MAURITIUS METEOROLOGICAL SERVICES
Seasonal Outlook for Winter 2023

1.0 Introduction

The Winter 2023 Seasonal Outlook gives an insight of the expected evolution of the climate during the winter months in Mauritius and Rodrigues. The content of this outlook is meant to be used as general guidance for planning purposes by stakeholders in various socio-economic sectors.

2.0 Background

A seasonal climate forecast aims to estimate the likelihood of a climatic event happening in the coming months. The seasonal forecast provides information on how likely it is that the coming season will be wetter, drier, warmer or colder than normal. A climate forecast is not an attempt to forecast the detailed day-to-day evolution of weather.

Winter season in Mauritius and Rodrigues occurs from May to October. The weather during Winter is often characterised by persistent trade winds emanating from anticyclones transiting the South Indian Ocean from west to east. Temperatures are cooler, especially during the months of June to September. May and October are generally considered as transition months.

The behavior of meteorological and oceanic parameters such as El Nino Southern Oscillation (ENSO) and the identification of analogous years are the key factors used to generate the most likely scenario for the season. Global, regional and local predictors are analysed in the process of the preparation of this outlook.

The ENSO is a recurring climate pattern involving changes in the temperature of ocean waters in the equatorial eastern and central Pacific. The oscillating warming and cooling pattern, referred to as the ENSO cycle, directly affects rainfall distribution in the tropics and can have a strong influence on weather in various parts of the world, including the Mascarenes islands. The periodicity of the ENSO cycle is irregular, but typically occurs roughly every 2 to 7 years.

El Niño and La Niña are two phases of the ENSO cycle; between these two phases is a third phase called ENSO-neutral. El Niño conditions occur when abnormally warm waters accumulate in tropical latitudes of the central and eastern Pacific Ocean. Conversely La Niña conditions occur when cooler than average waters accumulate in exactly the same region as El Nino.

3.0 The Past Summer 2022-2023

A weak La Nina prevailed during Summer 2022-2023.

A neutral Indian Ocean Dipole was observed in the Equatorial Indian Ocean for Summer 2021-2022.

Onset of Summer rainfall for 2022-2023 was late and it started in the second week of January 2023.

December 2022 was the driest month of the season, with 60 mm, which is 37% of the Long-Term Mean 1991-2020. November 2022 and February 2023 registered below normal rainfall compared to the Long-Term Mean 1991-2020 , about 39% (33 mm) and 48% (156 mm) respectively. . January 2023 registered well above normal rainfall 531 mm (188%). March and April 2023

recorded near normal rainfall and slightly below normal respectively.

The mean temperature during the past summer was close to the normal except for April 2023 which was slightly above normal. .

Before the onset of the cyclone season 2022-2023, two (2) tropical low systems intensified into moderate tropical storms and were named *Ashley* on 27 September and *Balita* on 07 October 2022 by the Mauritius Meteorological Services.

Seven named storms transited in the South West Indian Ocean during this summer, including *Darian* and *Freddy*, which were named by the Bureau of Meteorology in the Australian region of responsibility and which later moved in the South West Indian Ocean. Out of these named systems, two were very intense tropical cyclones, three tropical cyclones and two moderate tropical storms. Very Intense Tropical Cyclone *Freddy* passed close to Mauritius and Rodrigues and cyclone warning bulletins were issued for both islands. Mauritius and Rodrigues did not experience cyclonic conditions; however, storm surges were observed along beaches of Mauritius. The VITC *Freddy* may have broken the record as the longest lasting tropical cyclone, being a named tropical system for 34 days (still under study by World Meteorological Organisation). It originated in the Australian region, travelled the entire Tropical South Indian Ocean, made landfall over Madagascar to emerge over the Mozambique Channel and made landfall twice over Mozambique before finally dissipating over Malawi. Cyclonic winds and extreme rainfall affected parts of Zimbabwe and Zambia, Malawi, Mozambique and Madagascar. Coastal areas along Madagascar and eastern AFrica were impacted by storm surges.

4.0 Conclusions

Based on analysis of analogous years and climate forecast from various model products from Global Producers of Long-Range Forecast, the most likely outlook for winter 2023 is as follows:

i. Observed trends of meteorological parameters in the region indicate that the onset of winter 2023 will be by the end of May

ii. Rainfall over Mauritius during winter is expected to be close to normal during the first part and slightly above normal for the second half. The cumulative rainfall will be normal for Mauritius, around 675 mm, which represents 110% of the Long-Term Mean 1991-2020. Most of the rains will be concentrated mainly over the Central Plateau, to the East and the South

iii. Rainfall over Rodrigues is expected to be slightly below normal in the first half of winter and slightly above normal in the second half. The cumulative rainfall for Winter 2023 is expected to be close to normal, amounting to 380 mm, which represents 95% of the Long-Term Mean 1991-2020 in Rodrigues.

iv. The mean day maximum and mean night minimum temperature will be close to the normal. Temperature during the day will be between 22 to 25 degrees Celsius over the high grounds and between 26 to 29 degrees Celsius along the coastal regions. The night temperature will between 16 to 18 degrees Celsius over the central plateau and between 18 to 21 degrees Celsius along coastal regions. In Rodrigues, temperature during the day will be around 24 degrees Celsius over the high grounds and 27 degrees Celsius along the coastal regions. The night temperature will be around 16 degrees Celsius over the high grounds and will be around 20 degrees Celsius along coastal regions.

Under the influence of strong anticyclones, Mauritius and Rodrigues may experience drop in temperatures by 2 degrees Celsius or more relative to the normal.

On few occasions, especially due to clear sky and calm wind condition at night, it is likely that the minimum temperature may drop to 10 degrees Celsius in certain places in Mauritius. Minimum temperature over Rodrigues may drop to 14 degrees Celsius over the high grounds.

v. Inference to other parameters

a. Wind will blow mainly from the East South East with average speed varying between 25 and 35 km/h. During the peak winter months mainly in July and August, the passage of strong anticyclones to the south of the Indian Ocean may cause strong pressure gradient over our region, resulting in wind gusts that may peak to above 90 km/h in the exposed areas;

b. On certain occasions, the sea will become very rough with heavy swells generated by the combined effect of deep extratropical lows and strong anticyclones transiting to the south of the Mascarenes. The swell waves are likely to reach the southern and western shores of Mauritius and Rodrigues and may at times cause tidal surge leading to temporary inundation of low-lying coastal areas; and

c. The Intergovernmental Panel on Climate Change Synthesis Report (IPCC AR6 SYR) states the following: "*The Human activities, principally through emissions of greenhouse gases, have unequivocally caused global warming, with global surface temperature reaching 1.1°C above 1850–1900 in 2011–2020. Consequently, widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred. Continued greenhouse gas emissions will lead to increasing global warming and every increment of global warming will intensify multiple and concurrent hazards*". Mauritius and Rodrigues, therefore, may experience extreme weather events including moderate to heavy showers, significant variation in temperatures and strong wind conditions during winter 2023.

This report will be updated upon availability of fresh information.

Meteorological Services
St Paul Road,
Vacoas
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