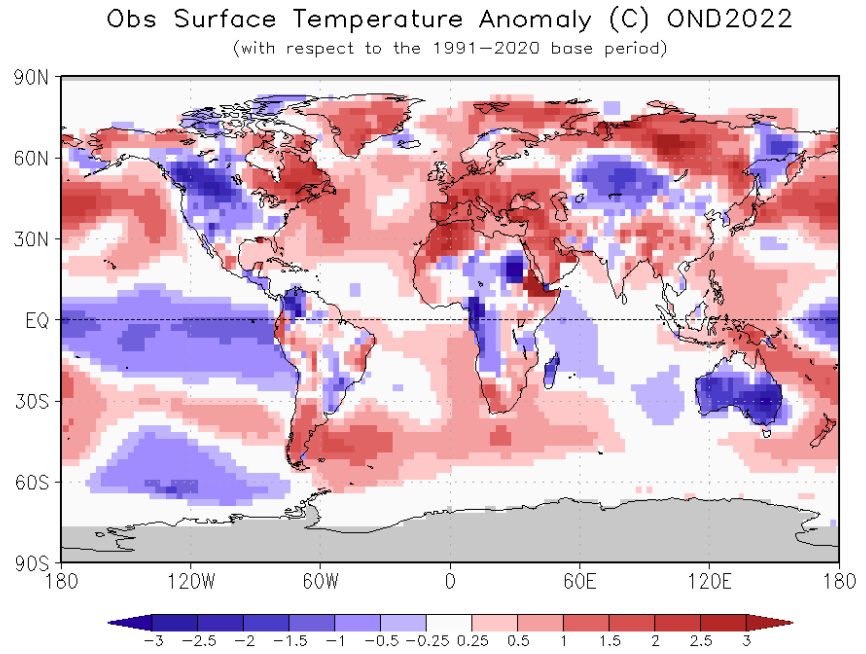


Figure 1. Probabilistic forecasts of surface air temperature and precipitation for the season February-April 2023. The tercile category with the highest forecast probability is indicated by shaded areas. The most likely category for below-normal, above-normal and near-normal is depicted in blue, red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



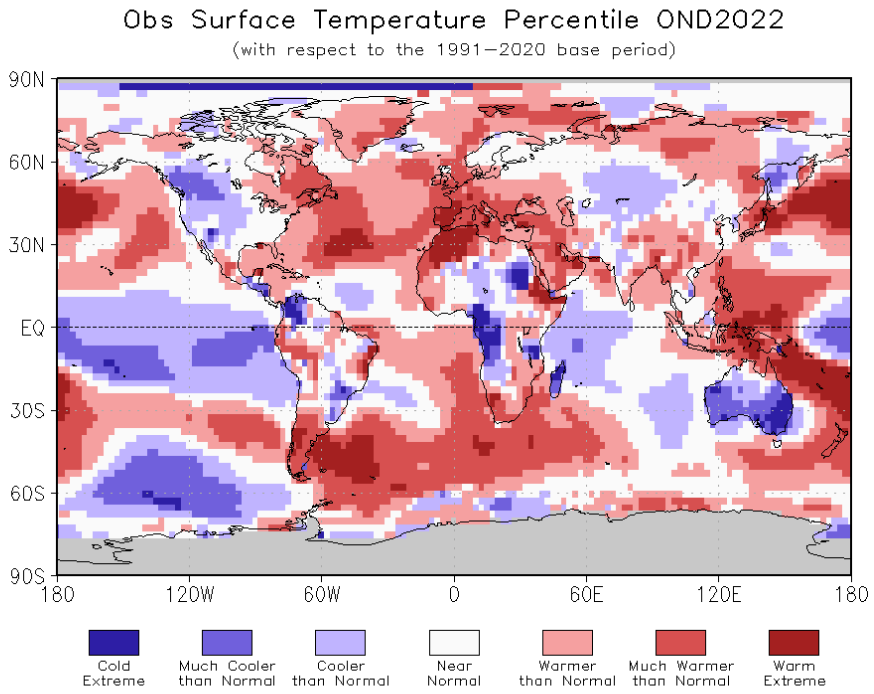
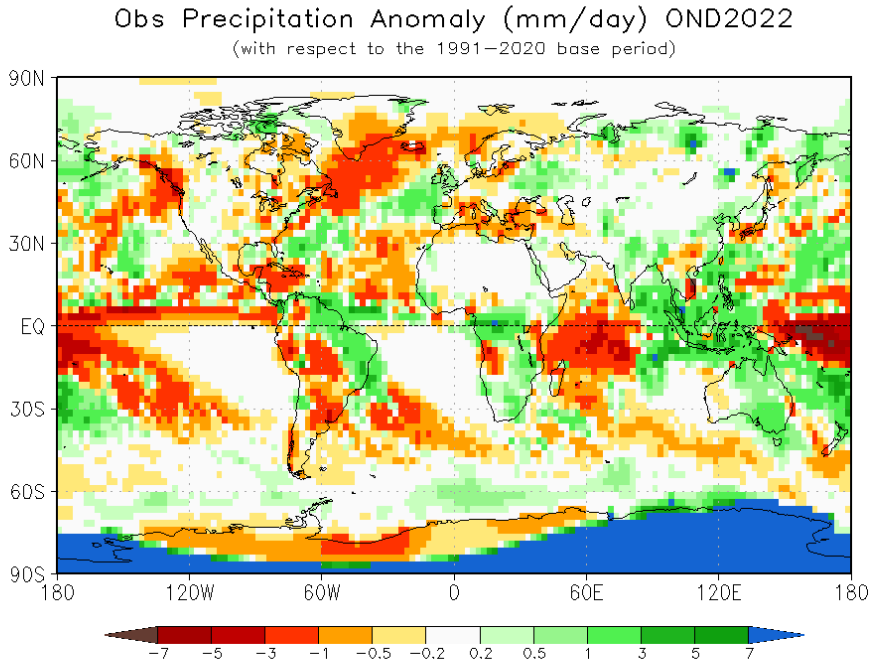


Figure 2. Observed October-December 2022 near-surface temperature anomalies relative to 1991–2020 (top). The Cooler than Normal, Near Normal, and Warmer than Normal shadings on the percentile map (bottom) indicate that seasonal mean anomalies were in the bottom, middle, and upper tercile of the 1991–2020 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).



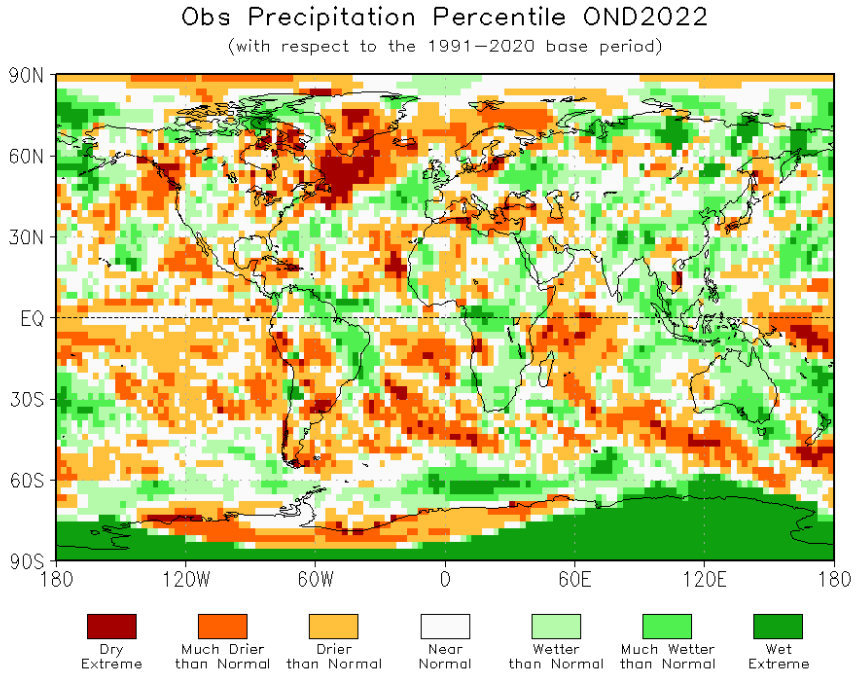


Figure 3. Observed precipitation anomalies for October-December 2022, relative to 1991–2020 base period (top). The Drier than Normal, Near Normal and Wetter than Normal shadings on the percentile map (bottom) indicate that seasonal mean anomalies were in the bottom, middle, and upper tercile of the 1991–2020 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).