STATEMENT OF THE TENTH SESSION OF THE SOUTH-WEST INDIAN OCEAN CLIMATE OUTLOOK FORUM (SWIOCOF-10)

web conference
20-23 SEPTEMBER 2021

SUMMARY

Climate information for October through January (2021/22):

- For **October-November-December** season (OND), the onset of the rainy season is likely to be delayed in the northern part of the region. Normal to below normal rainfall are expected over Tanzania, North Malawi, North Mozambique, North and East Madagascar and Seychelles. Below normal rainfall is more likely over Comoros, Mauritius, Rodrigues and Agalega. Normal conditions are expected over South Malawi, Central Mozambique, West and South-East Madagascar and La Réunion. For the South Mozambique and South Africa, a normal to above normal situation is likely to occur.

The temperatures are expected to be normal to above normal over most countries of the region execpt for South Africa where Normal conditions are most likely. The probability to observe above normal values is even higher for East Tanzania, North Mozambique, Malawi, Comoros, Madagascar, Seychelles and La Réunion. Normal temperatures are more likely over Rodrigues.

- For **November-December-January** season (NDJ), the rainfall anomalies display the same spatial distribution with a gradient from north to south over the continent and contrasted situations for island countries. Normal to below normal conditions are likely to occur over Tanzania, North Malawi and North Mozambique. Normal rainfall is expected for South Malawi and central Mozambique, whereas Normal to above normal rainfall should be observed over South Mozambique and Above normal is most likely over South Africa. Seychelles and Madagascar should experience Normal conditions while Comoros should be affected by Below normal rainfall. Normal to above normal rainfall is likely to occur over La Réunion and Normal to below normal situation is expected for Mauritius and Agalega. Below normal

The temperatures are expected to be Normal for the southern part of the continent including South Africa and South and central Mozambique. Elsewhere the conditions should be normal to above normal over most countries of the region. Above normal values are most likely over South Malawi and North Mozambique, Comoros, North, North-East and West Madagascar, La Réunion, Agalega and Seychelles.

- For the **Cyclone activity:** For the coming cyclonic season (November 2021 to April 2022), normal to bellow normal cyclone activity is expected over the SWIO basin. 7 to 11 tropical systems are likely to be named (climatological value is 10). For the first part of the season (up to January), Tropical Cyclone activity is expected mainly over the eastern part of the basin far from inhabited lands but parabolic tracks over the Mascarene region can not be excluded. For the second part of the season (February and beyond), the activity may develop further west and closer to inhabited lands over the southern Mozambique channel or North-East of Madagascar but uncertainty is quite high regarding the considered leadtime.

THE TENTH ANNUAL SOUTH WEST INDIAN OCEAN CLIMATE OUTLOOK FORUM

The Tenth Southern Western Indian Ocean Climate Outlook Forum (SWIOCOF-10) was held by web conference from 20 to 23 September 2021 to prepare a consensus outlook for the 2021/2022 rainfall season over the SWIO region. Climate scientists from the SWIO National Meteoroogical and/or Hydrological Services (NMHSs), Meteo-France, and ACMAD formulated this outlook. Additional inputs were considered from global climate prediction centres (GPCLRFs) namely, European Centre for Medium Range Weather Forecast (ECMWF), Météo-France, NCEP, South African Weather Service (SAWS), Copernicus Climate Change Services (C3S) and the WMO Lead Center for Long Range Forecasts Multi-Model Ensemble (WMO-LC-LRFMME). This outlook covers the major rainfall season from October 2021 through January 2022. The outlooks are presented in three-monthly rolling periods as follows: October-November-December (OND); November-December-January (NDJ).

This Outlook is relevant only to seasonal (overlapping three-monthly) time-scales and relatively large areas and may not fully account for all factors that influence regional and national climate variability, such as local and month-to-month variations (intra-seasonal). Users are strongly advised to contact the National Meteorological and Hydrological Services for interpretation of this Outlook, additional guidance and updates.

METHODOLOGY

Using statistical and other objective climate prediction methods, as well as expert interpretation, the climate scientists attending the SWIOCOF determined the likelihoods of above-normal, normal and below-normal rainfall and other parameters relevant to the region such as temperatures for each area for rolling three monthly periods i.e. October-November-December (OND – Figure 1 and 2), November-December-January (NDJ – Figure 3 and 4). Above-normal category is defined as lying within the highest third of record (30 year mean that is, 1981-2010) of a given parameter; below normal is defined as within the lowest third of the parameter and normal is the middle third, centred on the climatological median. The climatic statistics for rainfall and temperature are provided in the Annex. It should be noted that this outlook is produced over large zones at at regional scale. More local details and adaptations are given by the NMHSs.
The outlook for Tropical Cyclone (TC) Activity over SWIO basin (30°E, 90°E/0°S,-40°S) is provided for the upcoming cyclonic season (Nov-May).
The climate scientists took into account oceanic and atmospheric factors that influence our climate over the SWIO region, in particular the El Niño-Southern Oscillation (ENSO) and regional climate drivers such as the Indian Ocean Dipole (IOD) and the Subtropical Indian Ocean Dipole (SIOD).

OUTLOOK

The period of October to January over the SWIO region is typically a transition period before the main rainy season (January to March). The season (JFM) is also being referred to as the peak of the cyclonic season. The present outlook considers the following two overlapping seasons (i.e. OND and NDJ).

Current status of the climate system

The sea surface temperature over the Equatorial Pacific shows developing negative anomalies. The Indian Ocean Dipole (IOD) has been in a negative phase for a few months. Feedbacks on the climate system are already visible. In the south of the basin, the South Indian Ocean Dipole (SIOD) is still in a neutral phase and has no present impact on the atmosphere.

Expected evolution of the main climate drivers for SWIO region

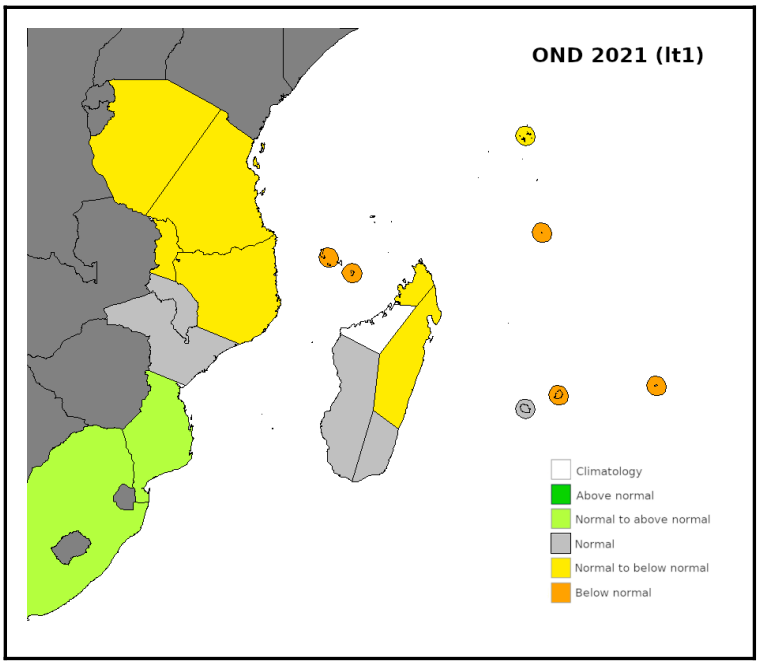
Most global climate models suggest that:
- The IOD is expected to decay and go back to a normal phase by November, but there are some uncertainties concerning the timing.
- El Nino Southern Oscillation (ENSO) is expected to develop a Nina event by the end of the year, but uncertainties remain regarding its amplitude.
- These patterns are likely to drive the regional climate for the coming seasons i.e. OND and NDJ.
- The SIOD is expected to develop a positive phase but its impact on the climate system should be observed later in the season and is likely to influence the core of the cyclonic season.

Outlooks for OND 2020 and NDJ 2020/2021

Based on SST anomalies, sub-surface temperature patterns, knowledge and the understanding of seasonal climate variability over the South West Indian Ocean region together with available long range forecasts products, the following outlooks are provided for October 2021 to January 2022 which includes, precipitation, temperature and cyclones for the upcoming season (2021/2022).

Precipitation & Temperature:

- For **October-November-December** season (OND), the onset of the rainy season is likely to be delayed in the northern part of the region. Normal to below normal rainfall are expected over Tanzania, North Malawi, North Mozambique, North and East Madagascar and Seychelles. Below normal rainfall is more likely over Comoros, Mauritius, Rodrigues and Agalega. Normal conditions are expected over South Malawi, Central Mozambique, West and South-East Madagascar and La Réunion. For the South Mozambique and South Africa, a normal to above normal situation is likely to occur.



RAINFALL FORECAST

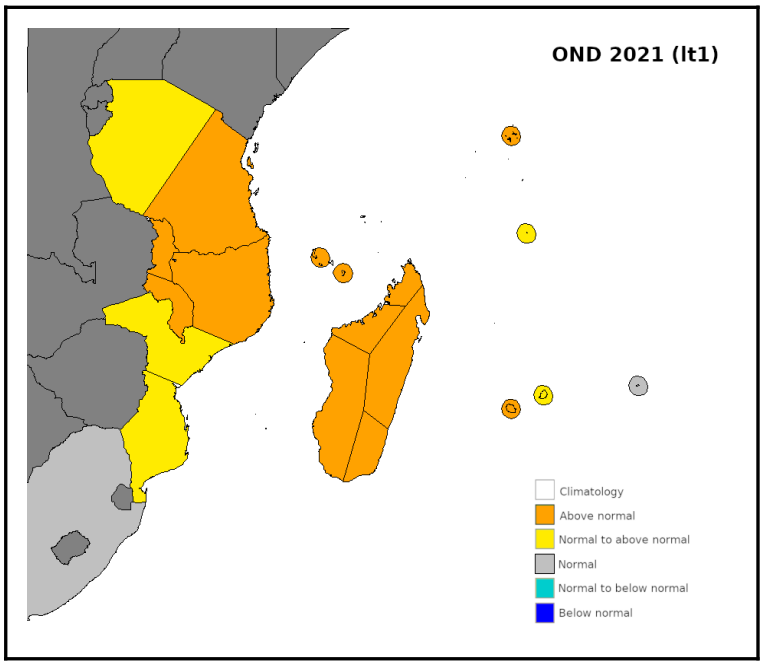
The different categories are related to the following probabilities for each tercile:

Climatology: [33 / 33 / 33]
Above normal: [10 / 30 / 60]
Normal to above normal: [10 / 40 / 50]
Normal: [25 / 60 / 15]
Normal to below normal: [40 / 50 / 10]
Below normal: [55 / 35 / 10]

Figure 1 : Consensus forecast of precipitation for OND 2021 in SWIO region

The temperatures are expected to be normal to above normal over most countries of the region except for South Africa where Normal conditions are most likely. The probability to observe above

normal values is even higher for East Tanzania, North Mozambique, Malawi, Comoros, Madagascar, Seychelles and La Réunion. Normal temperatures are more likely over Rodrigues.



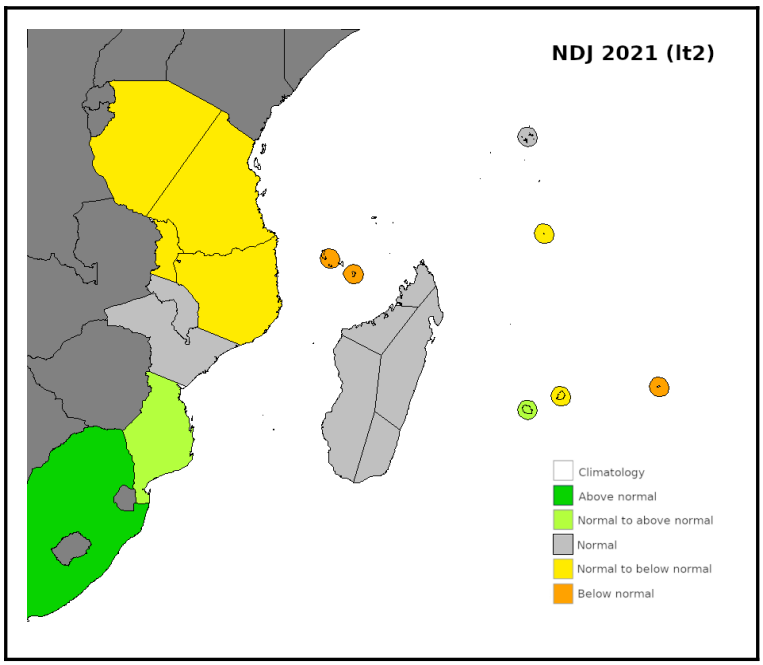
TEMPERATURE FORECAST

The different categories are related to the following probabilities for each tercile:

Climatology: [33 / 33 / 33]
Above normal: [10 / 20 / 70]
Normal to above normal: [10 / 40 / 50]
Normal: [20 / 50 / 30]
Normal to below normal: [40 / 50 / 10]
Below normal: [60 / 30 / 10]

Figure 2 : Consensus forecast of temperature for OND 2021 in SWIO region

- For **November-December-January** season (NDJ), the rainfall anomalies display the same spatial distribution with a gradient from north to south over the continent and contrasted situations for island countries. Normal to below normal conditions are likely to occur over Tanzania, North Malawi and North Mozambique. Normal rainfall is expected for South Malawi and central Mozambique, whereas Normal to above normal rainfall should be observed over South Mozambique and Above normal is most likely over South Africa. Seychelles and Madagascar should experience Normal conditions while Comoros should be affected by Below normal rainfall. Normal to above normal rainfall is likely to occur over La Réunion and Normal to below normal situation is expected for Mauritius and Agalega.



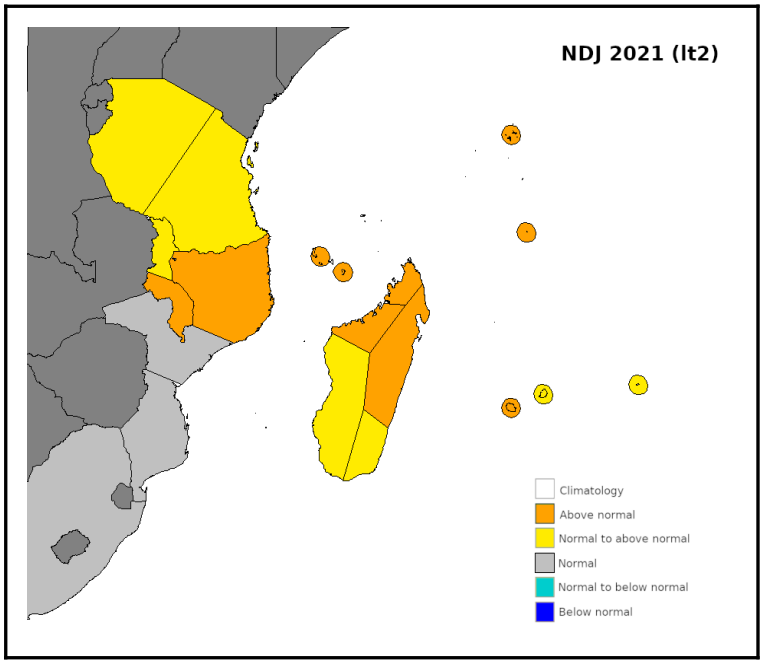
RAINFALL FORECAST

The different categories are related to the following probabilities for each tercile:

Climatology: [33 / 33 / 33]
Above normal: [10 / 30 / 60]
Normal to above normal: [10 / 40 / 50]
Normal: [25 / 60 / 15]
Normal to below normal: [40 / 50 / 10]
Below normal: [55 / 35 / 10]

Figure 3: Consensus forecast of precipitation for NDJ 2021/22 in SWIO region

The temperatures are expected to be Normal for the southern part of the continent including South Africa and South and central Mozambique. Elsewhere the conditions should be normal to above normal over most countries of the region. Above normal values are most likely over South Malawi and North Mozambique, Comoros, North, North-East and West Madagascar, la Réunion, Agalega and Seychelles.



TEMPERATURE FORECAST

The different categories are related to the following probabilities for each tercile:

Climatology: [33 / 33 / 33]
Above normal: [10 / 20 / 70]
Normal to above normal: [10 / 40 / 50]
Normal: [20 / 50 / 30]
Normal to below normal: [40 / 50 / 10]
Below normal: [60 / 30 / 10]

Figure 4: Consensus forecast of temperature for NDJ 2021/22 in SWIO region

Cyclone activity:

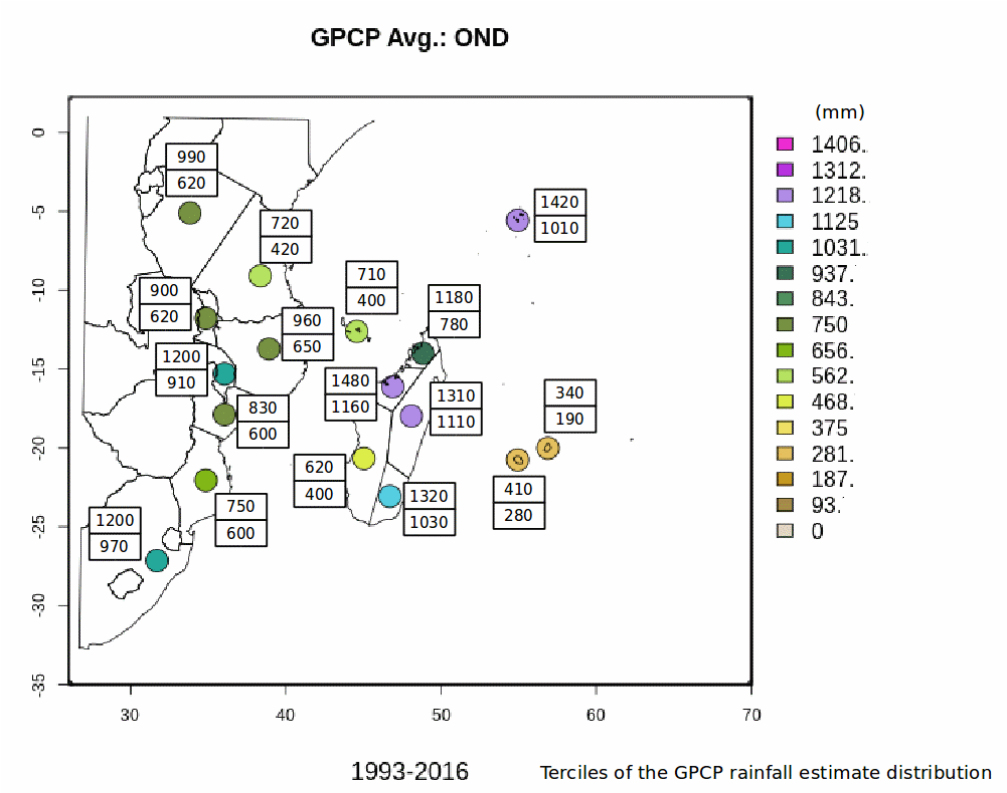
- This outlook covers the South-West Indian Ocean cyclonic basin (from 30°E to 90°E, between the equator and 40°S)

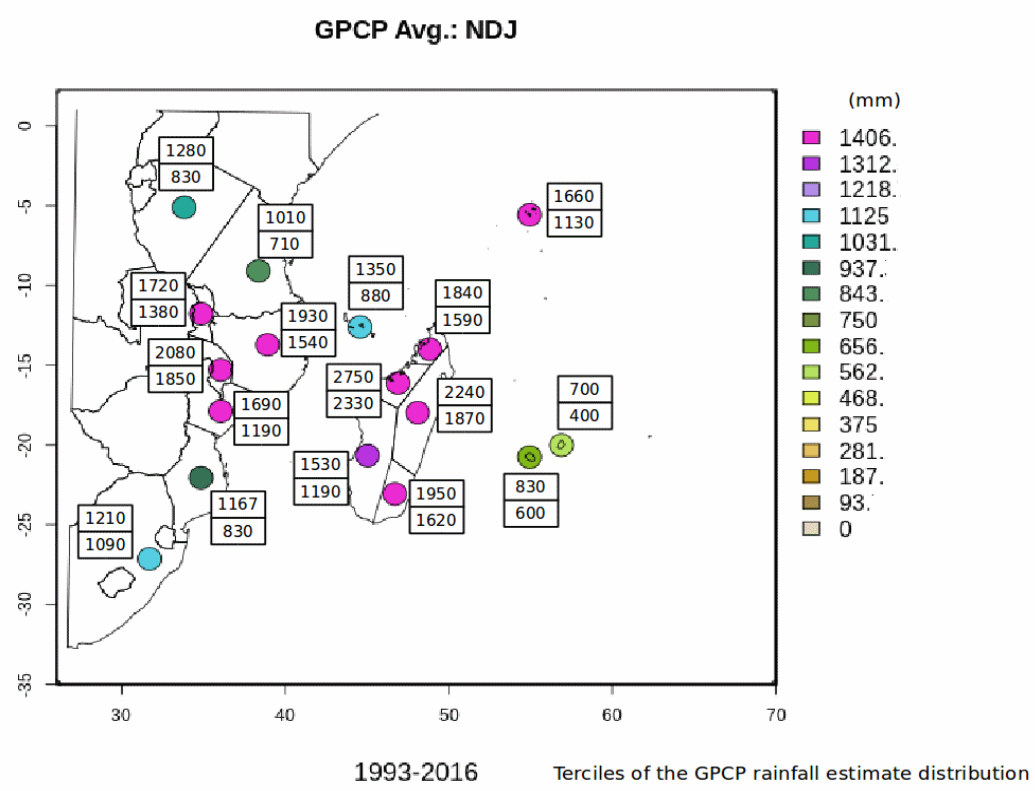
For the coming cyclonic season (November 2021 to April 2022), normal to bellow normal cyclone activity is expected over the SWIO basin. 7 to 11 tropical systems are likely to be named (climatological value is 10). For the first part of the season (up to January), Tropical Cyclone activity is expected mainly over the eastern part of the basin far from inhabited lands but parabolic tracks over the Mascarene region can not be excluded. For the second part of the season (February and beyond), the activity may develop further west and closer to inhabited lands over the southern Mozambique channel or North-East of Madagascar but uncertainty is quite high regarding the considered leadtime.

This outlook is produced at the regional scale. Thus, its interpretation should be for regional use. For local and/or country adaptation and applications needs, it is highly recommended to consult the National Meteorological and Hydrological Services for local details and updates.
An outlook update specific to the cyclone activity will be provided during the SWIOCOF-TC mini-forum which will take place as a web conference in late october 2021. Another update will be provided by RSMC Reunion in January 2022 at http://www.meteofrance.re/climat/previsions-saisonnieres

Annex 1: Normal values for Rainfall

The values displayed on the following maps are upper and lower terciles of the distribution of the rainfall data that is used at regional scale. This data consist of estimates (Global Precipitation Climatology Project) so the values have to be considered as relevant at regional scale and should not be compared to observed data at local scale.





Annex 2: Normal values for Temperature

The values displayed on the following maps are upper and lower terciles of the distribution of the temperature data that is used at regional scale. This data consist of estimates (ERA5 reanalysis) so the values have to be considered as relevant at regional scale and should not be compared to observed data at local scale.