MAURITIUS METEOROLOGICAL SERVICES

CLIMATE BULLETIN APRIL 2019

Introduction

April 2019 was warm and wet. It is only during the last week, after the passage of a frontal system that wintry conditions were felt over Mautitius. Slightly warm ENSO conditions prevailed with Sea Surface Temperature anomalies above 0.8 ^{0}C in the Pacific region. The Indian Ocean Dipole was in the neutral phase. Initially, the Madden Julian Oscillation (MJO) was neutral but the wet phase emerged in the South West Indian Ocean during the second fortnight. A tropical storm evolving to the west of Agalega developed and was named KENNETH. During the third week, a second storm was named LORNA. KENNETH peaked to an intense tropical cyclone while LORNA intensified to a tropical cyclone. Typical of the pre-monsoon season in the Northern hemisphere, a tropical storm named FANI turned out to be the strongest tropical cyclone to hit India in 20 years.

1. Rainfall

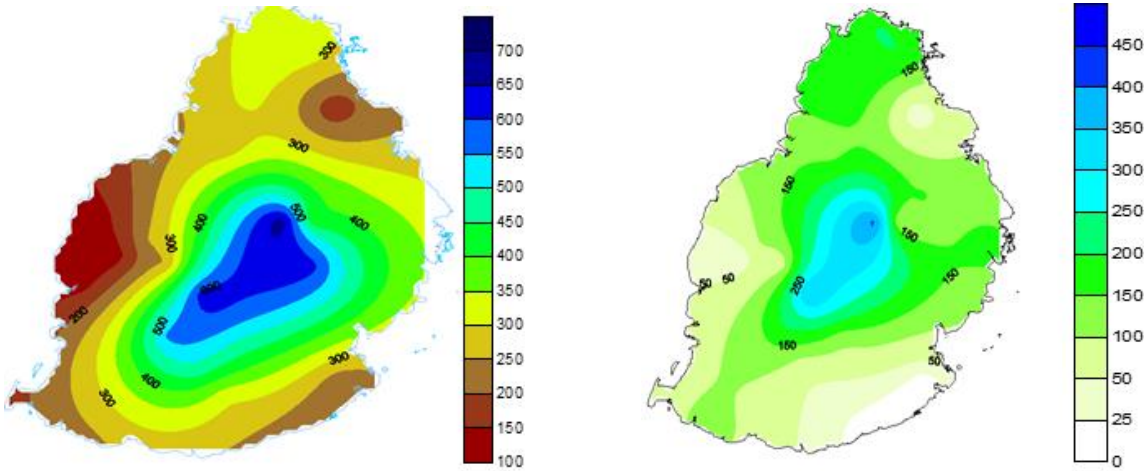
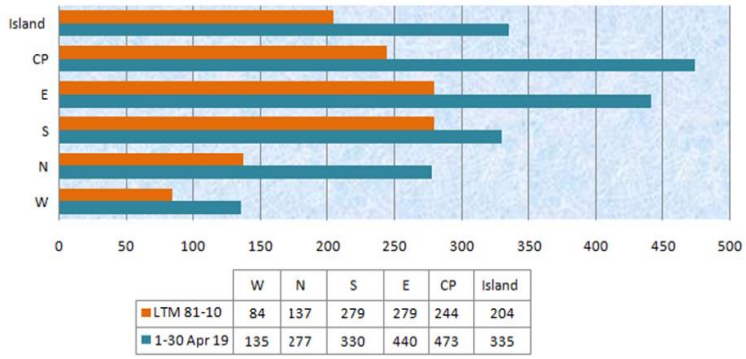


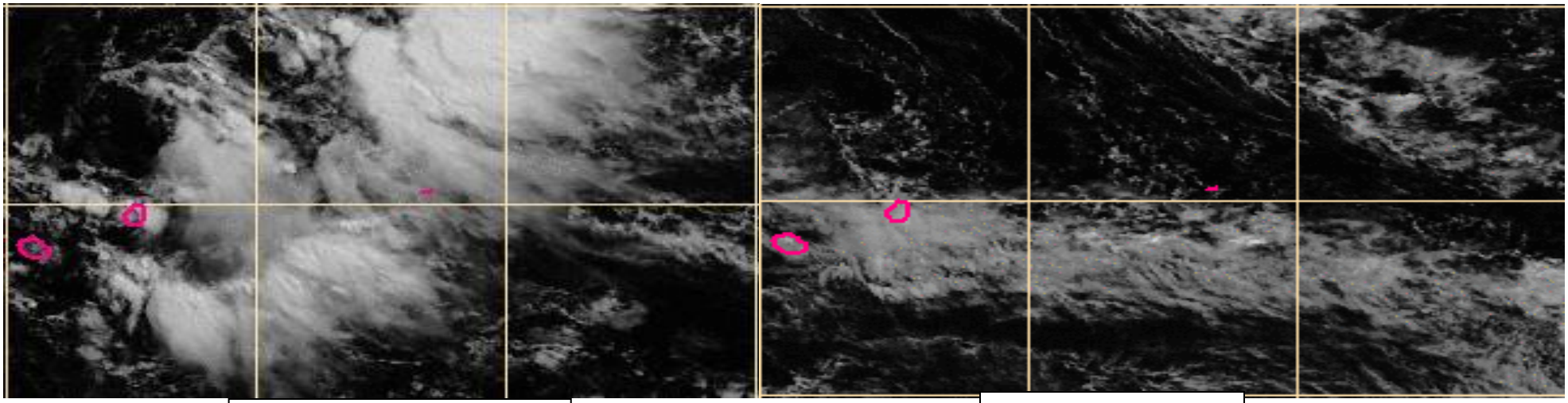
Fig. 1: (a) Observed rainfall (mm) (b) rainfall anomaly (mm)



	W	N	S	E	CP	Island
LTM 81-10	84	137	279	279	244	204
1-30 Apr 19	135	277	330	440	473	335

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

April 2019 received above normal rainfall amounting to 335 mm, representing 164 % of the long-term mean. Rainfall during the first fortnight was associated both with instability zones giving widespread showers and formation of active clouds in the afternoon causing moderate to locally heavy showers accompanied with thunderstorms mainly to the West, North-west and over the Central Plateau. Remnants of a frontal system also crossed the island on 25 to 26. Very wet conditions prevailed over the island during the first fortnight where 102 % of the LTM was already recorded. Some rain events even warranted the issuance of Heavy Rain warning on some occasions and even a torrential rain warning on the 09. All regions of the island received above normal rainfall. The highest rainfall intensity was observed at Port-Louis on the 09 where 54.6 mm was recorded within one hour.



(a) Unstable weather on 09

(b) Frontal system on 25

Fig 3: Weather systems during April 2019

2. Surface Temperature

April 2019 is the second warmest April on record since 1971 (based on mean maximum temperature recorded at Plaisance)

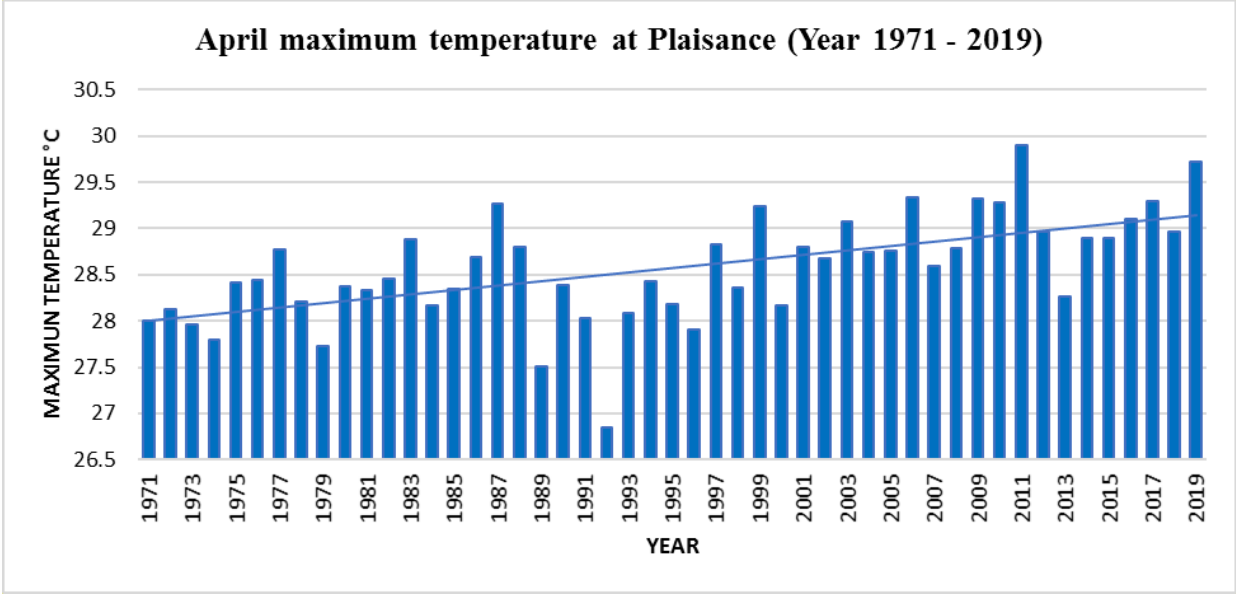


Fig. 4: Maximum temperature trend during April from 1971-2019

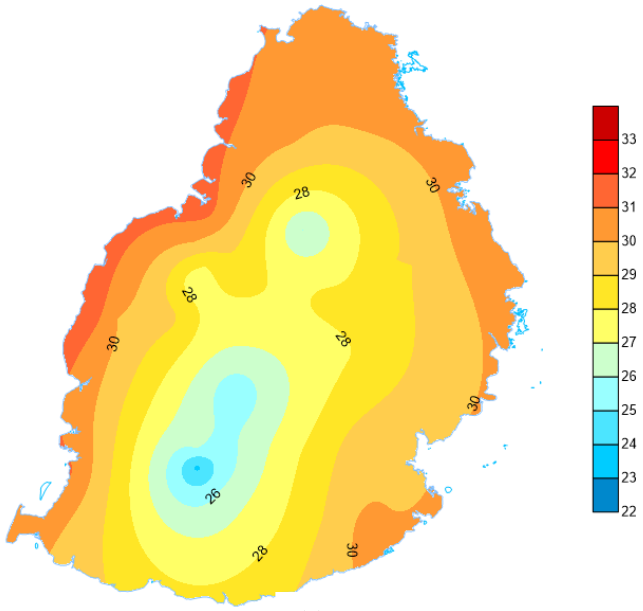
Warmer than normal conditions prevailed during April 2019. On some days, the sunshine hours were above normal on various occasions which resulted in more heating, leading to above normal daytime temperatures on most of the days till the third week (Fig 10). This also contributed to make the average April 2019 temperature for Plaisance as the second warmest since year 1971 (Fig 4).

Across the island, certain stations recorded maximum temperature anomalies of 1.0 °C and more. In few places, such anomalies persisted for almost two to three weeks, for instance, Mon Desert Alma had up to 20 warm days. On some days, the maximum temperature anomaly reached 3 to 5 °C locally with highest anomaly of 5.2 °C was recorded at Quatre Bornes on 02. Higher temperature anomalies were observed over the eastern regions and part of the Central Plateau (Fig 6(a)).

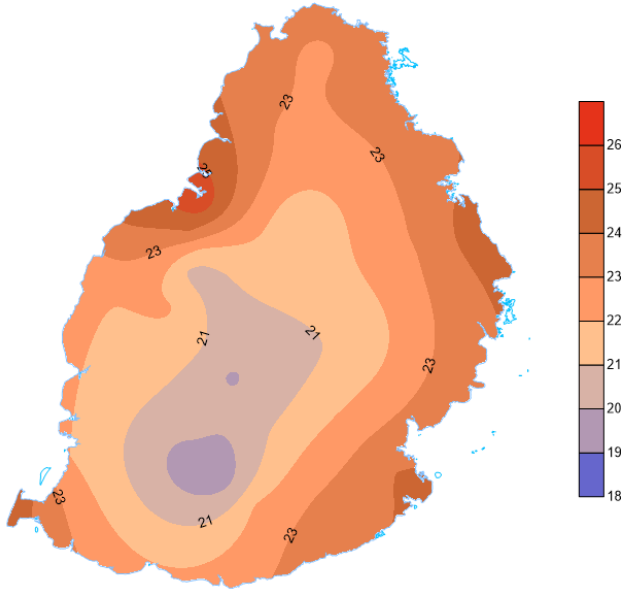
The highest temperature recorded was 33.6 °C at Medine on 03. Several stations had new records of extreme maximum temperature for the month. These include, Beau Songes with 32.5°C (previous 32.4°C), Case Noyale with 33.4°C (previous 33.2°C), Quatre Bornes with 32.9°C (previous 31.8°C), Providence with 34.9°C (previous 34°C), Medine with 35°C (previous 34°C), Gros Cailloux with 31.2°C (previous 30.9°C), Bois Cheri with 30.1°C (previous 29.2 °C), and La Baraque 32.4°C (previous 32.1°C).

During the last week, cold air advection associated with a sub-tropical high pressure to the south of the Mascarenes led to a drop in temperature over the island.

The night time temperature was near normal to locally above normal.



(a)

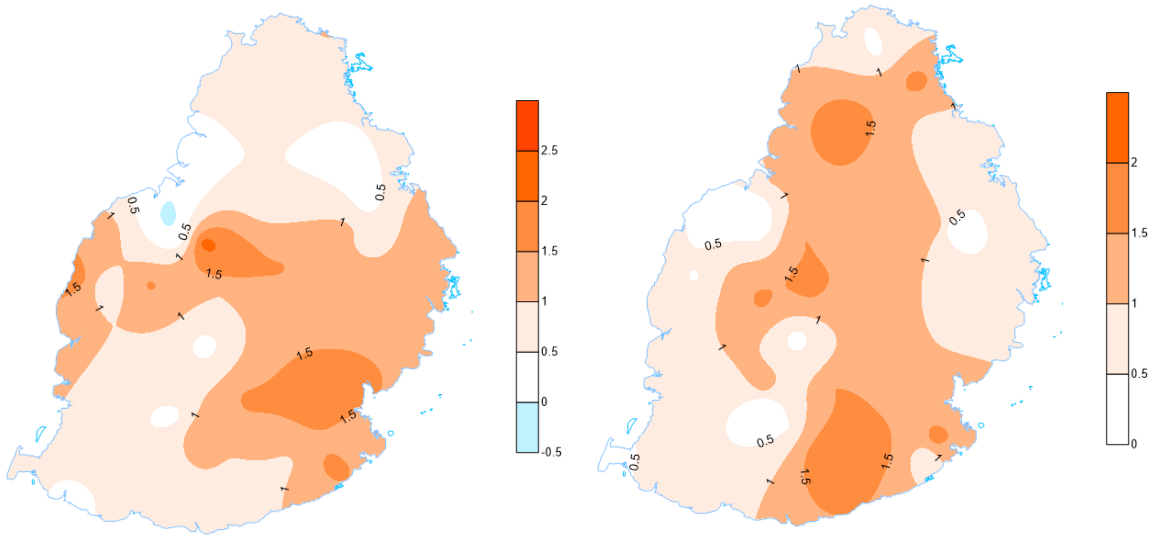


(b)

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

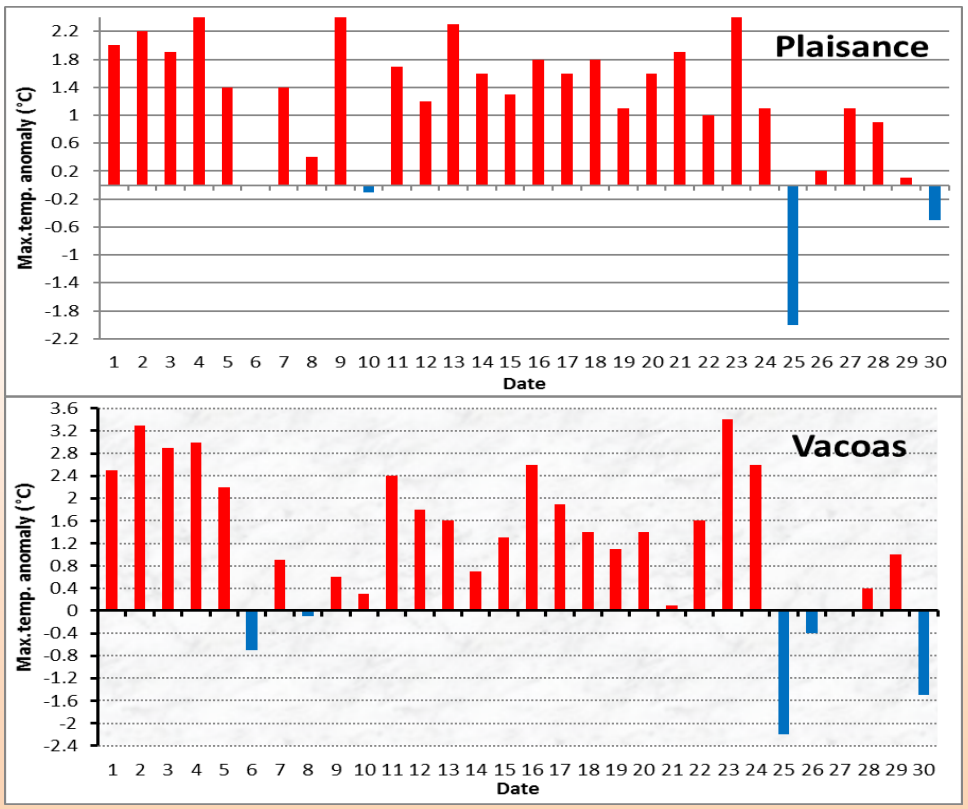
Some stations had up to 20 warm days;
(maximum temperature anomaly (anomax) >2°C).

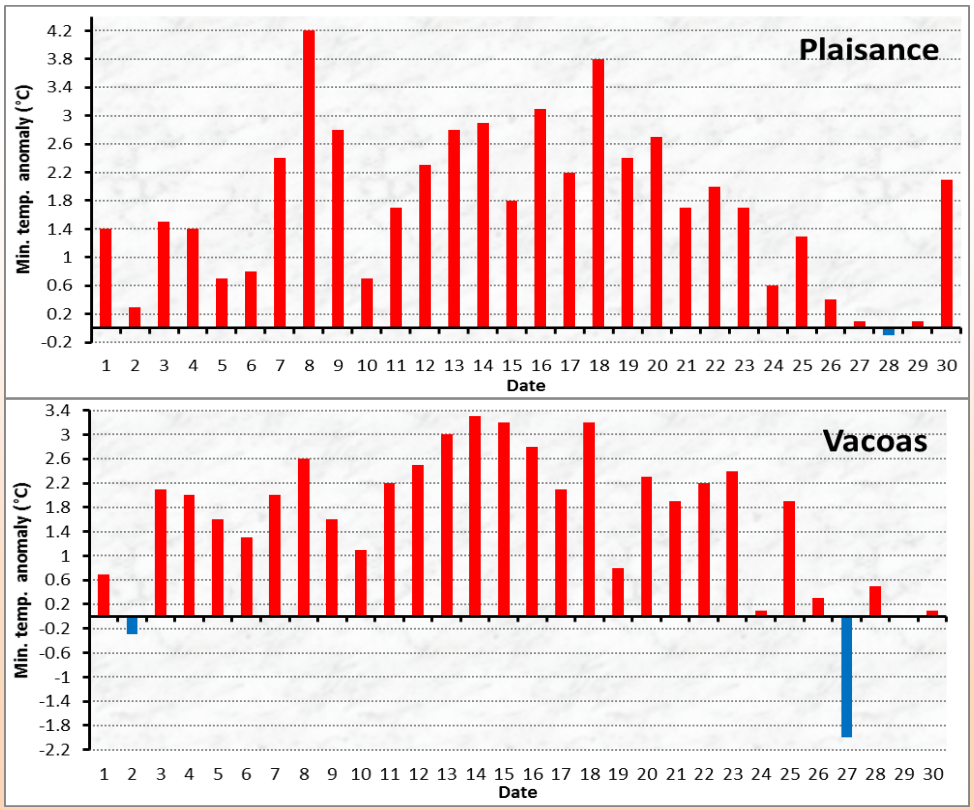
Stations	Highest anomax (°C)	Number of warm days.
Mon Desert Alma	4.1	20
Riche en Eau	4.5	18
Medine	3.6	15
Mon Desert MT	3.3	15
Quatre-Bornes	5.2	13
Union Park MSIRI	4.3	13
Bois Cheri	5.1	12
Providence	4.5	11
Beau Vallon	2.5	11
Gros Cailloux	2.8	9
Vacoas	3.4	9
Fuel	3.9	8
Queen Victoria	2.7	8
Sans Souci	4.7	8



(a) (b)

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





3. Sunshine and Humidity

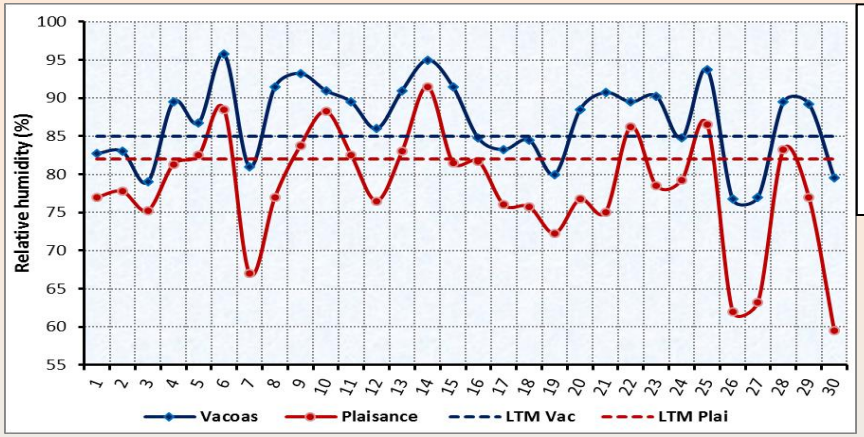


Fig. 9: Daily Relative Humidity: Vacoas (blue) and Plaisance (red)

The relative humidity (RH) was close to normal in the beginning of the month and then it showed some fluctuations especially during the last week. The average monthly RH was normal for both Vacoas and Plaisance. The highest humidity was recorded on the 14 reaching 92 % at Plaisance and 95 % at Vacoas (Fig 9). The lowest RH at Plaisance was recorded on the 30 and was 60 %.

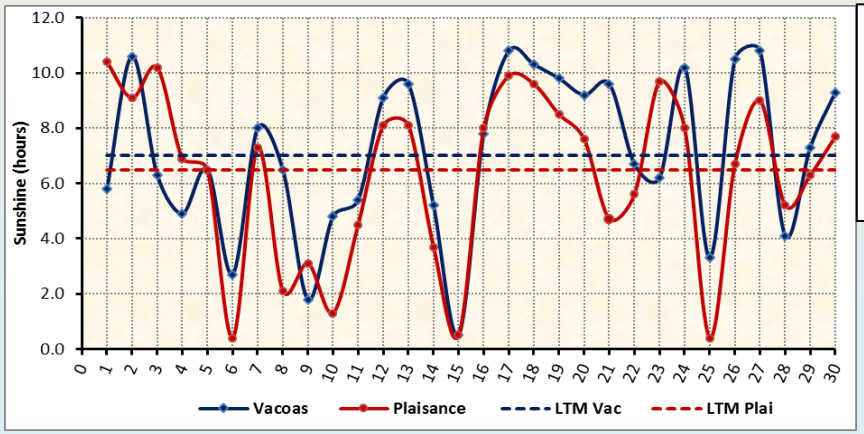


Fig. 10: Daily sunshine hours: Vacoas (blue) and Plaisance (red)

Monthly mean sunshine hours were close to normal with anomalies of 0.1 hours at Vacoas and -0.2 hours at Plaisance. In fact, for most of the month, both Plaisance and Vacoas had daily sunshine hours which varied significantly (Fig 10). The least daily sunshine hours for Plaisance was 0.4 on the 06 and 25 and for Vacoas was 0.5 on the 15. During the first fortnight, sunshine hours was below normal when clouds associated the instability zones crossed the island but the second half of the month was drier and thus sunshine was mainly above normal.

4. Winds

Light wind conditions mostly prevailed over Mauritius, Fig 11, However, on few occasions in the second week, moderate wind blew over the island due to the combined effect of a low pressure area to the north and an anticyclone to the south of the Mascarenes. By the end of the month, after the passage of the fontal system, the wind increased again under the influence of the sub-tropical anticyclone. The prevailing wind direction was mainly from the eastern sector.

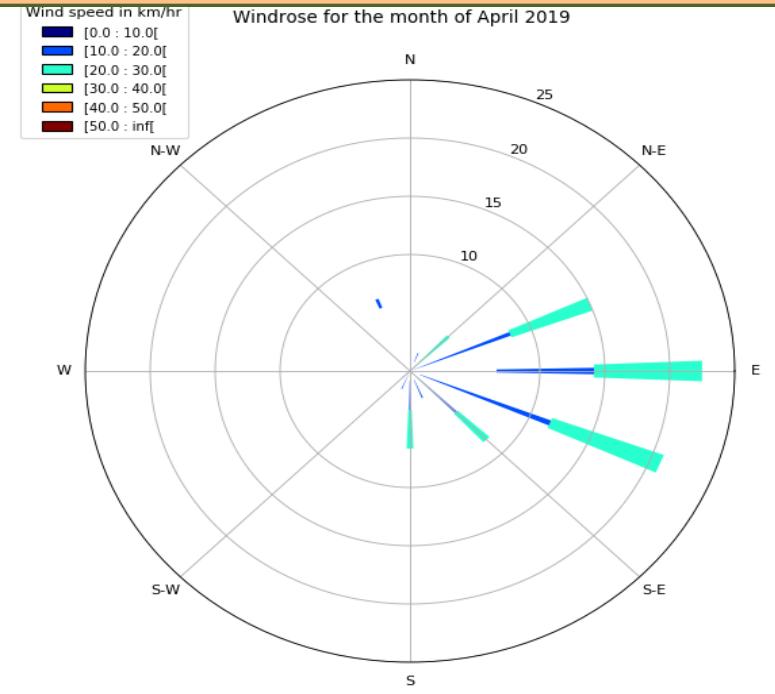


Fig. 11: Wind frequency at Plaisance

5 Heavy rain and torrential rain events

The first fortnight of April was wet and the island recorded above normal rainfall amounting to 255 mm, representing 245 % of the long term mean for the period. Since the beginning of the month, under the influence of light wind conditions, clouds formation due to sea breeze effect was experienced giving localised showers. In addition, from 05 to 06, clouds coming from the south east were enhanced by day time convection over the island and gave moderate to heavy rainfall was recorded especially to the east, south and over the central plateau. A heavy rain warning was issued at 0430 hours on the 06.

In the beginning of the second week, a low-pressure area was evolving to the north of Mauritius. As a result, a warm and moist airstream was flowing over our region. At the same time, an instability zone in the low levels of the atmosphere came in phase with the favorable upper level atmospheric conditions. Clouds associated with the instability zone got amplified and influenced weather over Mauritius during the night of 08 and day of 09 necessitating issuance of a heavy rain followed by a torrential rain warning which was valid till the morning of 10.

The weather remained wet and by the end of the second week, another instability zone was amplified in the vicinity of Mauritius. Moreover, the low level of the atmosphere was warm and moist and a slight cooling was observed in the mid-troposphere which enabled the clouds to grow further into thunder clouds. Moderate to heavy thundery showers were observed as from the night of 13 April. A heavy rain warning was issued at 0430 hours on 14 which was waived after 24 hours.

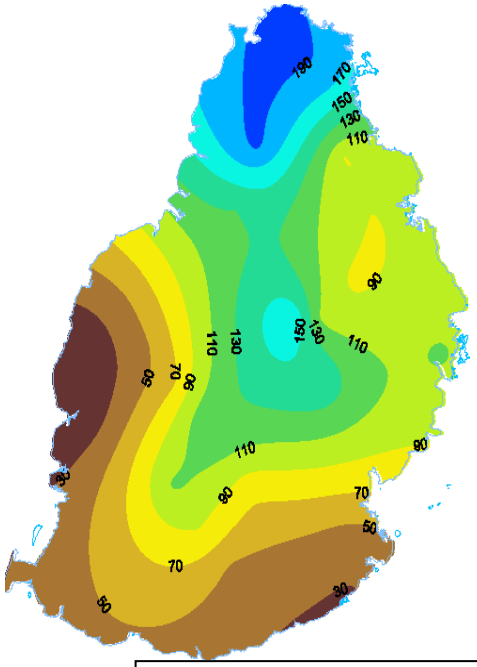


Fig 12(a)

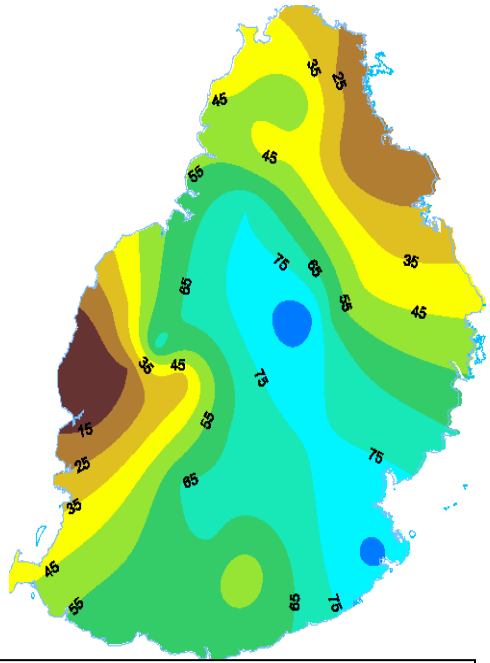


Fig 12(b)

Figure 12(a) and (b): Rainfall distribution for 08-10 and 12-14 January 2019 respectively

Station / Date	Highest Rainfall recorded in mm				
	05	06	08	09	14
Arnaud		43.6			
Mon Bois	135.2		84.4		
N Decouverte					58.6
Riche TERRE				143.5	

FORECAST FOR MAY - JUNE - JULY (MJJ)

The central and eastern equatorial Pacific will remain warmer than normal for MJJ with characteristics of weak El Nino event. The moderate SIOD which peaked in March has weakened and is expected to remain of weak intensity. The most dominant features for MJJ will be the moderate IOD which has developed in April and the persistent warm pool of SST over the SWIO. In the previous AMJ statistical run above normal rainfall was predicted, however, using empirical method an optimum forecast was worked out. Observed rainfall for April and May were as follows: 335mm representing 164% of the LTM and 125 mm representing 86% of the LTM respectively.

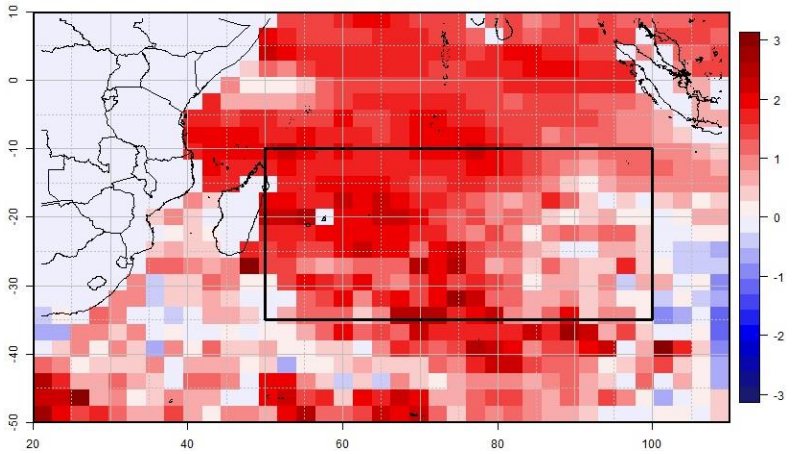


Figure 13: MJJ sea surface temperature anomaly chart

Consensus forecast for Mauritius

- Statistical model is expecting slightly above normal rainfall for MJJ (Fig. 14(a)). However, in view of the expected evolution of large and regional scale atmospheric-oceanic circulations, the forecast is being amended to near normal rainfall as follows: normal for June and July with ~110mm and ~127mm respectively.
- Mean temperatures will continue to remain slightly above normal at most places due to above normal sea surface temperature persisting over SWIO region.

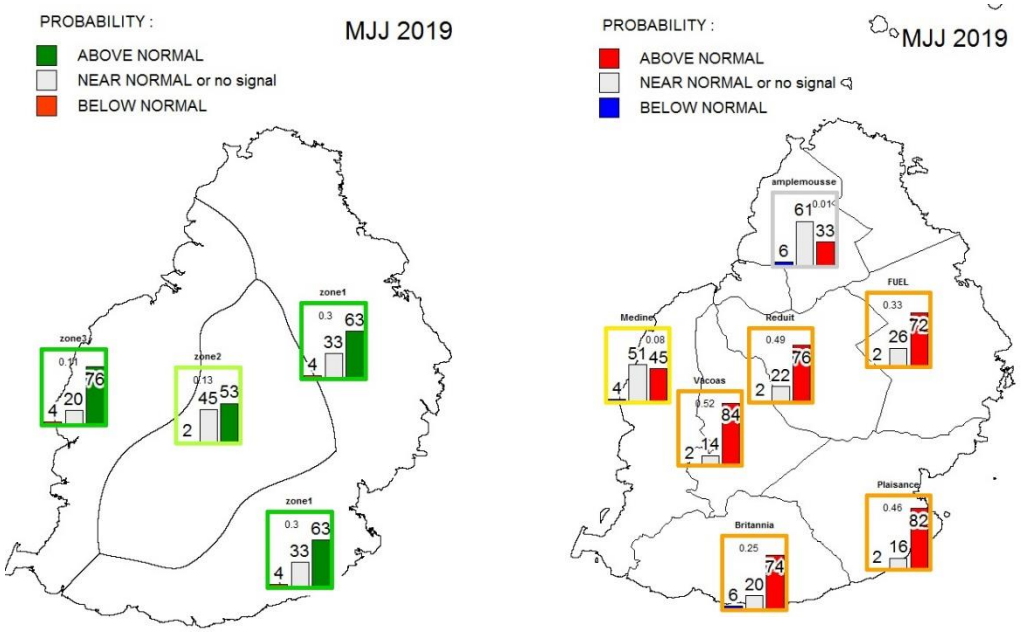


Fig. 14: Statistical Model Forecast of (a) rainfall and (b) temperature

Director, Meteorological Services,
St Paul; Road Vacoas,
***Tel*: 6861031/32, Fax: 6861033, *email*: meteo@intnet.mu**

Updated on: 10 June 2019