

1. IN BRIEF

A mature La Niña event still remains active in the tropical Pacific region.

Tropical Cyclone Cody was the highlight of the month, which brought about torrential heavy rain, resulting in severe flooding of Fiji's major rivers and low lying areas. Transportations were disrupted as number of roads in the country were closed. At the time of this report, there was one reported causality.

Overall, out of the 21 rainfall monitoring stations, 8 recorded *well above average* rainfall and 13 recorded *above average* rainfall.

Tropical Depression TD03F and tropical cyclone Cody resulted in significant rainfall being recorded across the country from the 8th to 10th. The highest 24-hour rainfall of 525mm was recorded at Nadarivatu, followed by 388mm at RKS Lodonu, 332mm at Yasawa-I-Rara, 248mm at Dobuilevu, all on the 9th respectively.

On temperatures, the highest day-time temperature of 36.1°C was recorded at RKS Lodonu with 35.9°C on the 11th,

followed by Keiyasi with 35.7°C on the 20th, Navua with 35.6°C on the 13th, Levuka with 35.5°C on the 25th and Yasawa-I-Rara with 35.1°C on the 23rd.

The lowest daily minimum air temperature of 16.6°C was recorded at Nadarivatu on the 25th, followed by Monasavu with 18.4°C on the 25th, Vunisea (Kadavu) with 20.0°C on the 2nd, Vaturekuka (Labasa) with 20.5°C on the 25th, Yasawa-I-Rara and Vanuabalavu, both with 20.6°C on the 10th and 19th, respectively.

Northerly winds were dominant at both Nadi Airport and Nausori Airport during the month, with winds ranging from light to strong in strength (Figure 8).

Warmer than normal sea surface temperature anomalies were observed across most of the Fiji Group during the month (Figure 9).

2. WEATHER PATTERNS

The weather in January was dominated by a series of troughs of low pressure and active convergence zone systems that brought about a lot of rainfall and major flooding events over most parts of the country.

A trough of low pressure affected the Fiji Group from the 1st till the 3rd with occasional rain and thunderstorms over most parts of the country. The trough remained slow moving over the northern parts of the country on the 4th till 6th bringing torrential heavy rain and thunderstorms over Vanua Levu with significant 24-hour rainfall recorded at Seaqaqa with 118.0mm, Vaturekuka (Labasa) and Matei with 108.0mm on the 5th.

From the 7th, Tropical Depression TD03F had moved to the west of Fiji from the north with the associated active convergence zone affecting Fiji with continuous heavy rain and thunderstorms. This weather continued with strong to gale force gusty winds over the country with TD03F moving to the far southwest of Fiji and becoming Tropical Cyclone Cody on the 10th. Several stations recorded above 200mm 24-hour rainfall during this passage of TD03F/TC Cody. As TC Cody moved west further from the Fiji group, the associated trough of low pressure continued to bring strong gusty winds with occasional rain, heavy at times and thunderstorms over the Fiji Group from the 11th and the

12th. This trough continued to move to the north of Fiji bringing occasional showers and thunderstorms with isolated heavy falls over the country from the 13th till the 15th.

On the 16th, a trough of low pressure descended over the country from the north with occasional rain, heavy at times and thunderstorms over Fiji. Toge recorded 200.5mm 24-hour rainfall with Monasavu, Ba/Rarawai, Penang, Nadarivatu and Saqani all recording above 100mm on the same day. This weather continued to affect Fiji till the 18th with the trough moving to the eastern parts of the group. A moist easterly wind flow prevailed over Fiji on the 19th till the 22nd with occasional showers affecting the interior and eastern parts of Viti Levu, Vanua Levu, Taveuni and Kadavu. On the 24th till the 26th, a southeast wind flow prevailed over Fiji with some showers over the interior and eastern parts of the larger islands.

Rotuma's weather was dominated by a series of troughs of low pressure and moist easterly winds with the most significant 24-hour rainfall for the month recorded on the 5th with 138.0mm.

3. RAINFALL

The active convergence zone, together with the passage of tropical cyclone Cody through the Fiji Group resulted in the *above average to well above average* rainfall at majority of the stations. The northern and western Viti Levu, stretching from Doboilevu to Nadi Airport, Yasawa-I-Rara and Vanuabalavu recorded more than twice the *normal* monthly rainfall. High intensity rainfall caused severe flooding across the country during the month.

Overall, out of the 21 rainfall monitoring stations, 8 recorded *well above average* rainfall and 13 stations recorded *above average* rainfall (Table 2, Figures 1-5).

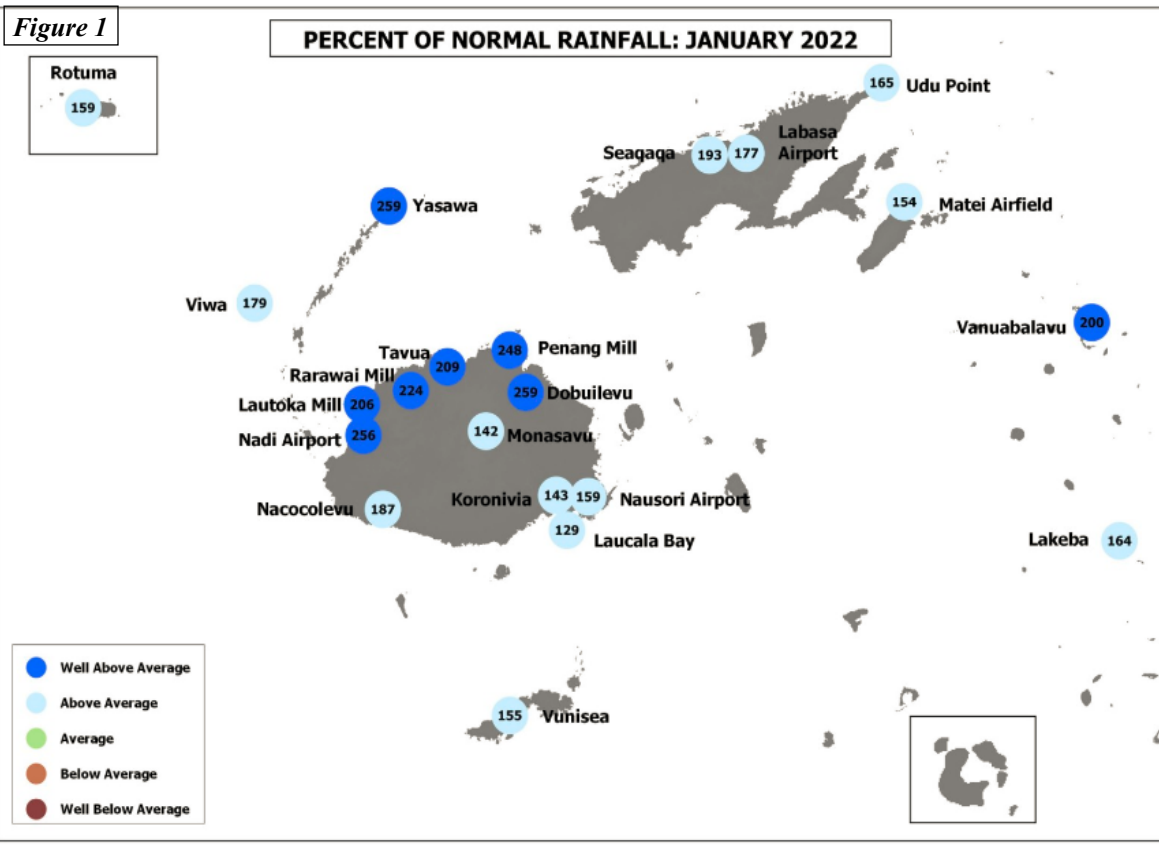
Nadarivatu was the wettest site with 2023.0mm of rainfall, followed by RKS Lodonni with 1103.0mm, Doboilevu with 1052.0mm, Penang Mill with 994.2mm, Rarawai Mill with 967.5mm, Monasavu with 931.8mm, Nadi Airport with 871.8mm, Seaqaqa with 830.0mm, Vaturekuka (Labasa) with 812.0mm, Saqani with 785.5mm, Levuka with 781.5mm, Lautoka Mill with 776.2mm, Tavua with 748.0mm and Keiyasi with 704.5mm. On the other hand, Wainikoro recorded the month's lowest total monthly rainfall of 240.0mm, followed by Vunisea (Kadavu) with 379.3mm and Lakeba with 398.8mm.

The passage of Tropical Depression TD03F and TC Cody resulted in significant rainfall recorded across the country, within the 8th to 10th (Figure 13). The highest 24-hour rainfall of 525mm was registered at Nadarivatu, 388mm at RKS Lodonni, 332mm at Yasawa-I-Rara, 248mm at Doboilevu, all

on the 9th, 202mm at Nadi Airport on the 8th, 187mm at Monasavu on the 9th, 179mm at Lautoka Mill on the 8th and 169mm at Nacocolevu on the 9th. The heavy downpour led to widespread flooding across Viti Levu, with Ba, Nadi, Tavua, Rakiraki and Sigatoka town being inundated with flood waters (Figure 14).

Rotuma recorded its highest number of rain days (rainfall ≥ 0.1 mm) with 29 days, followed by RKS Lodonni and Doboilevu, both with 28 days, Udu Point, Monasavu, Vanuabalavu and Levuka, all with 27 days, Keiyasi, Lomaivuna and Seaqaqa, all with 26 days, Nausori Airport, Lakeba, Nadarivatu and Saqani, all with 25 days. On the other hand, Vunisea recorded the least number of rain days with 18 days, followed by Nacocolevu with 20 days, Tavua, Wainikoro, Momi, Lautoka and Navua, all with 20 days.

Nadarivatu recorded its highest daily rainfall of 525.4mm during the month of January, since the installation of the Automatic Weather Station (AWS) in 2013 (Table 1).



Normal: Long term average from 1981 to 2010
 Well Below Average: Rainfall less than 40% of normal
 Below Average: Rainfall between 40 to 79%
 Rain Day: Rainfall ≥ 0.1 mm

Average: Rainfall between 80 to 119%
 Above Average: Rainfall between 120 to 199%
 Well Above Average: Rainfall greater than or equal to 200% of normal

4. AIR TEMPERATURES

A. Maximum Day-time Air Temperatures

Above normal or near normal day-time air temperatures were observed at most parts of the country during the month. Out of the 18 climate stations that reported in time for the analysis of data, 6 recorded anomalies $\geq +0.5^{\circ}\text{C}$, 9 within $\pm 0.5^{\circ}\text{C}$, and 3 recorded anomalies $\leq -0.5^{\circ}\text{C}$.

The warmest days on average were recorded at Ellington (Rakiraki) with 32.7°C , followed by Keiyasi with 32.3°C , Navua with 32.2°C , Levuka with 32.1°C , Viwa and Yasawa-I-Rara, both with 31.9°C , RKS Lodonu with 31.7°C , Lautoka Mill with 31.6°C and Korolevu with 31.5°C . On the other hand, Nadarivatu recorded the coolest days on average with 24.9°C , followed by Monasavu with 26.0°C , Wainikoro with 29.9°C , Vaturekuka (Labasa) with 30.0°C , Rotuma with 30.2°C , Momi, Vanuabalavu, Matei Airfield and Udu Point, all with 30.4°C .

The highest day-time temperature during the month was registered at RKS Lodonu with 35.9°C on the 11th, followed by Keiyasi with 35.7°C on the 20th, Navua with 35.6°C on the 13th, Levuka with 35.5°C on the 25th and Yasawa-I-Rara with 35.1°C on the 23rd. In contrast, the coolest day-time temperature of 21.1°C was at Nadarivatu, 22.0°C at Monasavu, both on the 8th, Lomaivuna with 24.5°C on the 9th, Laucala Bay and Koronivia both with 25.2°C on the 9th and RKS Lodonu with 25.8°C on the 9th as well.

There were no new records registered during the month.

B. Minimum Night-time Air Temperatures

Generally above normal night-time temperatures were recorded over most parts of the country during the month. Of the 18 stations, 10 recorded anomalies $\geq +0.5^{\circ}\text{C}$, 3 within $\pm 0.5^{\circ}\text{C}$, and 5 registered anomalies $\leq -0.5^{\circ}\text{C}$.

The coolest days on average was at Nadarivatu with 19.2°C , followed by Monasavu with 20.2°C , Lomaivuna with 22.4°C , Yasawa-I-Rara with 22.6°C , Vaturekuka (Labasa) with 22.8°C , Keiyasi with 23.1°C , Vanuabalavu with 23.3°C , Korolevu with 23.4°C , Udu Point and Labasa Airfield both with 23.5°C . On the other hand, the warmest night-time temperatures on average were observed at Levuka with 25.7°C , followed by Rotuma with 25.1°C , Laucala Bay with 24.9°C , Viwa with 24.5°C , Saqani with 24.4°C , Vunisea (Kadavu), Penang Mill, Lautoka Mill, Nadi Airport, all with 24.3°C .

The lowest daily minimum air temperature of 16.6°C was recorded at Nadarivatu on the 25th, followed by Monasavu with 18.4°C on the 25th, Vunisea (Kadavu) with 20.0°C on the 2nd, Vaturekuka (Labasa) with 20.5°C on the 25th, Yasawa-I-Rara and Vanuabalavu, both with 20.6°C on the 10th and 19th, respectively. On the other hand, the warmest night-time temperature of 27.6°C was recorded at Levuka on the 23rd, followed by Rotuma with 27.4°C on the 25th, Lakeba with 27.0°C on the 13th, Viwa with 26.7°C on the 23rd, Momi with 26.6°C on the 13th, Laucala Bay, Lautoka Mill, RKS Lodonu and Wainikoro, all with 26.5°C on the 4th, 8th, 12th and 13th, respectively.

New mean monthly minimum temperature was recorded during the month at Nadi Airport and Nausori Airport (Table 1).

TABLE 1. CLIMATE RECORDS ESTABLISHED IN JANUARY 2022

<u>Element</u>	<u>Station</u>	<u>Observed (record)</u>	<u>On</u>	<u>Rank</u>	<u>Previous (record)</u>	<u>Year</u>	<u>Records Began</u>
Daily Maximum Rainfall	Nadarivatu	525.4mm	9 th	New High	506mm	2021	2013
Mean Monthly Minimum Temperature	Nadi Airport	24.3°C	-	New High	24.2°C	1998	1942
Mean Monthly Minimum Temperature	Nausori Airport	24.2°C	-	New High	24.1°C	1998	1956

Note: All comparisons in this summary are with respect to “Climatic Normals”. This is defined to be the average climate condition over a 30-year period. Fiji uses 1981-2010 period as its “climatic normal” period.

TABLE 2. DAILY CLIMATE REPORTING SITES: SUMMARY FOR JANUARY 2022

	RAINFALL					AIR TEMPERATURES								SUNSHINE	
	TOTAL	RAIN		MAX. FALL	ON	AVERAGE DAILY				EXTREME		TOTAL	*		
	MM	* %	DAYS +	MM		MAX. #	MIN. #	MIN. #	MAX. #	MAX. C	MIN. C	HRS			
NADI AIRPORT	871.8	256	23	202	8	31.1	-0.4	24.3	1.4	33.7	22	23.1	4	166	79
LAUCALA BAY	458.0	129	23	119	9	31.4	0.3	24.9	0.7	34.6	5	23.6	10	142	73
NACOCOLEVU RESEARCH	505.0	187	20	169	9	MISSING OBSERVATIONS									
ROTUMA ISLAND	556.7	159	29	138	5	30.2	-0.8	25.1	0.2	31.9	31	22.9	6	106	68
VIWA ISLAND	468.6	179	24	107	9	31.9	0.4	24.5	-0.6	33.5	26	22.8	31		
YASAWA-I-RARA	612.3	259	23	332	9	31.9	0.9	22.6	-1.9	35.1	23	20.6	10		
UDU POINT WEATHER	622.9	165	27	93	9	30.4	-0.4	23.5	-0.9	33.1	21	21.9	9		
LABASA AIRFIELD	697.2	177	23	119	9	31.3	-0.5	23.5	1.0	34.4	5	21.5	26		
KORONIVIA RESEARCH	529.8	143	24	116	9	30.7	0.1	24.0	1.1	32.6	20	22.9	25		
NAUSORI AIRPORT	564.3	159	25	129	9	31.2	0.7	24.2	0.9	33.2	29	23.1	18		
NAVUA (AWS)	SUSPICIOUS					32.2	1.8	24.0	1.9	35.6	13	21.6	25		
MONASAVU HYDRO DAM	931.8	142	27	187	9	26.0	0.5	20.2	1.2	29.8	23	18.4	25		
FSC LAUTOKA MILL	776.2	206	21	179	8	31.6	0.3	24.3	0.5	33.5	2	22.5	17		
FSC RARAWAI MILL	967.5	224	24	378	9	31.4	-0.8	23.8	1.5	34.7	19	21.9	26		
FSC PENANG MILL	994.2	248	23	534	10	31.0	0.2	24.3	0.3	33.0	21	23.0	4		
MATEI AIRFIELD	570.7	154	24	108	5	30.4	0.4	23.6	-0.5	31.8	3	22.4	24		
VANUABALAVU	485.0	200	27	100	9	30.4	0.2	23.3	-1.3	32.2	27	20.6	19		
LAKEBA	398.8	164	25	70	9	31.0	0.7	24.0	-0.1	32.4	28	20.9	10		
VUNISEA	379.3	155	18	115	9	30.7	0.6	24.3	0.8	32.4	7	20.0	2		
MATUKU	MISSING OBSERVATIONS														
ONO-I-LAU	MISSING OBSERVATIONS														
YAQARA AWS	U/S					31.0		24.0		34.0	19	22.5	4		
LEVUKA AWS	781.5		27	166	10	32.1		25.7		35.5	25	24.1	10		
KEIYASI AWS	704.5		26	130	8	32.3		23.1		35.7	20	21.5	26		
LOMAIVUNA AWS	580.0		26	111	9	31.3		22.4		34.5	25	21.2	5		
NADARIVATU AWS	2003.0		25	525	9	24.9		19.2		30.4	19	16.6	25		
RKS LODONI AWS	1103.0		28	388	9	31.7		24.0		35.9	11	22.3	25		
MOMI AWS	490.0		21	137	9	30.4		24.1		32.6	5	22.5	17		
SIGATOKA AWS	511.5		23	162	9	31.3		23.6		33.4	11	22.4	4		
ELLINGTON (RA) AWS	487.5		24	160	8	32.7		U/S		34.3	26	U/S			
VATUREKUKA AWS	812.0		24	163	9	30.0		22.8		32.8	5	20.5	25		
KOROLEVU AWS	421.0		23	100	9	31.5		23.4		34.1	13	21.7	25		
WAINIKORO AWS	240.0		21	35	12	29.9		23.9		33.2	4	21.6	26		
SAQANI AWS	785.5		25	104	16	31.2		24.4		34.3	20	22.8	10		
SEAQQA TB3	830.0	193	26	126	9										
DOBUILEVU TB3	1049.0	259	28	248	9										
NASINU TB3	482.5		24	112	9										
TAVUA TB3	748.0	209	21	156	9										

	TEMPERATURE (C)		HUMIDITY		WIND	SUN RAD
	DRY	WET	RH%	VP		
	MEAN (AVERAGE AT 9AM)				KT	%OF MJ/ POS SQ.M
NADI AIRPORT	27.7	28.3	25.7	81	28.8	7.7
LAUCALA BAY	28.2	28.6	26.0	81	29.3	6.3
NACOCOLEVU RESEARCH	MISSING OBSERVATIONS					
ROTUMA ISLAND	27.7	28.5	26.1	83	29.1	
VIWA ISLAND	28.2	29.0	26.5	82	30.0	
YASAWA-I-RARA	27.2	28.4	26.6	87	28.9	
UDU POINT WEATHER	26.9	28.0	25.7	84	28.3	
LABASA AIRFIELD	27.4	27.9	25.4	82	28.1	
KORONIVIA RESEARCH	27.4	28.2	25.9	83	28.6	
NAUSORI AIRPORT	27.7	28.1	25.8	83	28.4	5.9
NAVUA (AWS)	28.1					
MONASAVU HYDRO DAM	23.1	23.0	21.8	90	21.0	
FSC LAUTOKA MILL	27.9	29.2	26.5	81	30.3	
FSC RARAWAI MILL	27.6	28.2	25.7	82	28.6	
FSC PENANG MILL	27.7	28.2	25.9	84	28.6	
MATEI AIRFIELD	27.0	28.2	26.0	84	28.6	
VANUABALAVU	26.9	28.3	25.7	82	28.8	
LAKEBA	27.5	29.1	26.2	80	30.1	
VUNISEA	27.5	28.8	26.0	81	29.6	
MATUKU	MISSING OBSERVATIONS					

MEAN TEMPERATURE IS (MAX+MIN)/2; WIND IS MEAN SPEED AT 06,12,18,24 HOURS.
 \$:SOLAR RADIATION CALCULATED FROM SUNSHINE DURATION. # :DEPARTURE FROM LONG-TERM AVERAGES (1981-2010). + :NUMBER OF DAYS WITH 0.1 MM OR MORE RAIN. * :PERCENT OF LONG-TERM AVERAGES.
 BLUE FONT: MISSING RECORDS OF LESS THAN OR EQUAL(≤) TO 5 DAYS. U/S: UNSERVICEABLE

Figure 2

Nadi Airport (Western Division) - Temperature & Rainfall Records for the last 13 Months (January 2021 - January 2022)

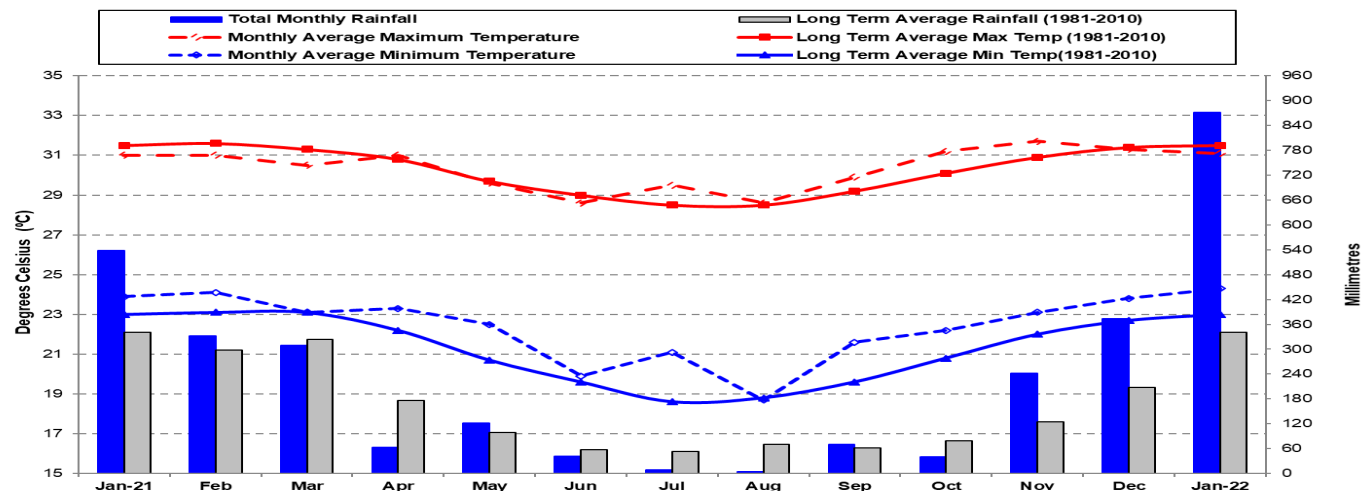


Figure 3

Laucala Bay - (Suva) (Central Division) - Temperature & Rainfall Records for the last 13 Months (January 2021 - January 2022)

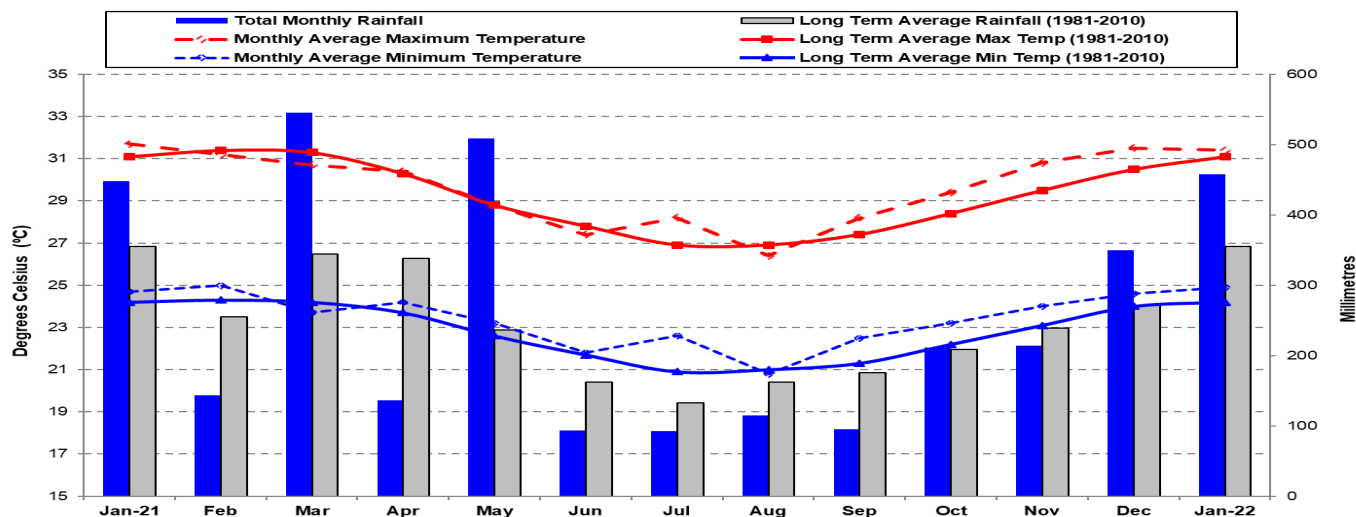


Figure 4

Udu Point (Eastern Division) - Temperature & Rainfall Records for the last 13 Months (January 2021 - January 2022)

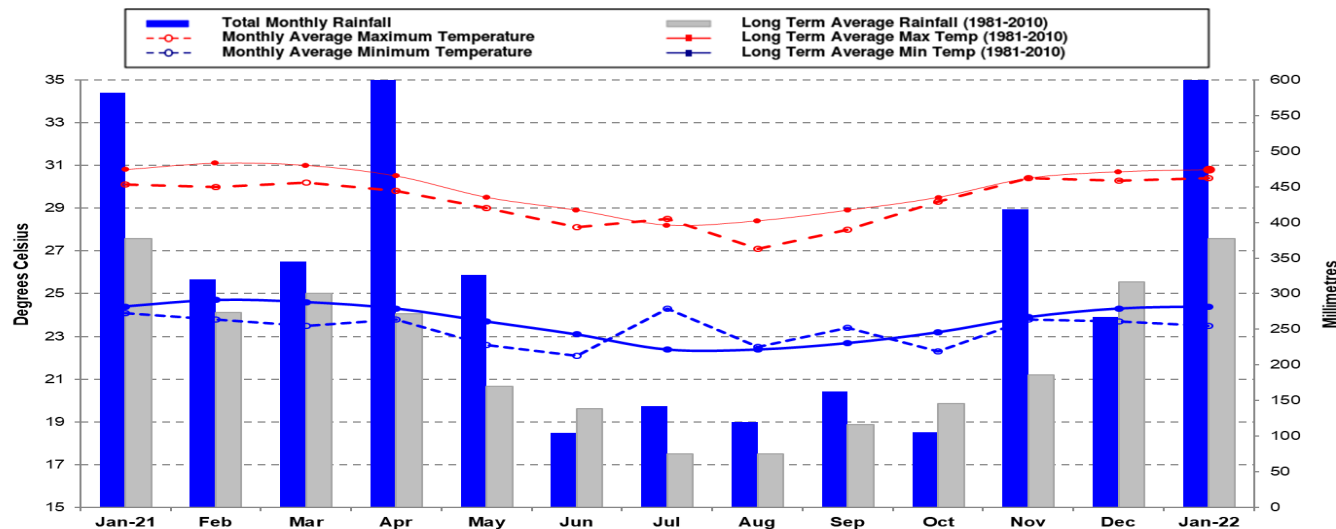
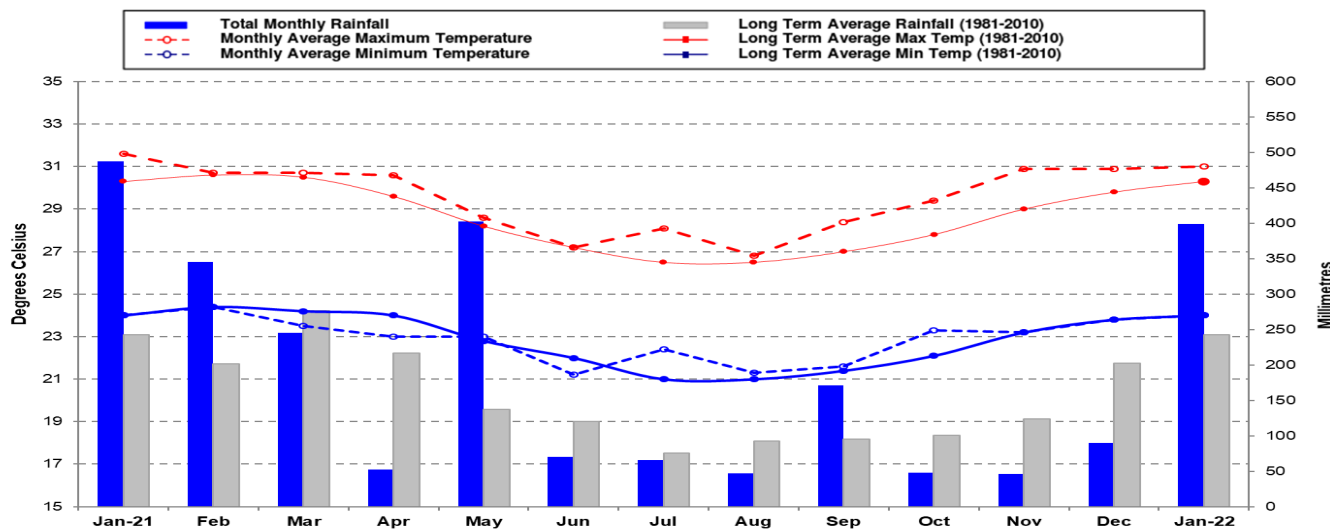


Figure 5

Lakeba (Eastern Division) - Temperature & Rainfall Records for the last 13 Months (January 2021 - January 2022)



5. DAILY RAISED PAN EVAPORATION

Figure 6

Daily Evaporation for January 2022

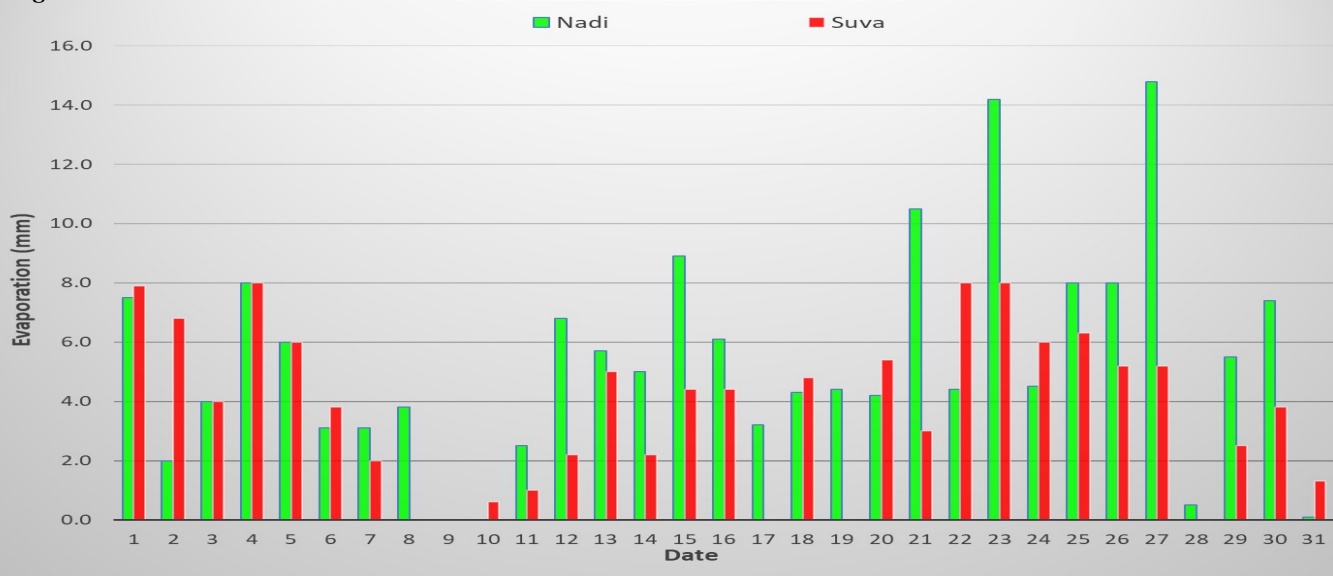


Figure 6: The total monthly evaporation at Nadi Airport and Laucala Bay (Suva) were 166.5mm and 117.8mm, respectively. Nadi’s highest daily evaporation was 14.8mm on the 27th, with Suva’s highest daily evaporation of 8.0mm on the 4th, 22nd and 23rd. Note Nacocolevu’s evaporation could not be analysed due to missing data.

6. SOLAR RADIATION

The Nadi solar radiation instrument became unserviceable during the month of January 2022.

7. WIND SUMMARY

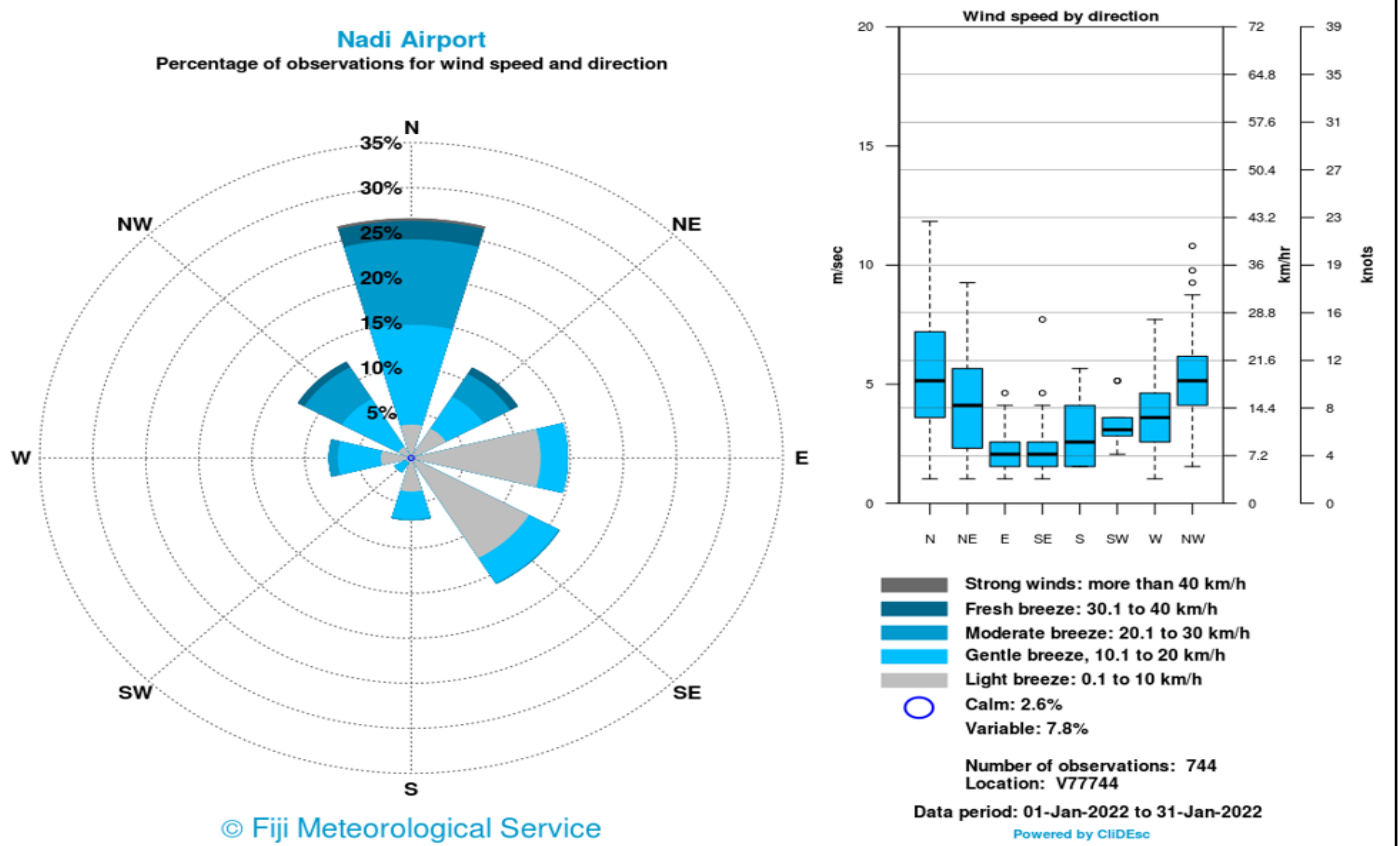


Figure 8a: Northerly winds were most dominant at Nadi Airport during the month, followed by southeasterly and easterly winds. Wind strength ranged from light to strong during this period.

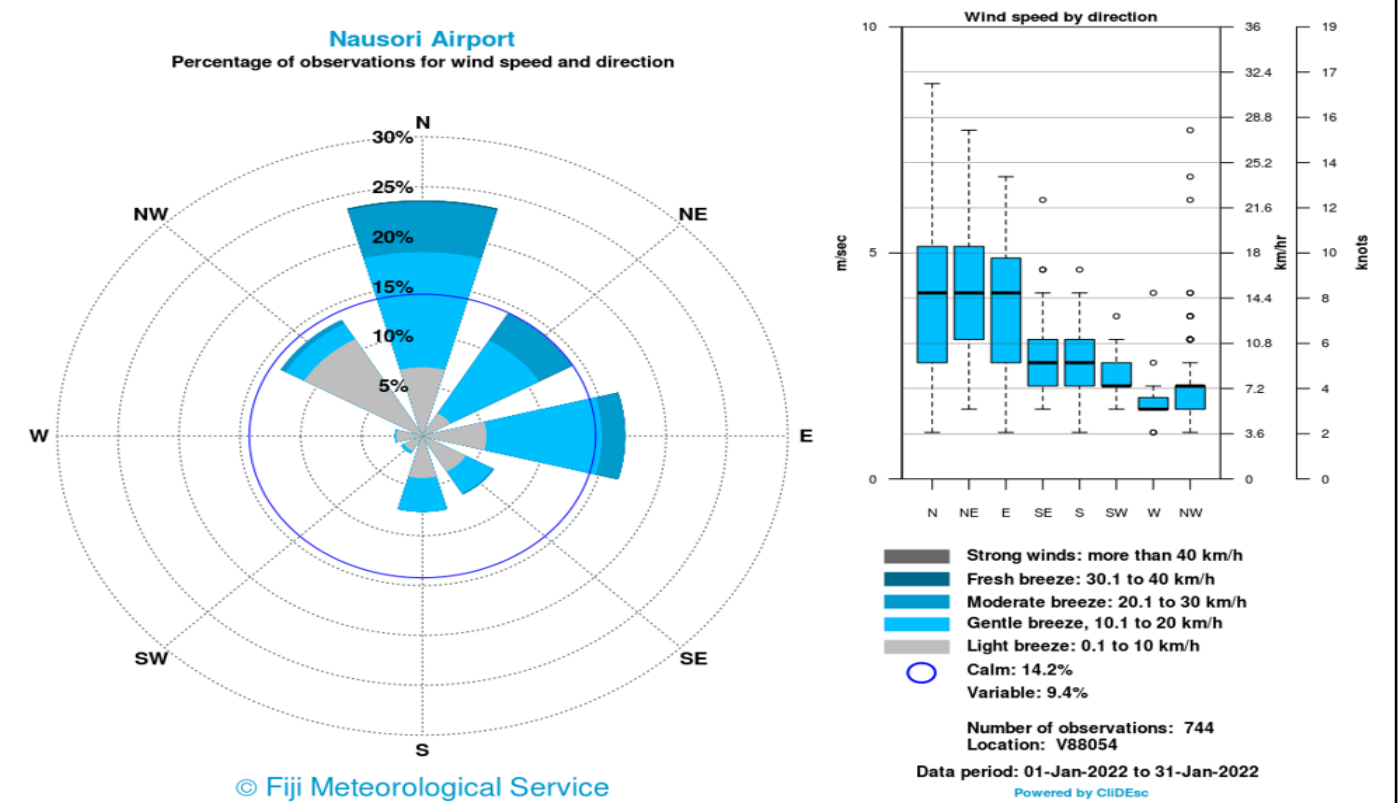


Figure 8b: Northerly winds were dominant at Nausori Airport, followed by easterly and northeasterly winds. Wind strength ranged from light to fresh breeze during this period.

8. SEA SURFACE TEMPERATURE (SST)

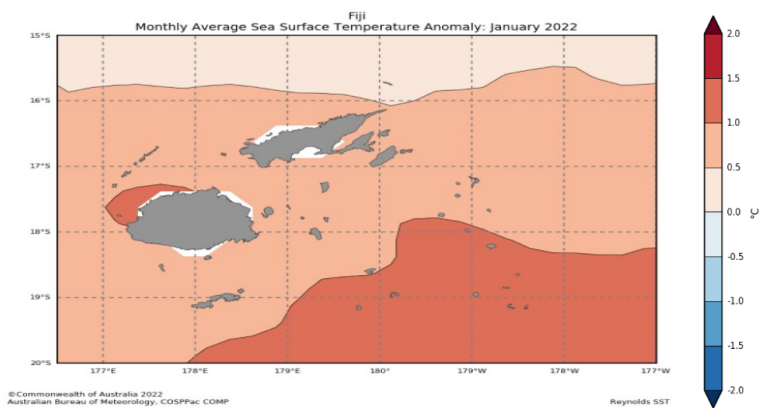


Figure 9: Warmer than normal sea surface temperature anomalies were observed across most of the Fiji Waters, with anomalies of more than 1.0°C observed northwestern Viti Levu, and across the Lau Group.

Source: <http://oceanportal.spc.int/portal/app.html#climate>

9. CLOUD COVER

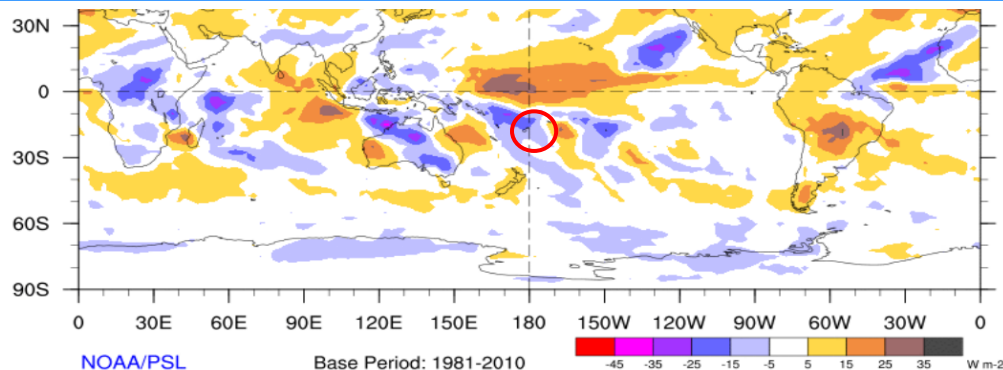


Figure 10:

Slightly above normal cloud cover was present over the Fiji Group during January (Fiji in red circle).

Source: <http://www.esrl.noaa.gov/psd/map/clim/olr.shtml>

10. SEA LEVEL

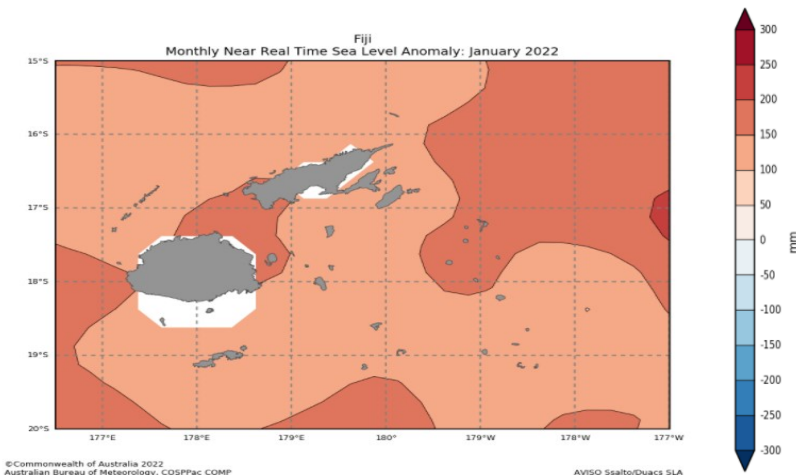


Figure 11: Above normal sea level anomalies (between 10-20cm) persisted across most of the Fiji Waters (Fiji in red circle).

Source: <http://oceanportal.spc.int/portal/app.html#sealevel>

11. WIND ANOMALIES

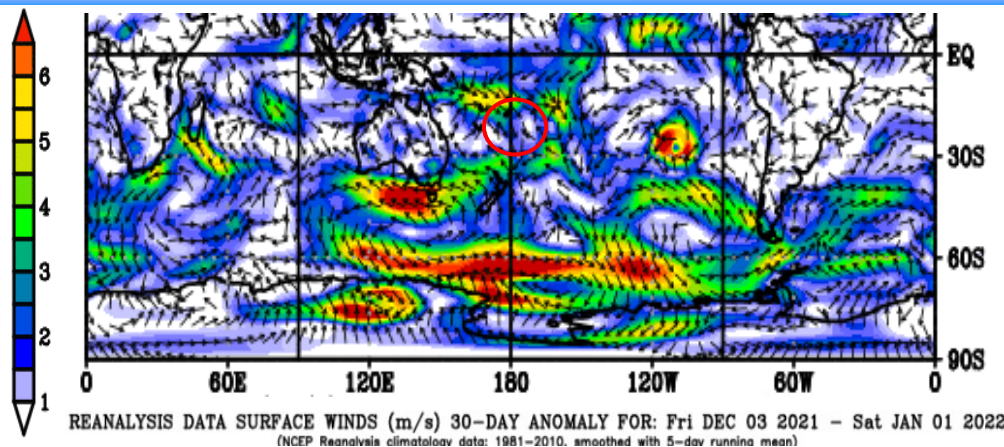


Figure 12:

Northerly wind anomalies were recorded over the Fiji Group during the month (base period: 1981-2010) (Fiji in red circle).

Source: https://www.esrl.noaa.gov/psd/map/images/rnl/sfcwnd_30b.rnl.html

12. SEVERE TROPICAL CYCLONE CODY

Severe Tropical Cyclone Cody was the 2nd tropical cyclone to affect RSMC Nadi's area of responsibility for the 2021 -2022 tropical cyclone season. It reached a maximum Category 3 winds intensity with expected maximum sustained winds of 70 knots close to the center at midday on 12th January 2022.

TC Cody originated from a low pressure system that was analyzed near Rotuma, to the north of Fiji at 6am on 04th January, 2022. It took the low pressure 5 complete days to transition from a low pressure system into a tropical cyclone. That is, it became a tropical disturbance, TD03F(1001hPa) at 12am on 06th January located to the north of Fiji. Consequently, a tropical depression (999hPa) at 12pm on 08th January located to the west of Fiji. It finally became a tropical cyclone and was named Tropical Cyclone Cody (995hPa) at 6am on 09th January to the south-southwest of Fiji.

Moving into more favourable conditions, TC Cody intensified into a Category 2 system at 6pm on 11th January 2022. It further intensified to a Category 3 system at 9am on 12th January, 2022. All this occurred over open waters to the far southwest of Fiji. Severe Tropical Cyclone Cody passed south of 25S at 6am on 13th of January with the handing over of warning responsibilities to Tropical Cyclone Warning Center (TCWC), Wellington.

The center of TC Cody did not make landfall on any Southwest Pacific Island country but the associated gale force winds and torrential heavy rain brought about damages of severe flooding and flash flooding of Fiji's major rivers and low lying areas impacting many densely populated areas, major roads and public utilities. Transportations were disrupted as number of roads in the country were closed due to flooding. At the time of this report, there was one casualty, whereby a man died while crossing flooded waters in Mataniwai, Tavua.

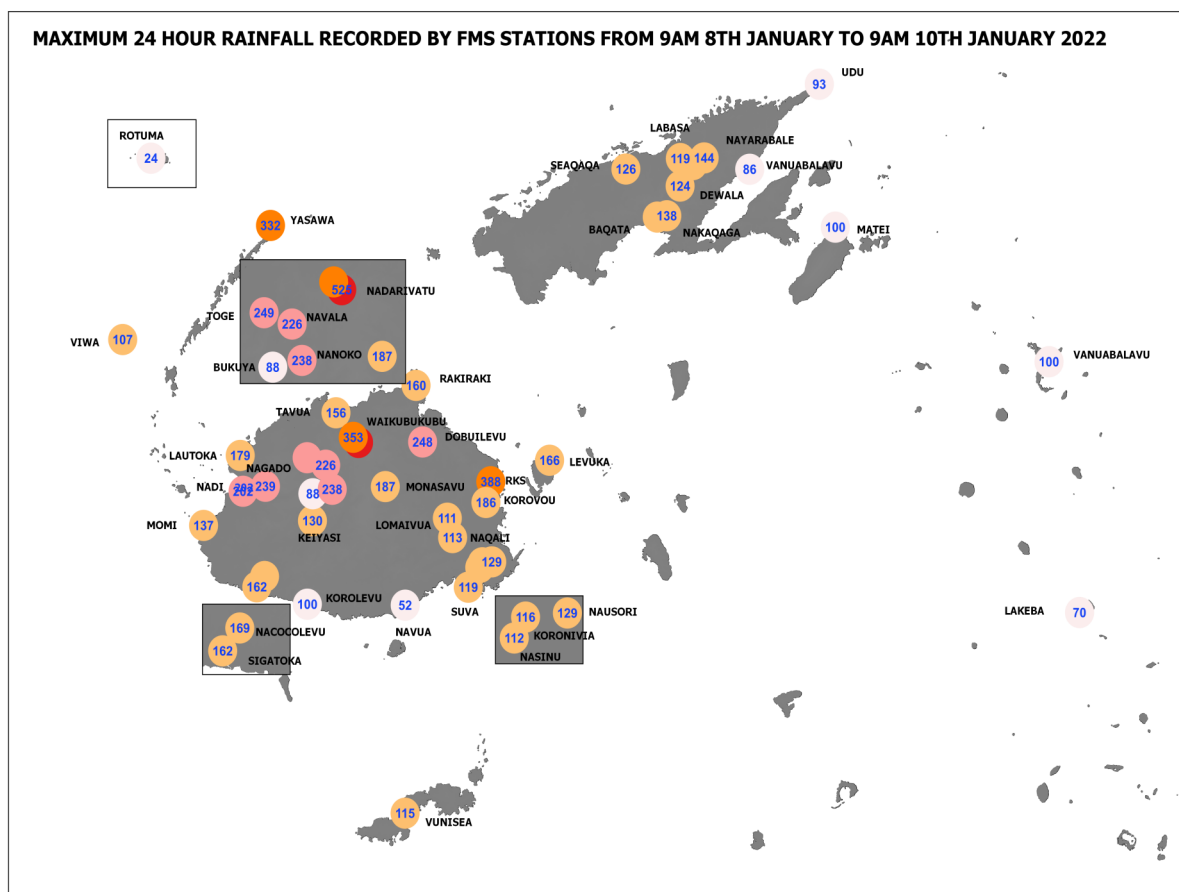


Figure 13: Rainfall across the country over 24-hour period from 8th to 10th.



Figure 14: (a) Flooding in Tavua town on 8th; (b) Inundated Nadi town on 9th; (c) Flooding in Ba town on 10th; and (d) Flash flooding in Sigatoka town on 10th. Picture credit: Fiji Roads Authority and FBC