MAURITIUS METEOROLOGICAL SERVICES

CLIMATE FEBRUARY 2019

Introduction

February 2019 was in mostly warm and dry. ENSO conditions and the Indian Ocean Dipole were neutral. However, the Inter Tropical Convergence Zone was active by the end of January and beginning of February, along which two tropical storms originated. The two systems were named FUNANI and GELENA and both reached intense tropical cyclone intensity. During the last week, the Madden Julian Oscillation induced a wet phase over the South West Indian Ocean. Consequently, a tropical low evolved in the central South West Indian Ocean by the end of the month.

1. Rainfall

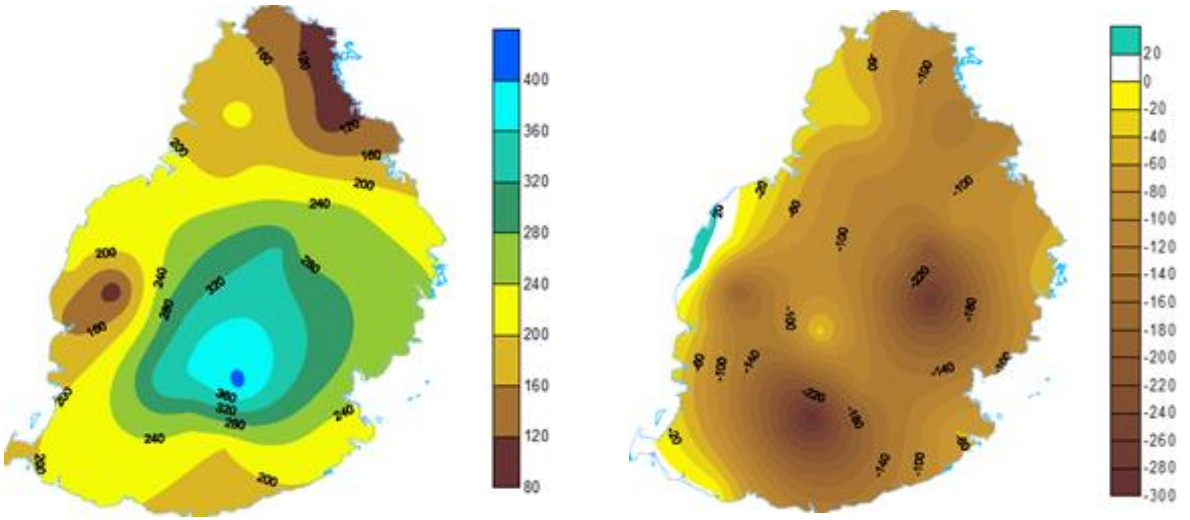
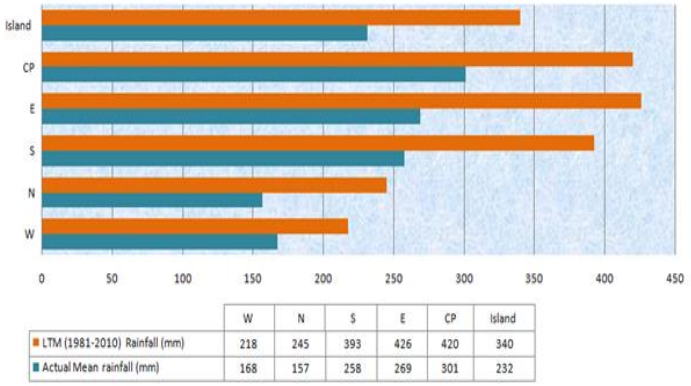


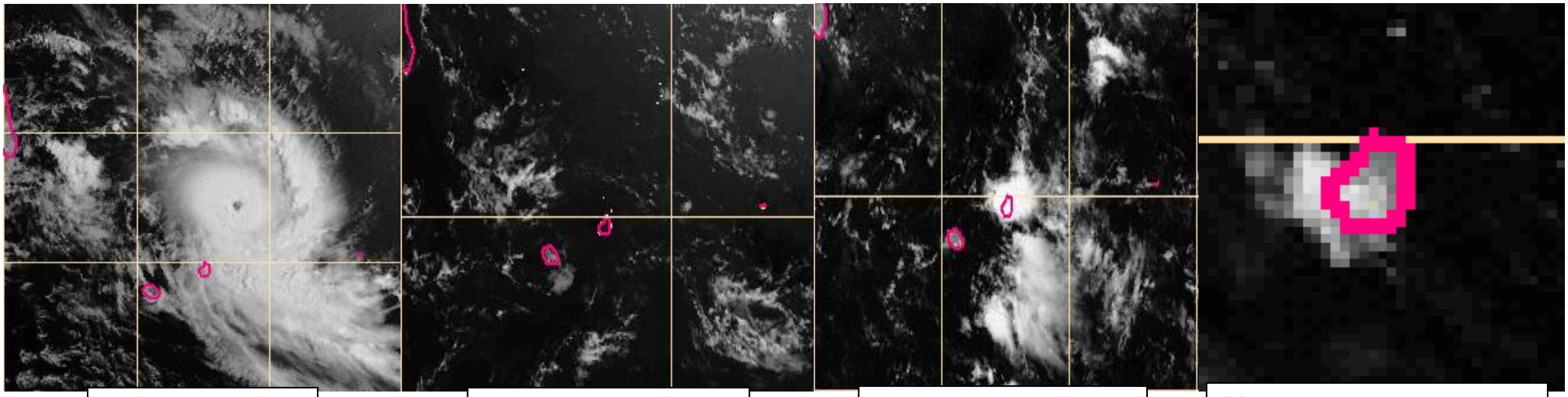
Fig. 1: (a) Observed rainfall (b) rainfall anomaly (mm)



	W	N	S	E	CP	Island
LTM (1981-2010) Rainfall (mm)	218	245	393	426	420	340
Actual Mean rainfall (mm)	168	157	258	269	301	232

Fig. 2: Regional rainfall distribution (based on 23 stations)

February 2019 received below normal rainfall amounting to 232 mm, representing 68% of the long term mean for the period. The first few days of the month were rather dry. Wetter conditions prevailed over the island from 6 to 18 and from 22 to 24 contributing to 64 % of the rainfall for the month. Clouds associated with Tropical Cyclone GELENA caused localised moderate showers on the 9. Instability zones influenced the local weather from 15 to 18 causing widespread showers over the island and a heavy rain warning was issued on 17 which lasted till 18. The remaining rain-days constituted mostly of localised afternoon convective precipitation. Rainfall was deficient in almost all regions over the island, except to the extreme West. Deficit rainfall of 295 mm was observed in the region of Bois Cheri.



(a) ITC GELENA on 09 | (b) Cloud free weather on 13 | (c) Unstable weather on 17 | (d) Sea breeze development on 22

Fig 3: Weather systems during February 2019

2. Surface Temperature

February 2019 is the ninth warmest February on record since 1971 (based on maximum temperature recorded at Plaisance)

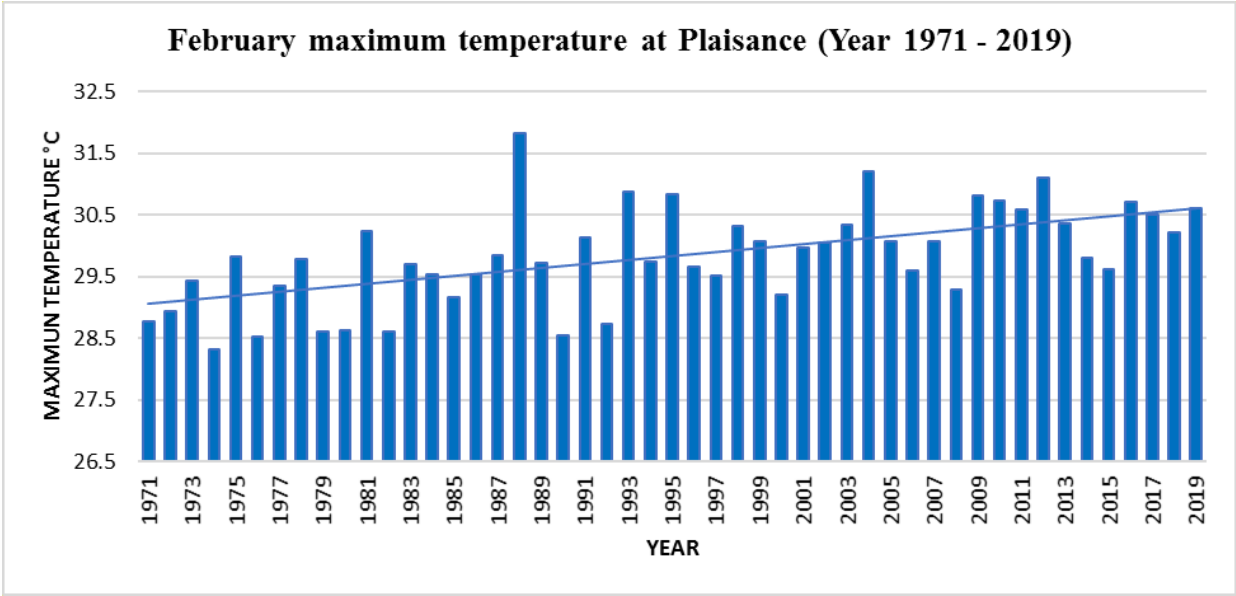


Fig. 4: Maximum temperature trend during February from 1971-2019

The warm summer continued during February 2019. Plenty of sunshine (Fig 10) resulted in more heating, leading to above normal daytime temperatures on most of the days.

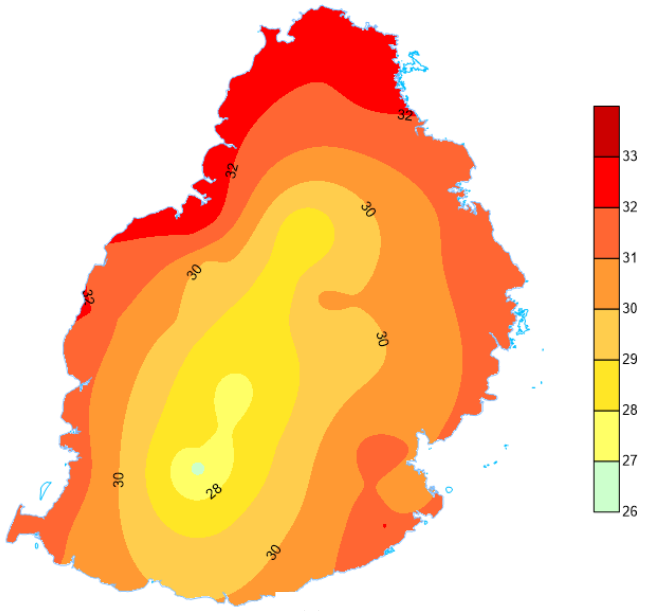
Across the island, several stations recorded maximum temperature anomalies of 1.5 °C and more. In certain localities such anomalies persisted for more than half of the month, for instance, Mon Desert Alma had 18 such days. The maximum temperature anomaly reached 3 to 4 °C locally. The highest anomaly of 5.0 °C was recorded at Bois Cheri on the 05.

Higher temperature anomalies were observed over the south-eastern part of the island compared to the northern and western part which had relatively lower maximum temperature anomalies (Fig 6(a)). This could be accounted for by the cloud cover to the western part due to sea breeze effect on various days.

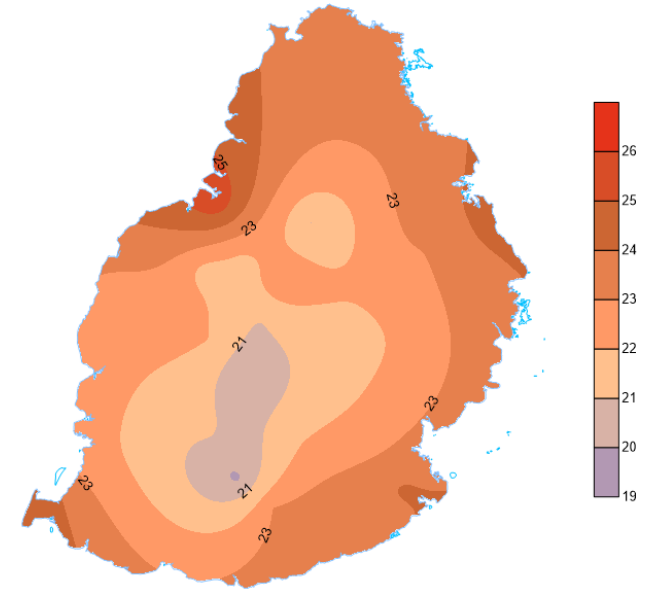
The highest temperature recorded was 35.1 °C at Port Louis on the 08. The first week was relatively warmer and on 05 three stations had new records of extreme maximum temperature for the month. These include, Domaine les Pailles with 34.9°C (previous 34.7°C), Mon Desert Alma with 32.1°C (previous 32°C), and Bois Cheri with 31.6°C (previous 30.7°C). During the second and third week, new records of extreme maximum temperature were observed at Quatre Bornes reaching 32.3°C (previous 32.2°C) and Reduit 33°C (previous 31.5°C) respectively.

During the second week, under the influence of the Mascarenes high, the maximum temperature was mainly close to below normal for most stations. On a few days, it plummeted by than 4 °C below the average at some stations along the western coasts.

The night time temperature was above the average by more than 1 °C and on some day by more than 2 °C especially on the Central Plateau. Elsewhere, it was close to slightly below normal. On the 13 to 15, under the influence of the Mascarenes high, the minimum temperature dropped by more than 2 °C compared to the normal and new records in low minimum were observed at some stations along the island. For example, on the 15, the following stations had new records of minimum temperature: Mon Loisir Rouillard 20.1°C, Queen Victoria 20.2°C, Albion 20°C and Beau Songes 19.6°C



(a)



(b)

Fig. 5: (a) Maximum (b) Minimum temperature distribution

Some stations had up to 18 warm days;
(maximum temperature anomaly (anomax) >2°C).

Stations	Highest anomax (°C)	Number of warm days.
Mon Desert Alma	4.1	18
Riche en Eau	4.3	17
Mon Desert MT	3.2	16
Bois Cheri	5.0	14
Grand Bassin	4.4	13
Providence	4.5	13
Union Park MSIRI	3.8	12
Digue Seche	3.2	11
Fuel	3.1	11
N. Decouverte	4.6	11
Britannia	3.2	11
ML Rouillard	3.1	10
Quatre-Bornes	3.5	10
Belle Rive	4.2	10

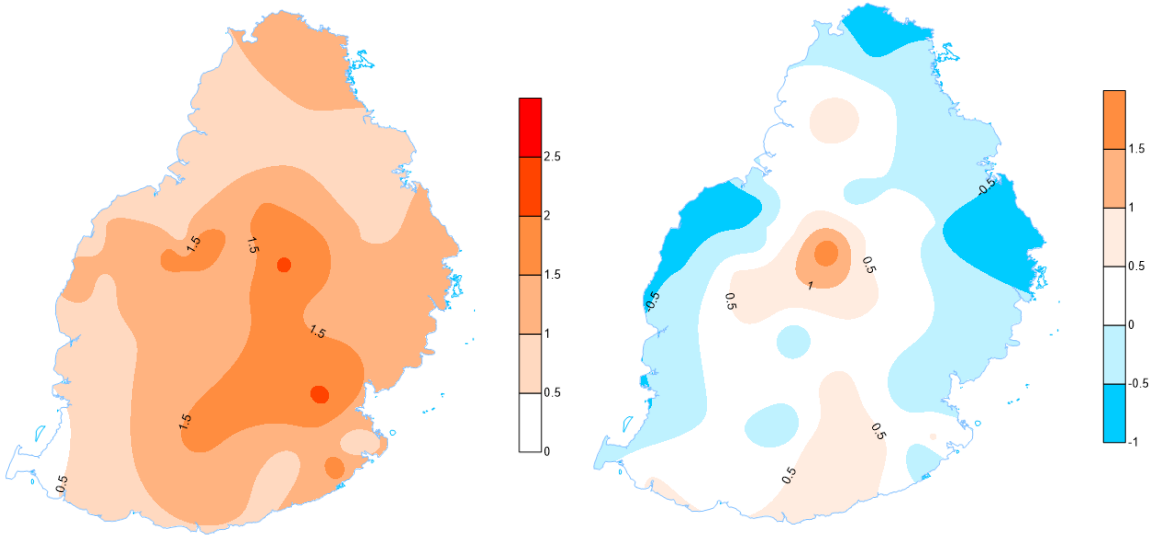
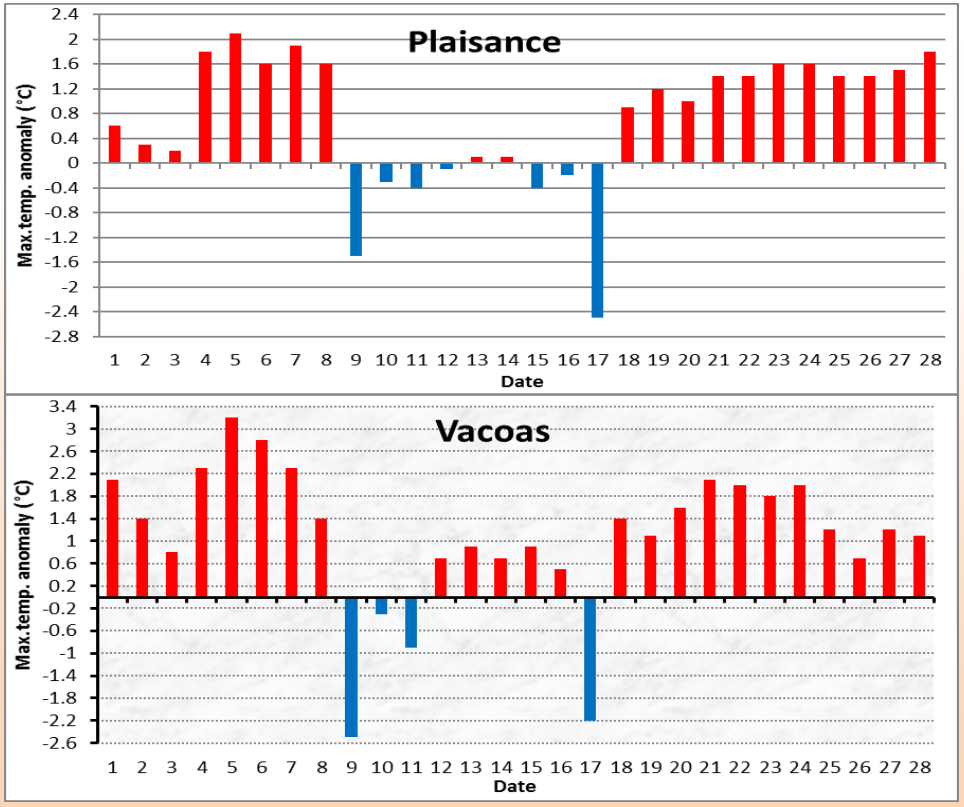
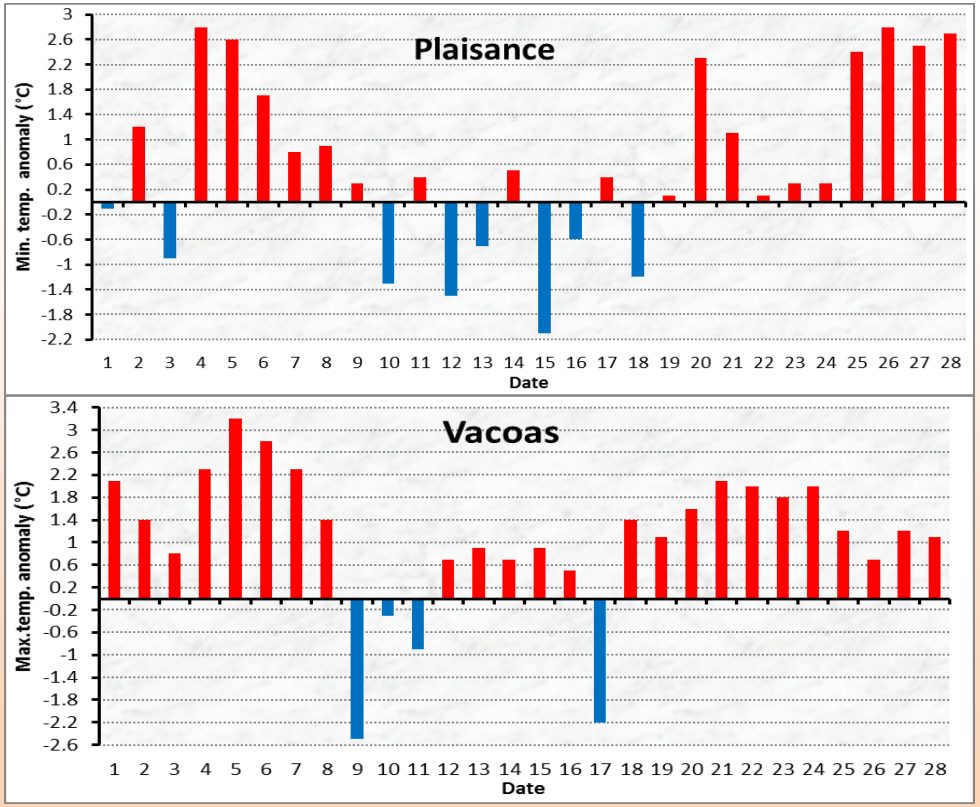


Fig. 6: (a) Maximum (b) Minimum temperature anomaly





3. Sunshine and Humidity

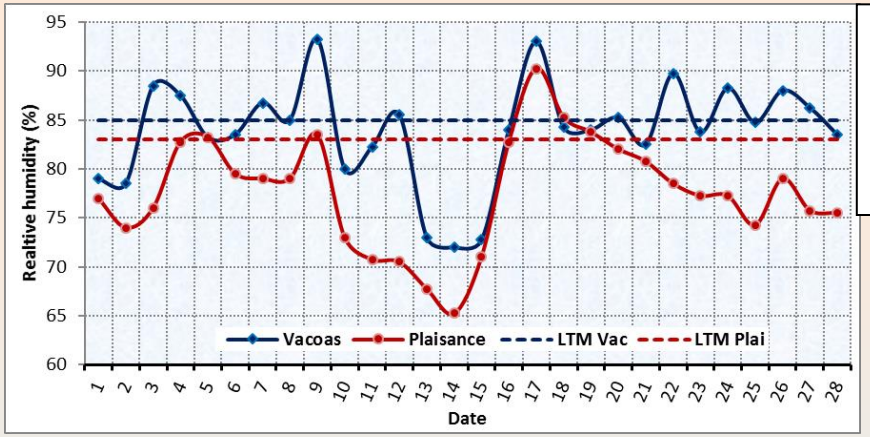


Fig. 9: Daily Relative Humidity: Vacoas (blue) and Plaisance (red)

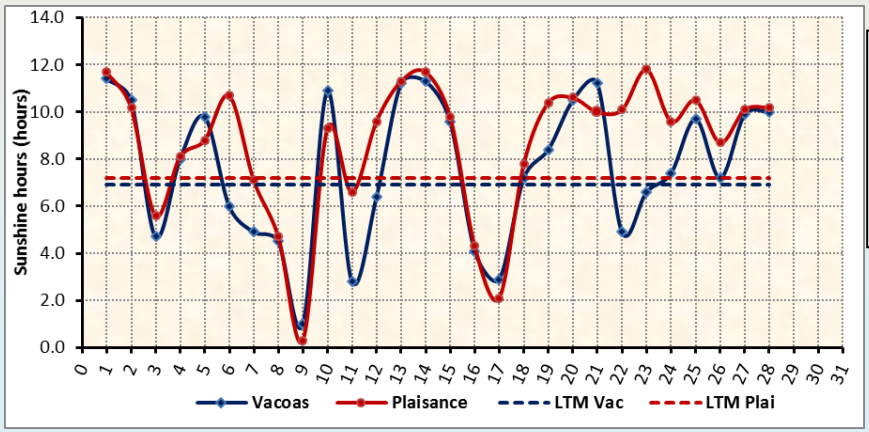


Fig. 10: Daily sunshine hours: Vacoas (blue) and Plaisance (red)

The relative humidity (RH) for February was on average close to normal for both Vacoas and Plaisance. The highest humidity was recorded under the influence of the Cyclone GELENA on the 09 and during the heavy rain on the 17 (Fig 9). The lowest daily mean RH at both Vacoas and Plaisance was on 14. In fact, by the end of the second week, there was a drop in the RH under the influence of a relatively dry airstream emanating from the sub-tropical high to the south.

Monthly mean sunshine hours were above the long term mean by 1.0 hours at Vacoas and 1.4 hours at Plaisance. For the 09, the sunshine hours were almost nil under the influenced of external cloud associated with GELENA. By the end of the month, the sunshine hours were mainly above normal especially for Plaisance.

4. Winds

Most of the time during the month of February 2019, a light wind prevailed over Mauritius, Fig 11. The wind direction was mainly from the eastern to north eastern sector. The passage of GELENA in the vicinity of Mauritius temporarily led to the veering of the wind towards the South East.

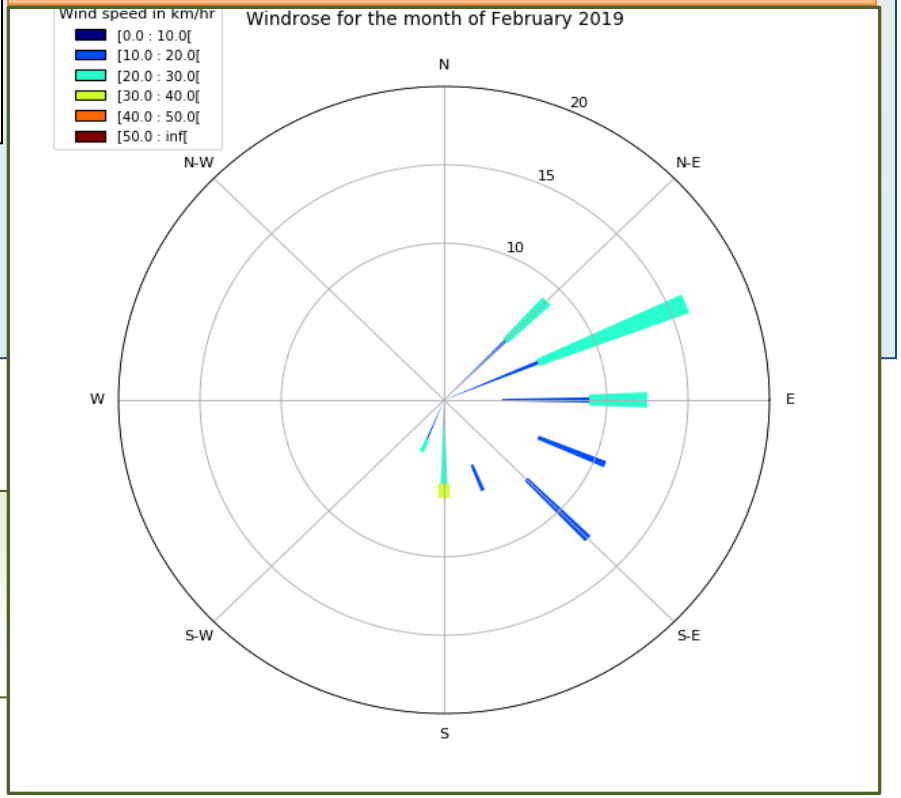


Fig. 11: Wind frequency at Plaisance

5 Intense Tropical Cyclone GELENA

In the beginning of February, two areas of low pressure could be located on the satellite imagery along the Inter Tropical Convergence Zone, one near Agalega and another one to the southeast of Diego Garcia. The latter was the first to deepen.

The system near Agalega intensified into a storm and was named GELENA in the morning of 06. It had an explosive intensification within 16 hours, whereby it reached Tropical Cyclone intensity during the night of 06. It eventually peaked to Intense Tropical Cyclone intensity and caused significant weather

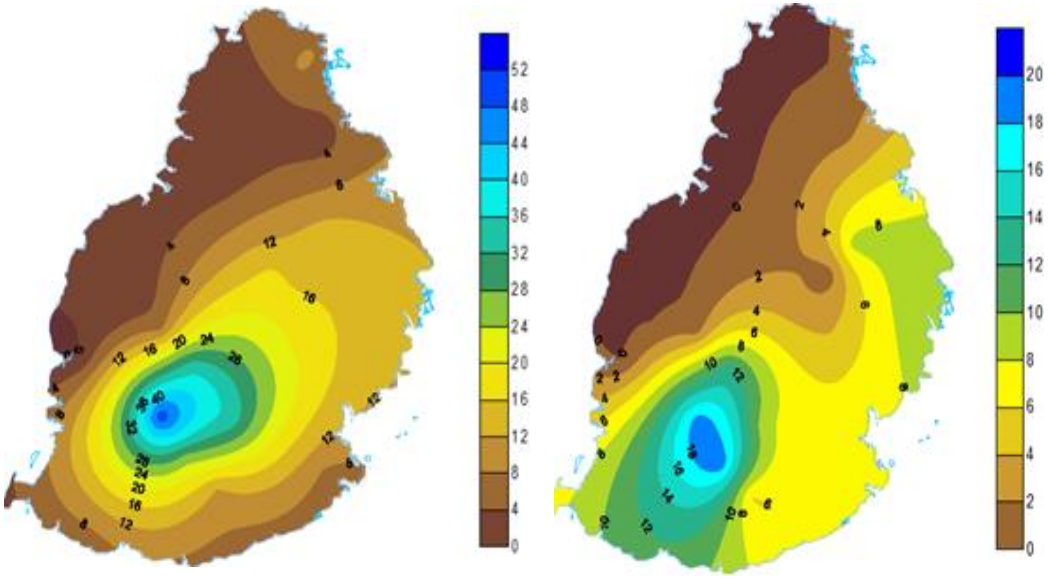


Figure 12(a) and (b): Rainfall distribution for 09 and 10 February 2019 respectively

The presence of GELENA in the vicinity of Mauritius induced unstable atmospheric conditions, notably a light, warm and moist airstream, which favoured convective clouds developments particularly over the eastern part of the island. Very active Cumulonimbus clouds led to a mini tornado at Sebastopol on the 08 whereby few houses were damaged.

Outer Cloud bands associated with GELENA started to influence weather over the island as from Friday 08 night. Widespread showers, locally moderate to heavy were observed all over the island on as shown in table 2. On the 09 afternoon, the associated clouds started to move away and rainfall decreased over Mauritius.

GELENA contributed to around 18 % of the long term mean rainfall for the month.

The highest gust of 76 km/h was recorded at Champ de Mars and Le Morne.

The lowest pressure recorded at the Aeronautical Meteorological Station at Plaisance was 1007.0 hPa.

FORECAST FOR MARCH - APRIL - MAY (MAM)

The central and eastern equatorial Pacific will remain warmer than normal for MAM with characteristics of a weak El Nino event and is expected to persist for the whole forecast period. In the Indian Ocean, the moderate SIOD index is weakening. The previous FMA statistical run and empirical method forecasted normal to above normal rainfall during February and March but March ended with below normal rainfall. Taking into consideration the intra seasonal rainfall variability and the limitation of statistical model which does not consider atmospheric-ocean coupling as in dynamical models, an optimum forecast for MAM has been worked out.

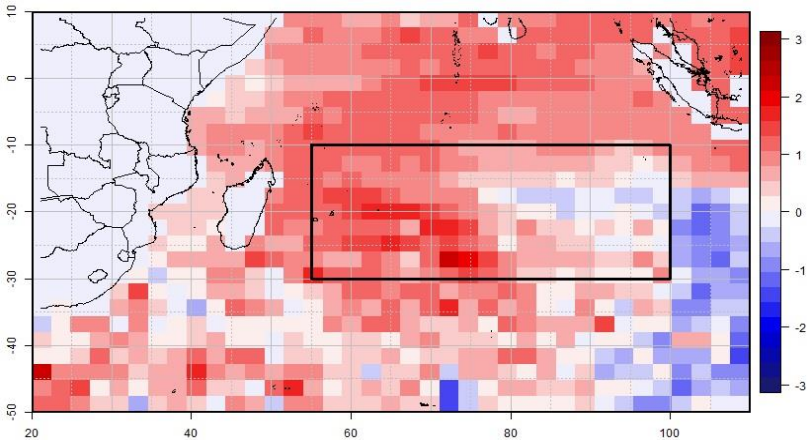


Figure 13: MAM sea surface temperature anomaly chart

Consensus forecast for Mauritius

- Due to persistence, statistical model is expecting above normal rainfall for MAM (Fig 14 (a)). However, in view of the expected evolution of large and regional scale atmospheric-oceanic circulations, the forecast is being amended accordingly to reflect the most likely scenario as follows: March below normal (~139mm), April and May slightly below normal (~168mm) and (~118mm) respectively.
- Day time maximum temperature will continue to remain above normal at most places due to above normal sea surface temperature and high humidity.

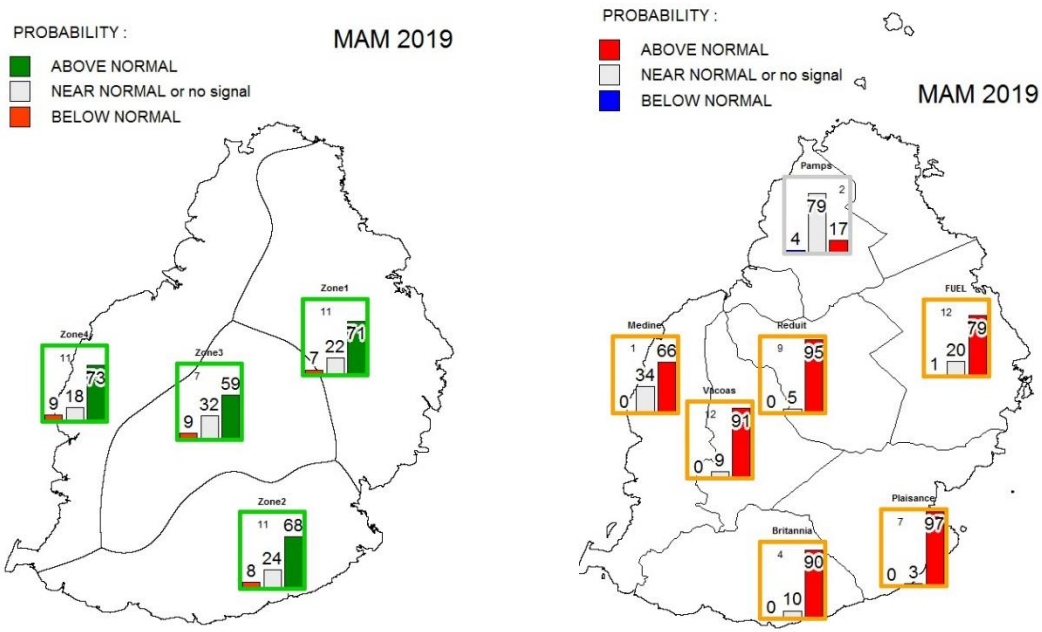


Fig. 14: Statistical Model Forecast of (a) rainfall and (b) temperature

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