



MAURITIUS METEOROLOGICAL SERVICES



CLIMATE DECEMBER 2018

Introduction

December 2018 was warm and wet. The mean monthly rainfall recorded islandwide was 261 mm which is 151 % of the normal. ENSO conditions and the Indian Ocean Dipole were neutral. The Madden Julian Oscillation was active over the equatorial Indian Ocean during the first fortnight whereby it enhanced the convective activity. During the second week, the convective activity flared up in the equatorial region of both hemispheres resulting in the formation of three named tropical systems, PETHAI in the northern Indian Ocean and KENANGA and CILIDA in the Southwest Indian Ocean. The two latter storms reached the Intense Tropical Cyclone intensity.

1. Rainfall

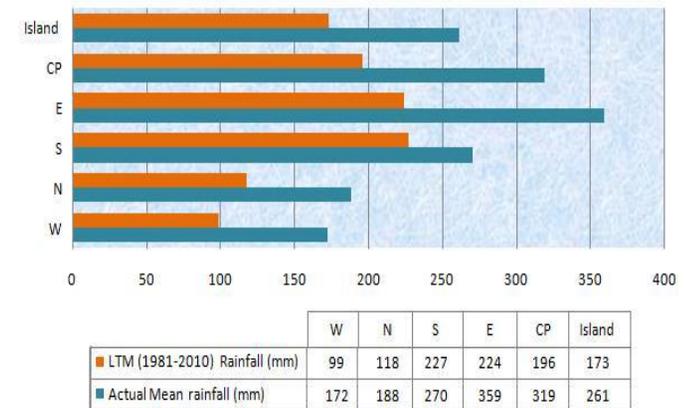
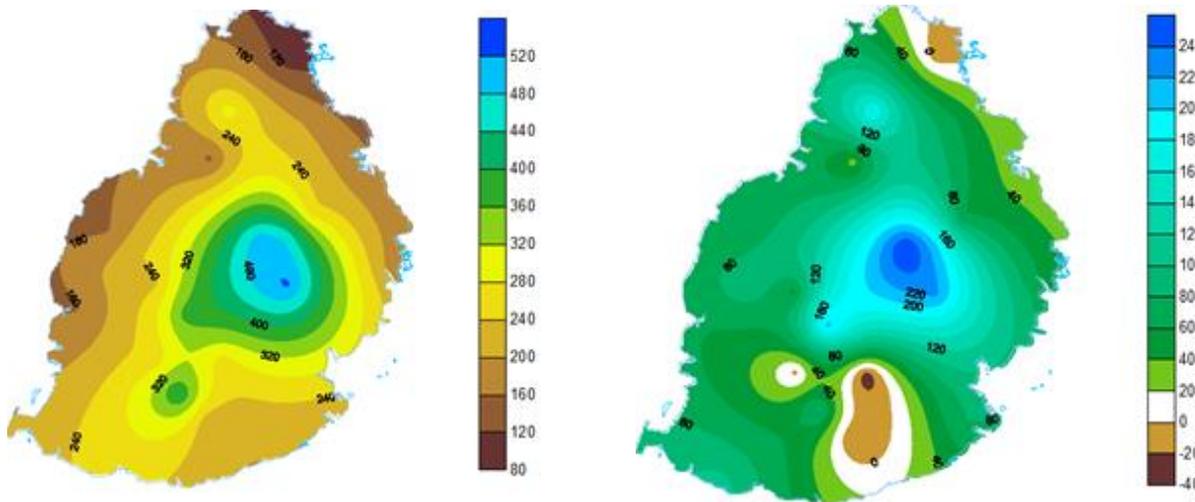


Fig. 2: Regional rainfall distribution (based on 23 stations)

Fig. 1: (a) Observed rainfall

(b) rainfall anomaly (mm)

Rainfall was mostly of short duration, heavy and localised associated mainly with convective clouds building up during the day. Further on the 5 and 10, very unstable conditions led to the issuance of heavy rain warnings and further contributed to violent thunderstorm. Hail was also observed on the 05 at Sebastopol and Bel Air. Clouds associated with ITC CILIDA added to the rainfall during the third week. Almost all regions over the island received above normal rainfall, except for some places in the south where rainfall was deficient. An excess of 260 mm was recorded in the region of Quartier Militaire. The highest monthly rainfall of 537.2 mm was recorded at Sans Souci. The highest rainfall intensity was observed at Pamlemousses on 10 where 76 mm was recorded during one hour.

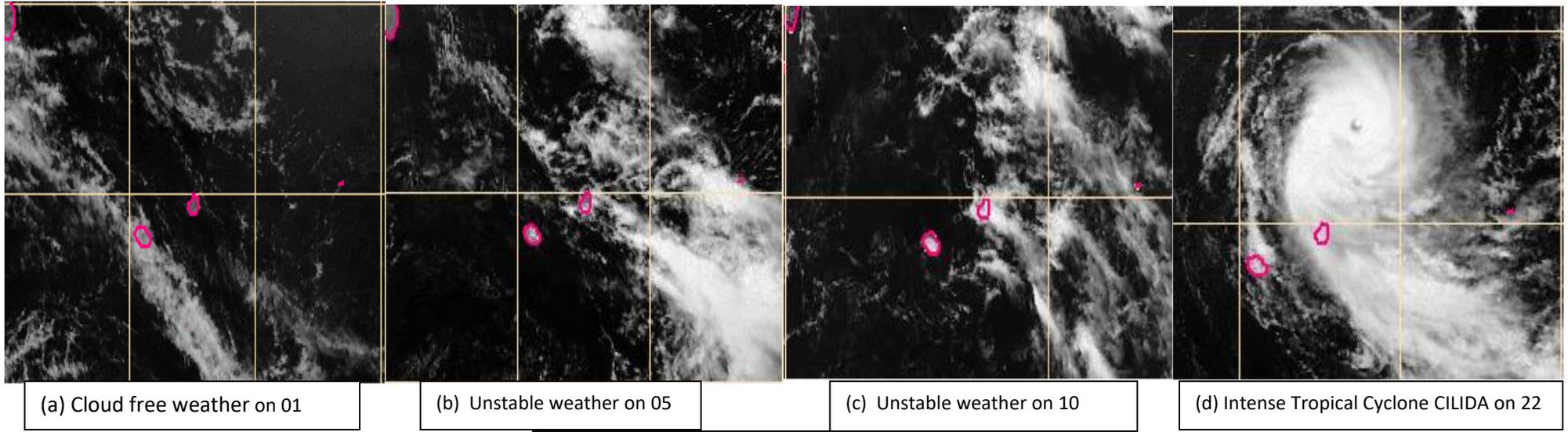


Fig 3: Weather systems during December 2018

2. Surface Temperature

December 2018 is the fifteenth warmest December on record since 1969 (based on maximum temperature recorded at Plaisance)

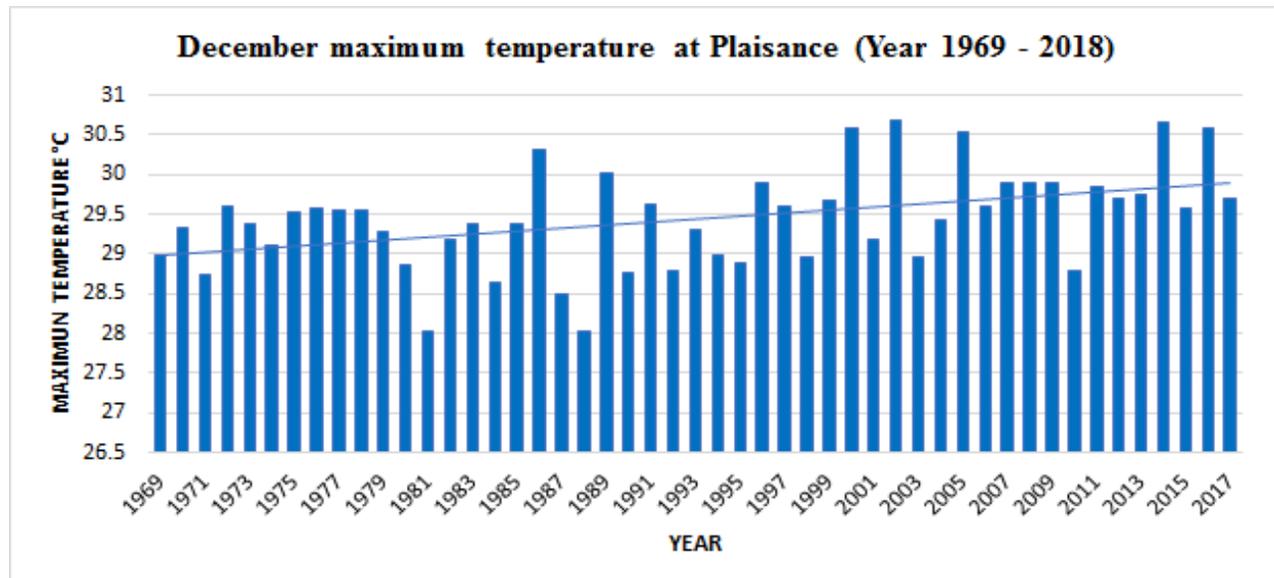


Fig. 4: Maximum temperature trend for December from 1969-2018

The warm trend for summer 2018 continued during December. The first few days of the month had maximum temperature anomaly of more than 2°C at several stations, particularly along the east and southeast and part of the central plateau. Overall, the coastal regions recorded temperatures in the range 30-32 °C except for the southern part where the stations recorded temperatures around 28-29 °C.

On several days, when an easterly to east south easterly wind regime influenced the island (Fig:11) and during light wind conditions, there were clouds formations to the western part of the island due to sea breeze effects which blocked insolation. Hence, a higher maximum temperature anomaly was observed to the eastern part of the island.

On the 23, two stations had new records of extreme maximum temperature for the month of December, Mon Loisir Sugar Estate with 33.4°C (previous 32.9°C) and Queen Victoria with 33.3°C (previous 32.5°C). Thereafter, on the 26 Mon Desert Mon Tresor had new record of extreme maximum temperature 33.0°C (previous 32.5°C). The highest number of warm days was observed at Providence with 20 warm days.

Inspite of the warm days, it was observed that on several occasions, the night time temperature plummeted over most regions by than 1°C or even more. This could be explained by the light wind prevailing and clear sky contributed to the drop in the minimum temperature.

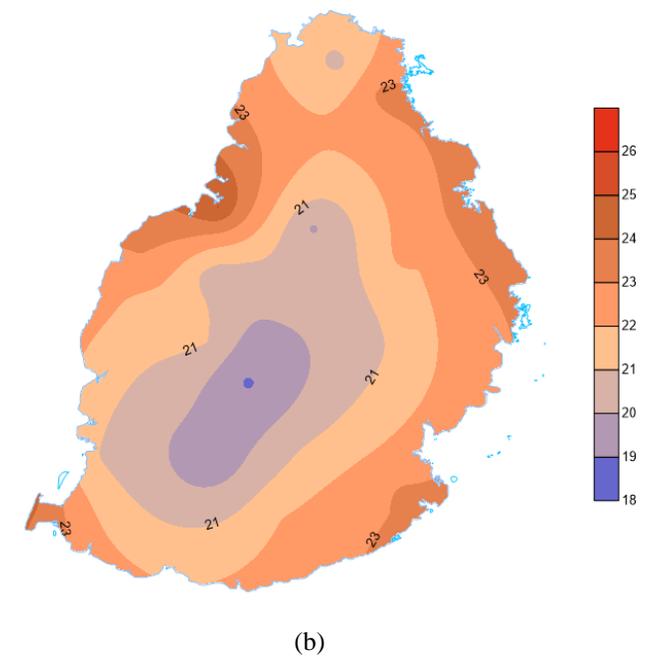
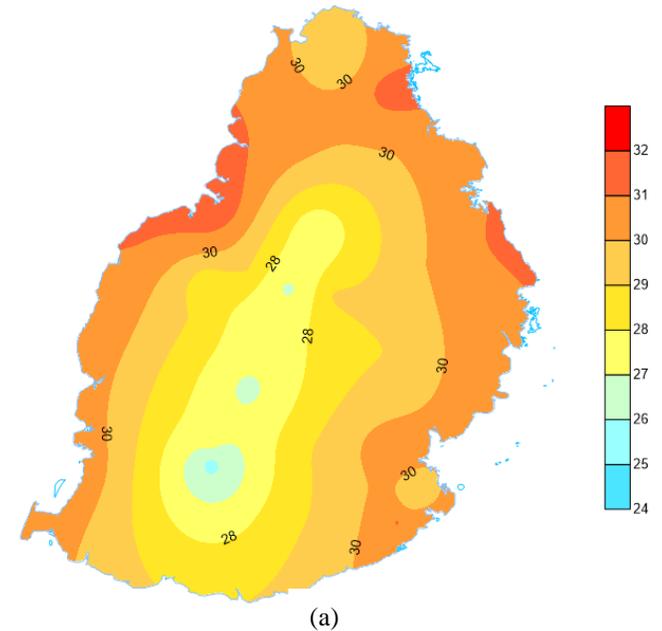


Fig. 5: (a) Maximum (b) Minimum temperature distribution

Some stations had up to 20 warm days
(maximum temperature anomaly (anomax) >2°C).

Stations	Highest anomax (°C)	Number of warm days.
Providence	4.1	20
Union Park MSIRI	3.4	17
N. Decouverte	4.9	13
Sans Souci	3	12
Bois Cheri	4	12
Mon Desert Alma	2.7	11
Belle Mare	3.5	10
Grand Bassin	3.7	10
Mon Bois	3.3	10
Mon Desert MT	3.3	10
Fuel	4.7	9
Queen Victoria	4.6	9
Digue Seche	3.3	6
Belle Rive(MSIRI)	3	6

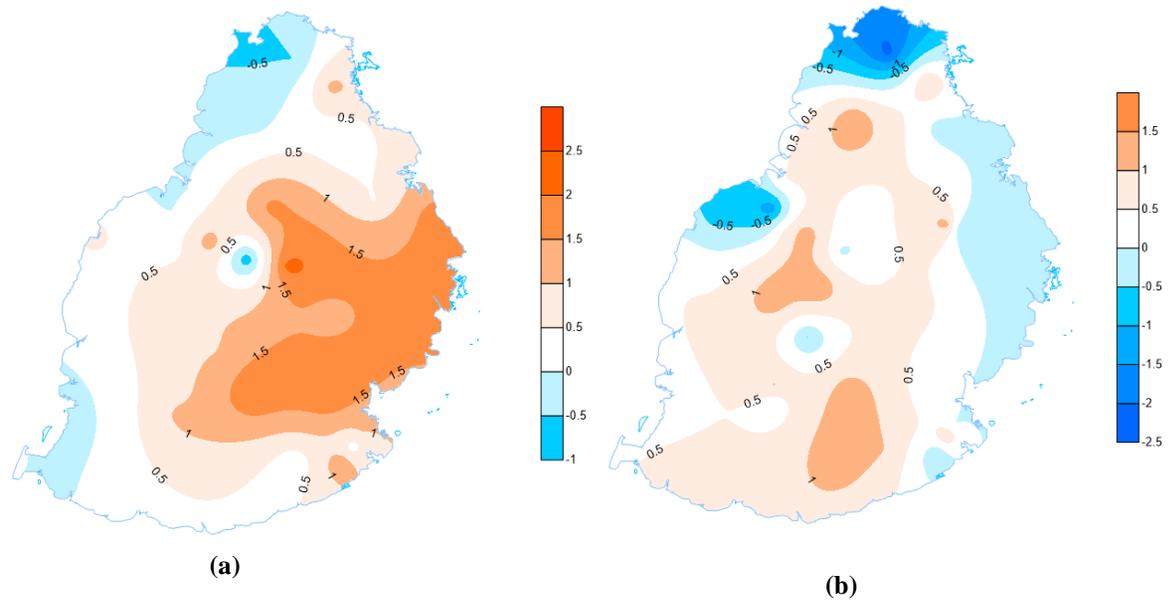
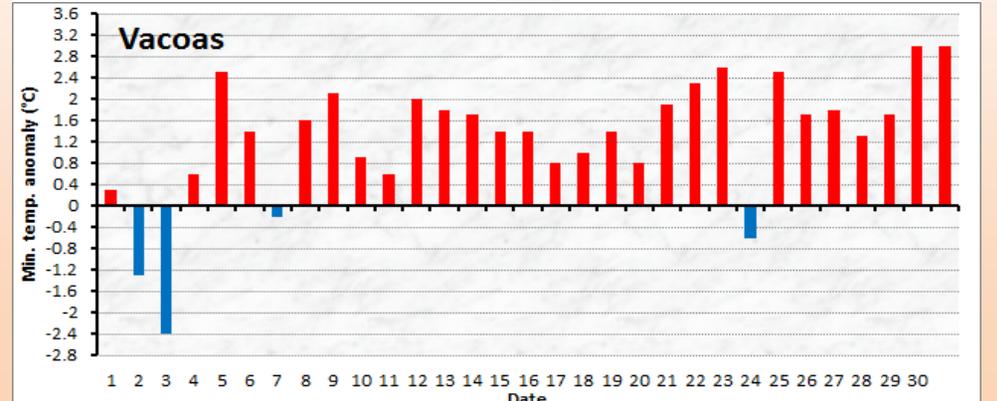
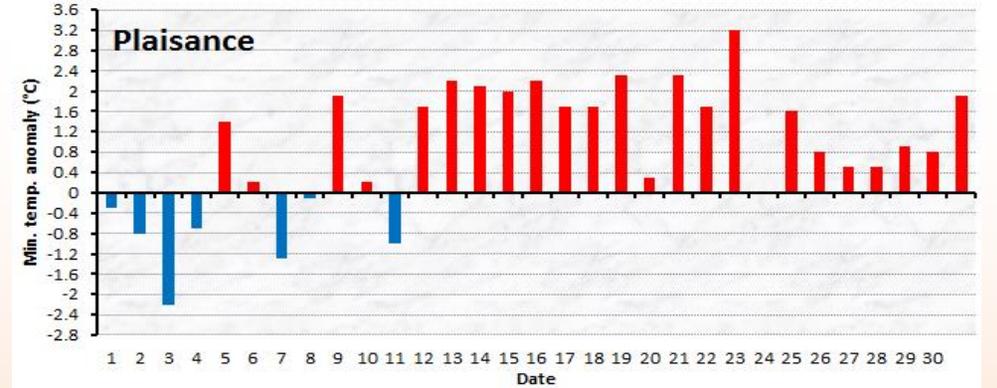
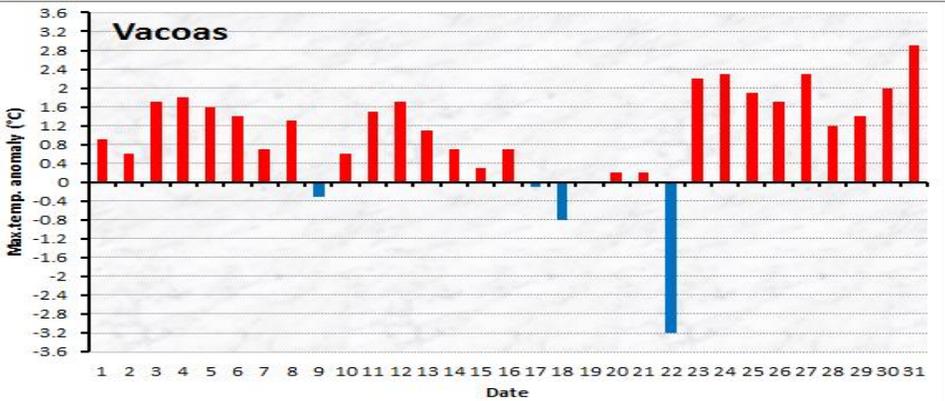
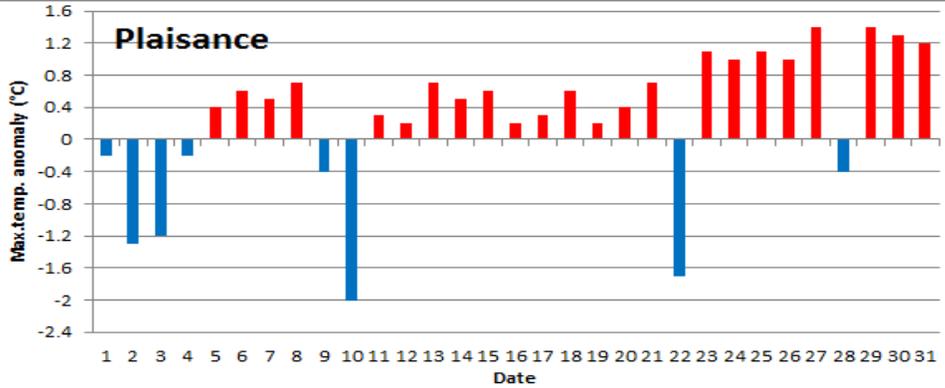


Fig. 6: (a) Maximum

(b) Minimum temperature anomaly



3. Sunshine and Humidity

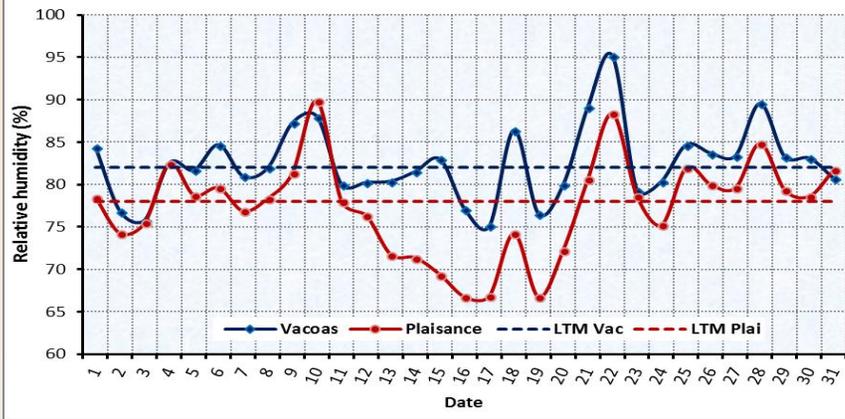


Fig. 9: Daily Relative Humidity: Vacoas (blue) and Plaisance (red)

The relative humidity (RH) for December peaked for Vacoas on the 22 and for Plaisance on the 10. The RH for Vacoas was on average close to normal except on three occasions (Fig 9). The increase in RH was due to heavy rain and CILIDA.

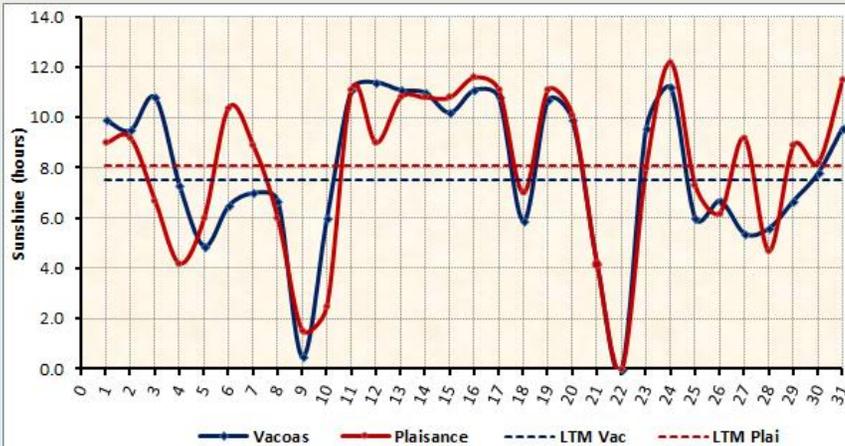


Fig. 10: Daily sunshine hours: Vacoas (blue) and Plaisance (red)

Daily mean sunshine hours were slightly below by 0.1 hours at Plaisance (8.0 hours) and at Vacoas, it was above by 0.3 hours (7.5 hours). For the period 9 to 10 and 21 to 22, the drop in sunshine hours was due to cloud cover associated with instability zone and the passage of CILIDA near Mauritius respectively.

4. Winds

A light wind regime was observed for most of the month of December 2018. A predominantly easterly airstream influenced the region. The wind strengthened over the region when CILIDA was evolving close to our region by the third week of the month. After the passage of the storm to the east of Mauritius, the wind blew from the northern sector for a short period of time.

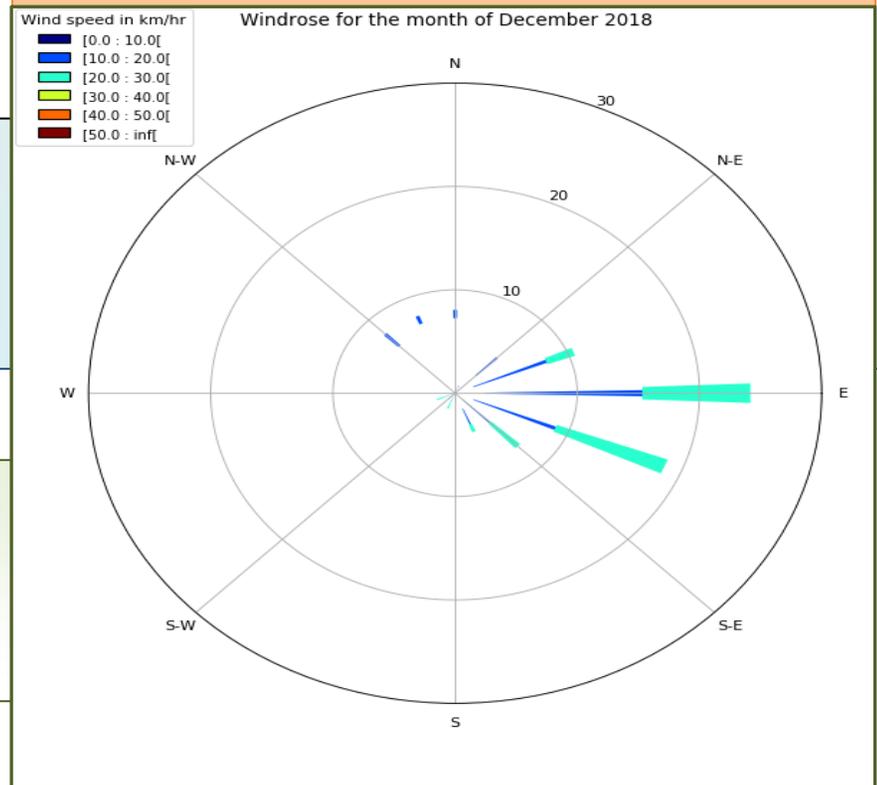


Fig. 11: Wind frequency at Plaisance

(a) Heavy rainfall event

In the morning of 10 December 2018, cumulonimbus clouds were observed in the Plaisance region and about 144 mm of rain was recorded in between 07 00 and 10 00 hr. Before midday, the thundery showers were observed to the east and just after midday, new convective clouds formed in the northern part of the island and about 103 mm was recorded at Pamplemousses. The rainfall recorded for the 10 December 2018 was a mean of 63 mm for the island which is about 36% of the monthly long-term mean. In the northern part of the island, the rainfall started mainly around midday with peaking intensity around 13 00 hr and decreasing gradually afterwards as can be seen in the intensity plot of Fig 13. The localised heavy rainfall in the northern region resulted in flooding and affected part of the population.

(b) Intense tropical cyclone CILIDA

On the 17 December, a weak low-pressure circulation could be observed. As the environmental conditions became more conducive for cyclogenesis, convective activity strengthened over the low-pressure area and it started to deepen. It was named CILIDA at 10h00 LT on 19. CILIDA underwent rapid intensification as it changed from a Severe tropical storm in the morning to an intense tropical cyclone at night on the 20. It initially moved slowly towards the south and after crossing the latitude of St Brandon, it started to recurve towards the Southeast. On the 22, at 22h00 LT, CILIDA passed at its closest position of 220 km to the north east of Mauritius and it maintained this distance till early morning of the 23. Afterwards, it started to move away.

Since CILIDA represented a potential threat for Mauritius, a cyclone Warning Class I was issued on 20 December 2018 at 16h10. The warning was upgraded to Class II on 21 at 16h10 LT and waived on 23 December at 04h10 LT. Cloud bands associated with CILIDA started to influence weather over the island as from Friday. Abundant showers were recorded over certain regions of the island on the night of 21. CILIDA contributed to 39 % of the long term mean for December.

Parameter	Value
Highest rainfall recorded	145.2 mm at Mon Bois (cumulated from 21/0400 to 22/0400)
Highest gust recorded	79 km/h at Champ de Mars
Lowest pressure	1003 hPa at Plaisance

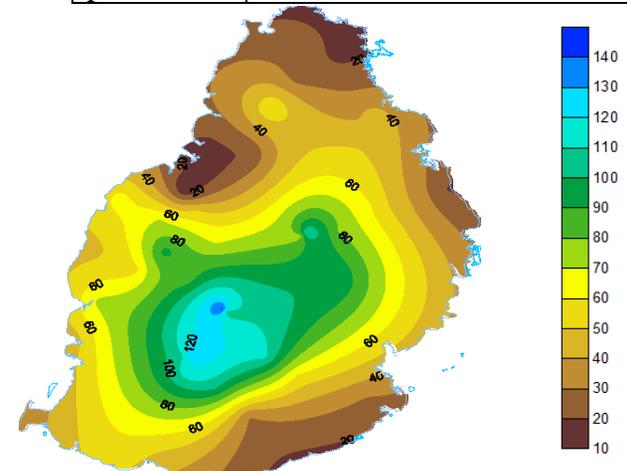
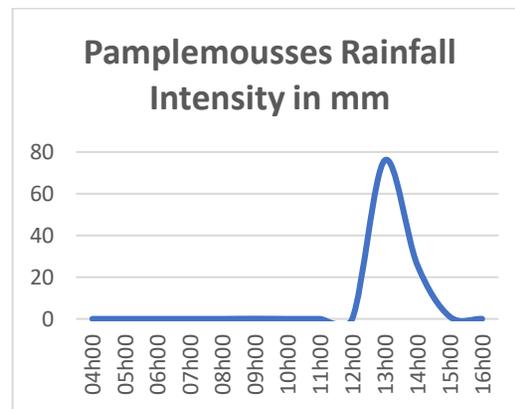
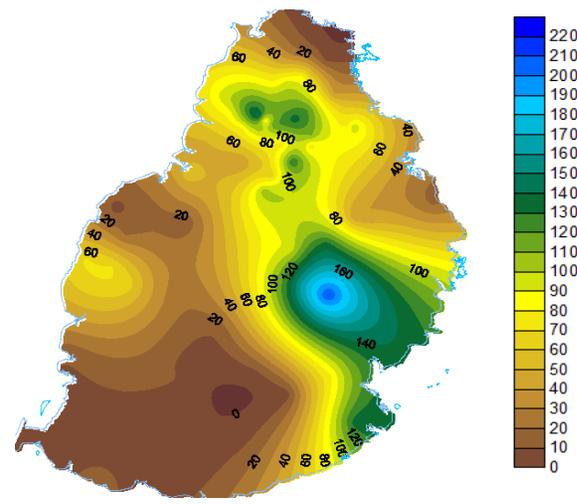


Fig 12: Rainfall amount in mm for 10 December from 10/047hr00 to 11/04hr00

Fig. 13: Rainfall intensity at Pamplemousses for 10 December

Fig 14: Cumulative rainfall in mm for 21-22 December from CILIDA

FORECAST FOR JANUARY – FEBRUARY - MARCH (JFM)

The central and eastern equatorial Pacific will be warmer than normal for JFM. However, satellite OLR images and wind anomalies at 850 hPa is not showing any typical El Nino pattern establishing yet. In the Indian Ocean, IOD will remain in a neutral positive phase whereas SIOD is expected to remain at peak intensity and eventually weakening as from second half of February. The Mascarene region will lie in a warm pool of SST (Fig 15) for the period JFM due to the ongoing positive SIOD. Consequently, light wind and sultry conditions may prevail during this period.

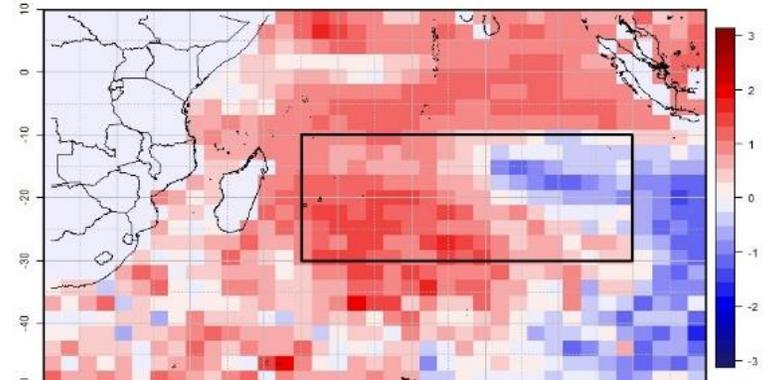


Figure 15: JFM sea surface temperature anomaly chart

Forecasts for Mauritius

- Rainfall amount is expected to be normal for JFM.
 - January rainfall will be below normal (~134mm), February and March are expected to be near normal (~300mm and ~250mm respectively).
- Day time maximum temperature will continue to remain above normal at most places.

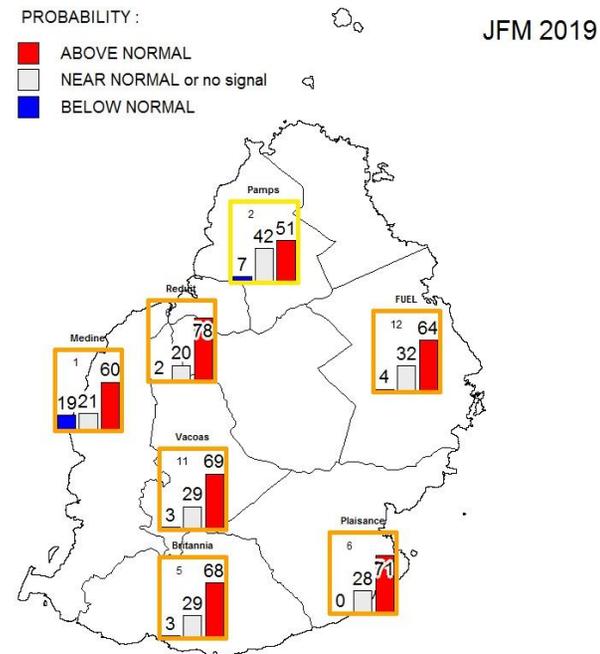


Fig. 16: Statistical Model forecast of Temperature

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