



CLIMATE SUMMARY FEBRUARY 2018

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HIGHLIGHTS

- ◆ Tropical Cyclone Gita was the main significant event that occurred in February 2018, which brought torrential rainfall activities and highest recorded gust of 62mph at Faleolo station. Photographs of the flooding impacts are presented in Pg 5.
- ◆ ‘Well above average’ precipitation was recorded in February over Samoa. Pg. 1 & 2
- ◆ Warmest daytime temperature of 34.8° C was recorded on the 13th at Vaiaata and the coolest of 17.0°C was recorded on the 18th at Afiamalu station. Pg. 3
- ◆ Significant gusts exceeding 60km/hr recorded at Faleolo and Apia station during TC Gita. Light winds of 1-10km/hr was generally recorded throughout February. Pg 4 & 5
- ◆ La Nina event has come to an end and ENSO indicators now show Neutral levels. Pg 6
- ◆ Warmer sub surface anomalies have developed over the western equatorial Pacific Ocean while cooler in the eastern region weakens . Pg 6

ISSUED: MARCH 2018

Figure 1: SPCZ Position in February 2018

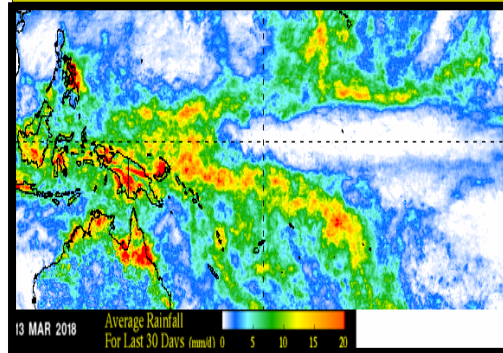
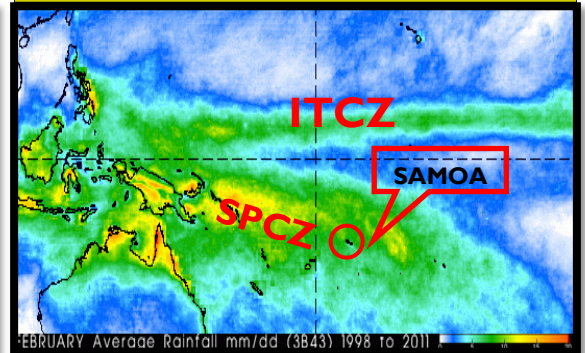


Figure 2: Normal Position of SPCZ in February



GLOBAL SCALE OBSERVATIONS

The Inter-Tropical Convergence Zone (ITCZ) was slightly disorganized and displaced north of its normal position, and more active than the average ITCZ for the month of February. The South Pacific Convergence Zone (SPCZ) was also displaced north of its normal position. An active pulse from the Madden Julian Oscillation (MJO) enhanced rainfall activities for the month of February, which also brought strong winds and thunderstorms. The MJO further supported favourable conditions for the Tropical Depression (TD) 07 to develop into Tropical Cyclone (TC) Gita.

LOCAL SCALE OBSERVATIONS

TC Gita was the main significant event that influenced the weather in February 2018 and was the second named TC in the region. It greatly impacted the rainfall status of the island which consequently resulting in ‘well above average’ rainfall recorded. In fact, the highest one day fall of 446.2mm received at Salailua on the 8th followed by 293.7mm at Afiamalu on the 9th and 281.0 at Matautu Falelatai on the same date were sufficiently provided by the convective activities of TC Gita. On the other hand, the impacts of the torrential downpour were mainly seen in the low lying areas been severely flooded as captured by the photos in page 5. Furthermore, Table 1 shows that 18 stations received “well above average” rainfall, 2 stations received “above average” rainfall, and only 2 stations registered “average”. Asau station recorded the highest monthly precipitation of 1316.5mm. Significantly it is a record high for Asau as the wettest February in its historical data. Afiamalu station received the second highest of 1237.4mm and Salani registering the 3rd highest of 1226.0mm. Conversely, the lowest rainfall records were registered at Lepa, Togitogiga and Lotofaga with 429.2mm, 491.7mm and 526.7mm respectively. It is verified that February 2018 is so far the wettest month for the season. Additionally, Figure 7 in page 7, displays the amount of rainfall received in February 2018 against the amount in February 2017.

Table 1: Rainfall Statistics in February 2018

This table displays the rainfall status of all stations in the country in February 2018

Stations	February Rainfall (mm)	February 30 Year Long Term Average	% of Average	1 day fall (mm)	Date	# of Rainy Days	Rainfall Status
UPOLU							
Afiamalu	1237.4	596	208	293.7	09 th	27	Well Above Average
Alafua	736.8	354	208	221.2	09 th	25	Well Above Average
Apia	895.0	352	254	250.0	09 th	19	Well Above Average
Faleolo	594.5	237	251	182.0	09 th	21	Well Above Average
Laulii	955.7	443	216	216.0	09 th	14	Well Above Average
Leauvaa	783.8	454	173	218.2	09 th	23	Well Above Average
Lepa	429.2	397	108	121.4	10 th	18	Average
Lotofaga	526.7	300	176	118.6	09 th	21	Well Above Average
Matautu Falelatai	565.9	596	95	281.0	09 th	23	Average
Nafanua	850.1	511	166	229.5	09 th	23	Well Above Average
Nuu	685.8	354	194	181.4	09 th	22	Well Above Average
Salani	1226.0	300	408	137.6	07 th	24	Well Above Average
Saletele	961.6	334	288	161.0	10 th	26	Well Above Average
Savalalo	728.0	352	207	229.0	09 th	16	Well Above Average
Tiavea	689.6	332	208	169.0	09 th	23	Well Above Average
Togitogiga	491.7	319	154	134.0	09 th	28	Above Average
Savaii							
Asau	1316.5	399	330	220.5	07 th	17	Well Above Average
Letui	556.8	394	141	132.4	07 th	17	Above Average
Samalaeulu	813.4	388	210	198.4	09 th	25	Well Above Average
Salailua	600.8	370	162	446.2	08 th	15	Well Above Average
Tuasivi	607.2	302	201	157.2	10 th	19	Well Above Average
Vaiaata	963.6	482	200	214.4	09 th	24	Well Above Average

Well Below Average
<40%

Below Average
40%-80%

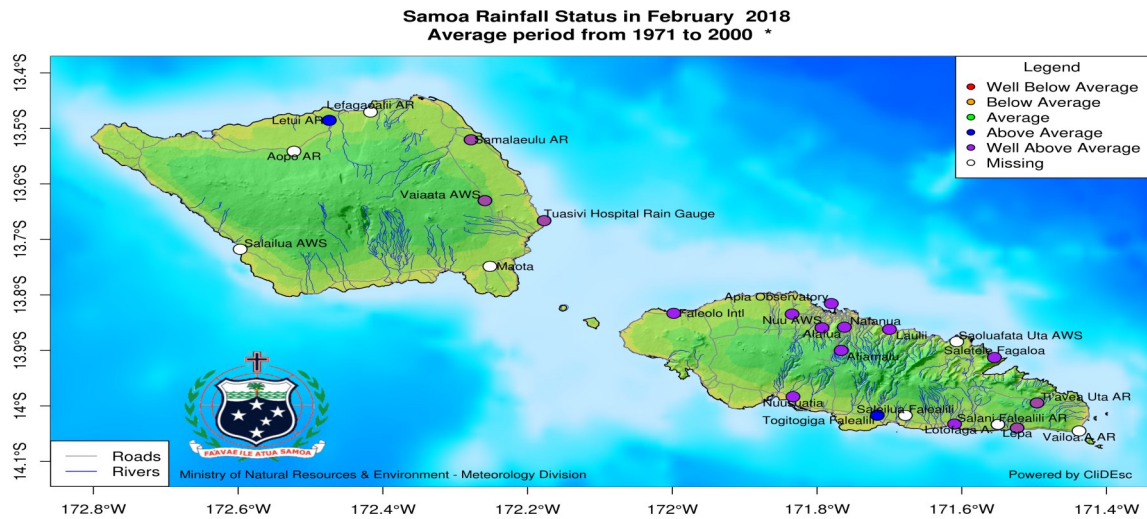
Average
80%-120%

Above Average
120%-160%

Well Above Average
>160%

Figure 3: Rainfall Status Map in February 2018

This rainfall map is generated using observation data from Table 1



* Newer stations use only data that is available as they do not have enough for a 30 year average

TEMPERATURE

Table 2: Air Temperature Statistics

This table displays the temperature statistics recorded across stations in February 2018

Stations	Temperature (Degree Celsius)				
	Mean Daily Temperature (°C)	Extreme Temp Max (°C)	Date	Extreme Temp Min(°C)	Date
Faleolo	28.5	33.6	17 th	23.0	22 nd
Nafanua	N/A	N/A	N/A	21.9	18 th
Afiamalu	22.5	27.5	04 th	17.0	18 th
Apia	N/A	31.6	04 th	22.2	11 th
Alafua	26.8	34.3	18 th	21.6	22 nd
Togitogiga	N/A	N/A	23 rd	20.0	22 nd
Vaiaata	27.4	34.8	13 th	21.2	01 st

N/A = Data Not Available

Vaia'ata station recorded the warmest daytime temperature of 34.8° C on the 13th of February, with Faleolo station being the second warmest day with 33.6 ° C recorded on the 17th . Moreover, the lowest night time temperature of 17.0°C was recorded at Afiamalu on the 18th with Togitogiga registering the second lowest temperature of 20.0° C on the 22nd . Mean daily temperatures for the month of February 2018 ranged from 22.5°C to 28.5°C

ATMOSPHERIC PRESSURE

Table 3: Atmospheric Pressure at Mean Sea Level (MSL)

This table displays the atmospheric statistics recorded across two stations in February 2018

Station	Highest MSL Pressure (hPa)	Date	Lowest MSL Pressure (hPa)	Date	Average MSL Pressure (hPa)
Apia	1013.6	27 th	993.5	10 th	1007.1
Faleolo	1013.5	27 th	995.5	10 th	1007.1

Apia recorded the highest MSL pressure of 1013.6 hPa on the 27th. Also, on the 10th of February, the lowest MSL pressure of 993.5 hPa was recorded at Apia. The 2 lowest MSL pressure were recorded on the same day, in which Tropical Cyclone Gita arrived to Samoa. (Note: High pressure systems associate with good weather conditions whereas low pressure systems associate with bad weather conditions)

WIND

Figure 4: Wind Speed and Directions

The following diagrams show the different wind speed and direction that recorded daily at 9am across the country in February 2018.

Figure 4a : Apia Station

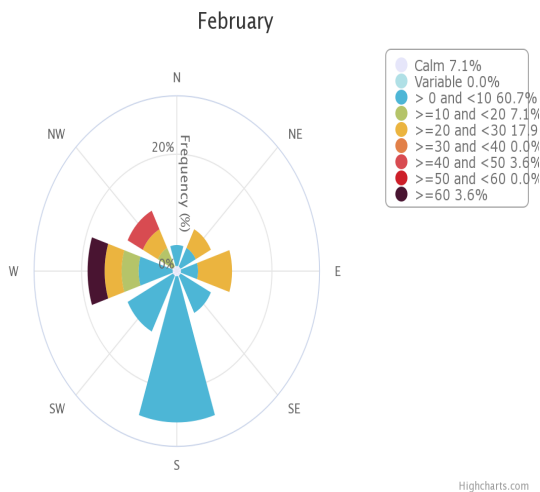
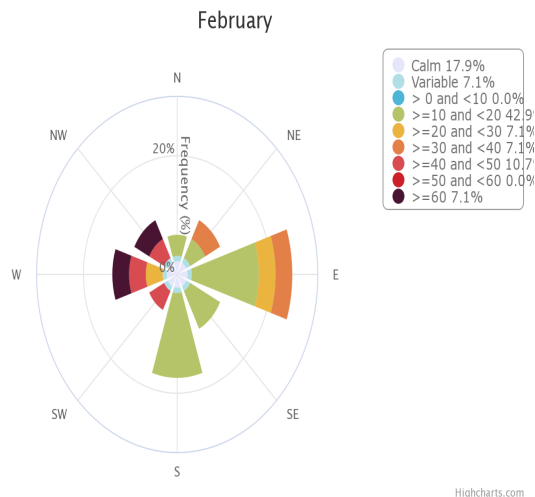


Figure 4b: Faleolo Station



Even though there were variable wind directions for Apia station (Figure 4a) southerly winds were registered to be the dominant wind direction, and light winds (1-10 km/hr) were the most occurring wind speed, with 60.7% occurrence.

Figure 4b shows that Faleolo station experienced easterly and southerly winds the most, with gentle winds (10-20km/hr) being the dominant wind speed.

TC Gita generated gale winds and storm force winds exceeding 60km/hr, which the Samoan islands experienced on the 09th and 10th of February as shown by both stations above. In fact, the gusty winds of TC Gita recorded to be 62mph. (Figure 4a & Figure 4b).

Figure 4c : Afiamalu Station

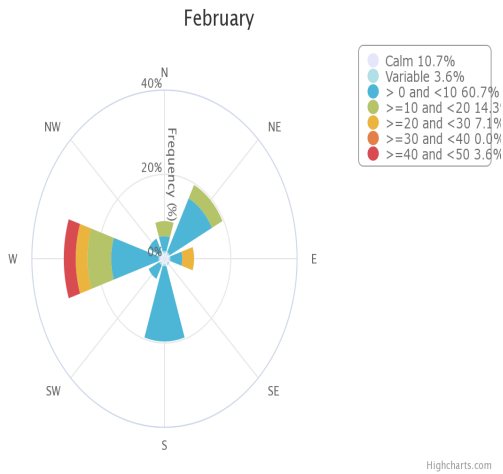
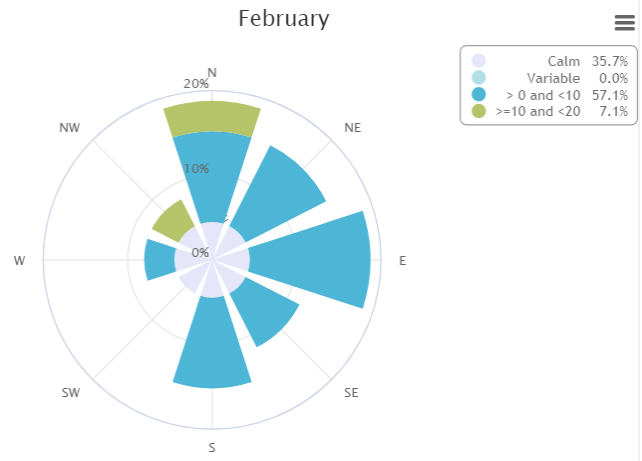


Figure 4d: Nafanua Station



Westerlies were predominant at Afiamalu station (Figure 4c) with prevailing light winds (1-10km/hr) which occupied 60.7% of the time. North east and southerlies were also recorded for the month of February. For Nafanua station, significant calm conditions were accountable for 35.7% of the time. Nevertheless, northern winds were still dominant along with frequent easterlies.

TROPICAL CYCLONE GITA IMPACTS

Photos capturing Flood Impacts in the Apia Town Area. Photo Credit : Silipa Mulitalo



EL NINO SOUTHERN OSCILLATION (ENSO)

CURRENT ENSO STATUS

The weak La Nina event that started from late 2017 has now ended. ENSO Indicators show neutral levels for in the past weeks therefore, the ENSO Outlook has now shifted from La Nina to Neutral phase.

Figure 5: Sea-surface Temperature

Sea surface temperature anomaly: 01/02/2018 to 28/02/2018

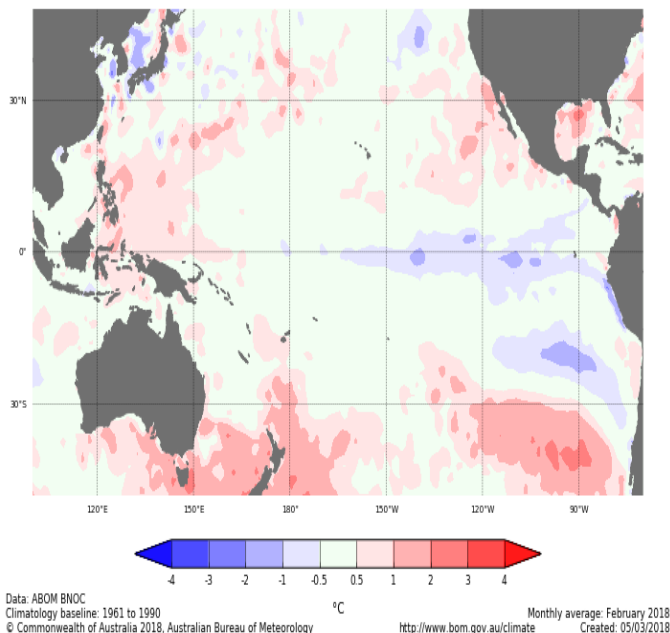
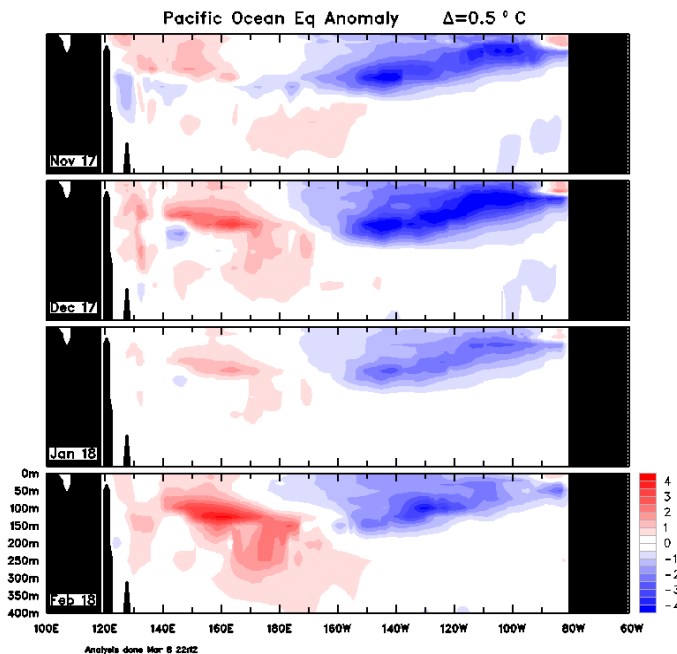


Figure 6: Sub-surface Temperature



Atmospheric Indicator of ENSO

Southern Oscillation Index (SOI)

The 30 day Southern Oscillation Index (SOI) to 11th of March was +3.2, with the 90 day value of +0.9. The SOI have been fluctuating but have mostly been in neutral range for the year 2018.

(Sustained positive values of the SOI above +7 indicate La Nina. Whereas sustained negative values below -7 indicate El Nino. Values within -7 and +7 shows neutral conditions.)

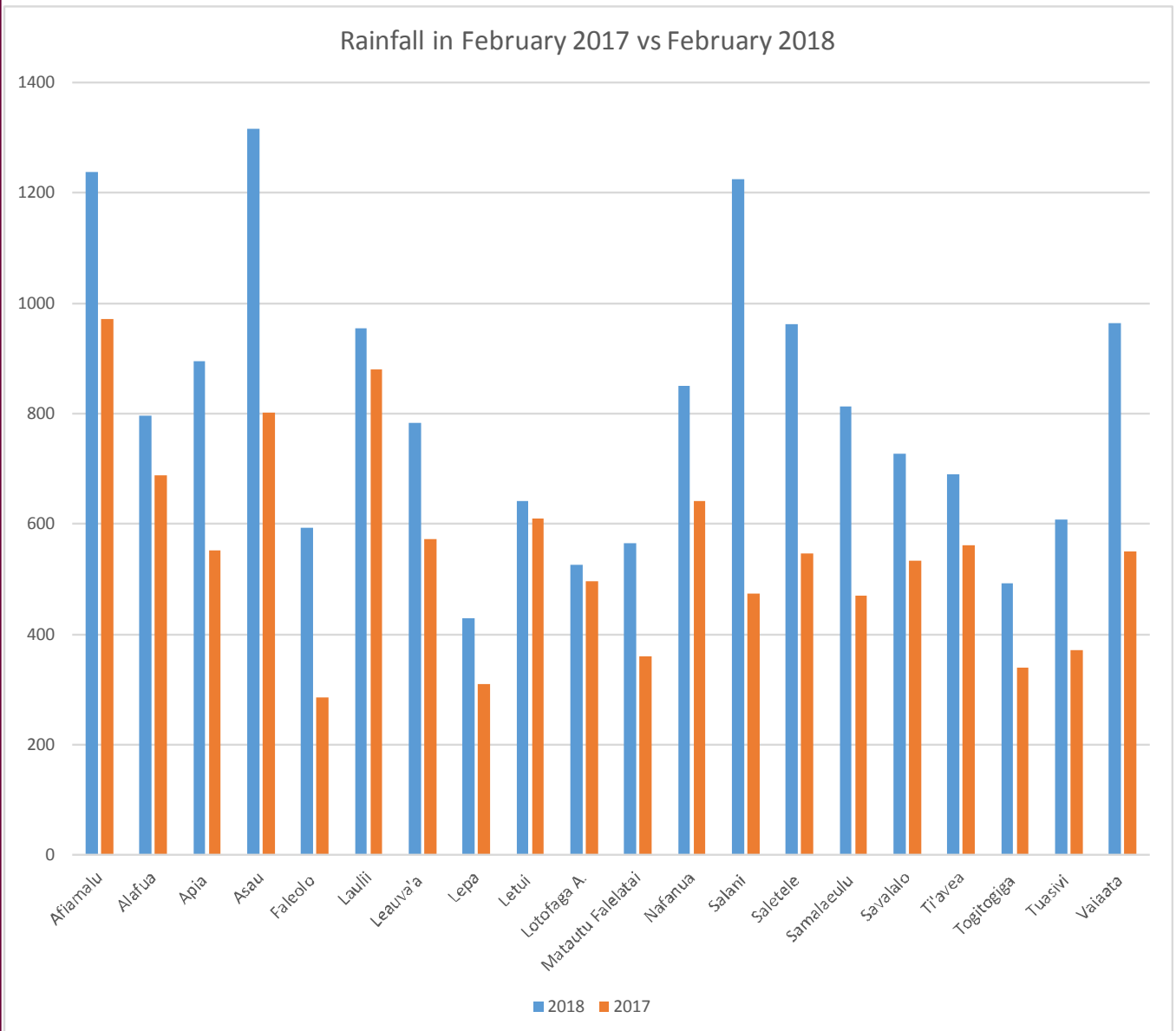
For the month of February, 2018, Sea surface Temperatures were cooler than average in the Central and Eastern Tropical Pacific Ocean. Warm anomalies however are mostly concentrated in the South Pacific area, extending from the south eastern side of Australia and enhancing across New Zealand. Other warm surface temperatures can be seen westward of South America, between the 130° W - 80° W Longitude.

The February value for NINO3 was -0.7°C , NINO3.4 was -0.6°C and NINO4 was -0.2°C

The 4 month sequence to February 2018 of sub surface temperatures shows that the cool anomalies have weakened in the Central and Eastern Equatorial Pacific Ocean for the past few months. On the other hand, warm anomalies of up to 400m in depth have started developing in the Western Equatorial Pacific Ocean, a typical indication of a decaying La Nina

APPENDIX

Figure 7: Graphical representation of total monthly rainfall in February 2017 vs February 2018 in all rainfall stations.



It is evident from Figure 7 that there was more rainfall activity for February 2018 compared to the previous year. Over a 2 day period, the rainfall status altered dramatically due to the enhancement of TC Gita over the Islands.