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# Fiji Climate Summary January 2021

ISO 9001:2015 certified Climate Services

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## 1. IN BRIEF

A moderate strength La Niña event continued in the Pacific Ocean during January 2021. The South Pacific Convergence Zone (SPCZ) was displaced south of its normal position, closer and over the Fiji Group during the month. Consequently, most parts of the country experienced wetter than usual month.

Northern Viti Levu, stretching from Tavua to Dobuilevu, Seaqaqa and Lakeba recorded more than twice the *normal* monthly rainfall. Furthermore, Nadarivatu recorded an enormous 2160mm of rainfall during the month, with Monasavu, Seaqaqa, Penang Mill, and Ellington (Ra) recording around 1000mm of total monthly rainfall.

Tropical cyclone Ana was the major highlight of the month. It made a landfall near Ra as a Category 2 system on the 31st and then bisected through Viti Levu exiting near Navua. It continued its journey south making a landfall over eastern half of Kadavu at the same intensity. Most of the destructive winds around Ana were packed to the north and east of its centre. Consequently, gale to storm force winds were recorded over Viti Levu, Kadvu, Lomaiviti Group and as far as Vanua Levu. The highest recorded wind was registered at Ellington, Ra with sustained wind of 96km/hr and gust of 134km/hr. Ana also resulted in very significant rainfall over the country, especially over the Northern and Central Divisions, and as well as northwestern Viti Levu. The highest 24-hour rainfall was recorded at Dreketilailai with 392mm on the 31st. Consequently severe flooding were registered, especially in the Central and Northern Divisions. Labasa recorded its worst flood since the flood associated with severe tropical cyclone Ami in 2003.

An active convergence zone resulted in widespread rainfall across the country on the 28th and 29th. Rainfall over the Western Division in particular was heavy. The highest rainfall during this event was recorded at Nadarivatu with a 24-hour rainfall of 506mm on the 28th and with a 48-hour rainfall of 942mm between 28th and 29th. All the major towns from Rakiraki to Nadi were inundated with flood waters on the 29th.

Apart from rainfall, occasionally very warm and humid conditions were experienced over the country due to northerly wind flow, especially from around 10th to the 21st. The highest maximum air temperature during the month was registered at Lomaivuna with 36.1°C on the 20th.

Damaging heavy swells were experienced on the southwestern parts of the country during the month due to an intense high pressure system to far southwest of the Fiji Group. There were reports of sea water crashing on the Queens Road at Vatukarasa, Nadaroga on the 22nd.

## 2. WEATHER PATTERNS

Series of troughs of low pressure systems and moist northerly wind flow dominated the Group. Meanwhile, the highlight of the month was the development and devastation brought by tropical cyclone Ana.

The month began with a weak trough of low pressure over the Group. The trough then drifted just to the south of the Group on the 3rd which directed a moist north to northwesterly wind flow over the country. Occasional rain with isolated heavy falls were experienced over most parts of the country.

The trough lingered over the southern parts of the Group till the 5th, then gradually drifted north and affected the northern parts of the country till the 7th. The trough then gradually drifted south again over the southern parts of the country and again directed a northerly wind flow over the Group till the 9th. During this period isolated heavy falls were experienced over parts of the country.

The trough then drifted further southwest of Fiji on the 10th and a northeasterly wind flow dominated the Group. A ridge of high pressure gradually pushed in over the Group from the southeast and this directed northeast to northerly wind flow over the Group till the 20th.

On the 21st, the trough gradually drifted north again just to the southwest of Fiji and by the 24th it was over the Group. The trough intensified and remained active over the Group till the end of the month as series of embedded low-pressure systems developed along the trough and affected Fiji including tropical cyclone Ana. Tropical cyclone Ana affected Fiji on the 30th and 31st with prolonged heavy rain, severe flooding of rivers, and damaging and destructive winds.

Rotuma was mainly affected by series of troughs of low pressure which brought about occasional rain and thunderstorms over the island during the month.

*Previously known as the Fiji Islands Weather Summary and Monthly Weather Summary

## 3. RAINFALL

The major southward shift of the South Pacific Convergence Zone (SPCZ), together with the passage of tropical cyclone Ana through the Fiji Group resulted in the *above average* to *well above average* rainfall at majority of the stations. Northern Viti Levu, stretching from Tavua to Dobuilevu, Seaqaqa and Lakeba recorded more than twice the *normal* monthly rainfall. High intensity rainfall resulted in two major flooding events during the month. Overall, out of the 23 rainfall stations, 6 stations received *well above average* rainfall, 14 *above average*, while 3 stations registered *near average* rainfall (Table 2, Figures 1-5).

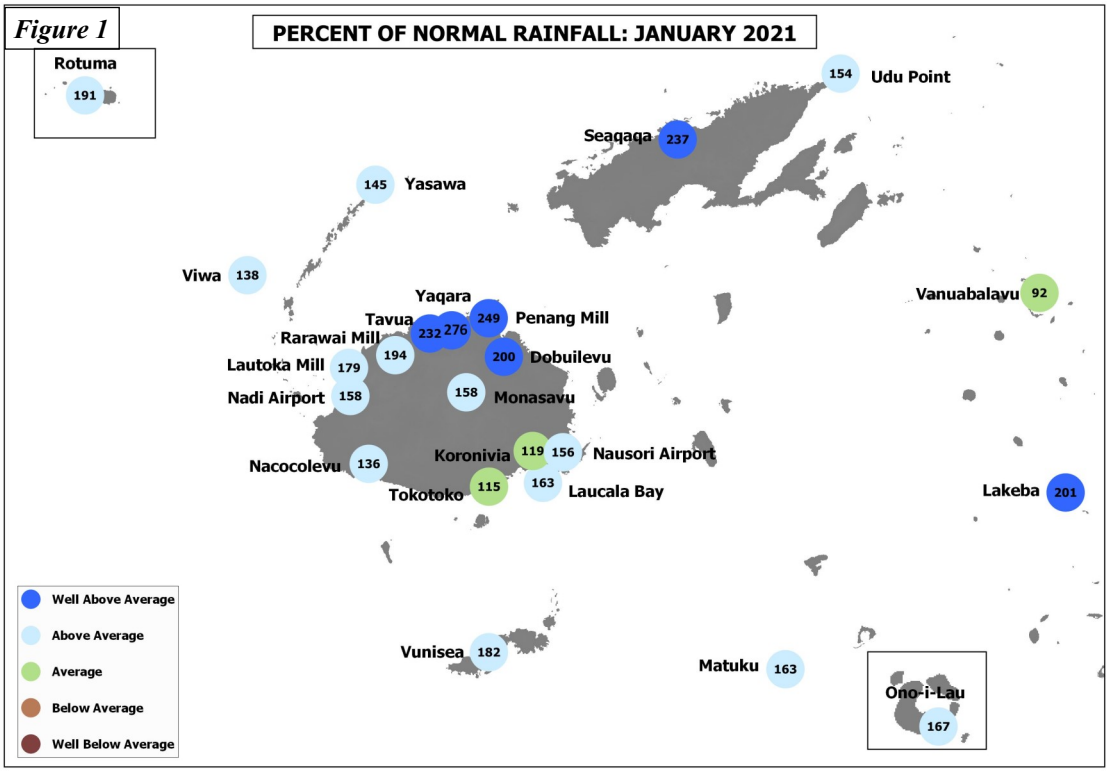
Two major rainfall producing systems affected the Fiji Group during the last week of the month. An active convergence zone on the 28th and 29th resulted in very heavy rainfall, especially over the Western Division and interior of Viti Levu. During this rainfall episode, Nadarivatu recorded 506mm of rainfall over a 24-hour period on the 28th, followed by 436mm a day later. Some of the other significant 24-hour rainfall during this event was at Vatukacevaceva with 330mm on the 28th, followed by Navala with 282mm on the 29th and Bukuya with 245mm on the 29th. Over 48-hour period from 9am on the 28th to 9am on the 30th, Nadarivatu registered 942mm, followed by Navala with 503mm, Vatukacevaceva with 479mm, Toge with 430mm and Nanoko with 426mm. This led to widespread flooding in the Western Division, with all the towns from Rakiraki to Nadi inundated with flood waters.

The second heavy rainfall on the 30th and 31st was associated with tropical cyclone Ana. During this event, the rainfall was intense in particular over Vanua Levu and eastern half of Viti Levu. Dreketilailai registered 392mm of rainfall over a 24-hour period on the 31st, with 352mm a day earlier. Some of the other significant 24-hour rainfall during this event was at Nadarivatu with 352mm, Seaqaqa with 350mm, Qawa with 300mm and Penang Mill with 287mm, all on the 30th. Over 48-hour period from 9am on the January 30th to 9am on the February 1st, Dreketilailai received 744mm of rainfall, followed by Nadarivatu with 563mm, Qawa with 542mm, Nayarabale with 519mm and Seaqaqa with 511mm. This led to widespread flooding on Vanua Levu, with the Labasa town inundated with flood waters. Widespread flooding was also reported on eastern half of Viti Levu.

The highest total monthly rainfall was recorded at Nadarivatu with 2160mm, followed by Monasavu with 1038mm, Seaqaqa with 1019mm, Penang Mill with 1008mm, and Ellington (Ra) with 991mm. On the other hand, the lowest total monthly rainfall was registered at Vanuabalavu with 224mm, followed by Sigatoka with 260mm, Ono-i-Lau with 295mm, Yasawa-i-Rara with 343mm and Korolevu with 349mm.

Ono-i-Lau recorded the highest number of rain days (rainfall ≥0.1mm) during the month with 27 days, followed by Yasawa-i-Rara and Korolevu with both 26, and RKS (Lodoni), Nacocolevu (Sigatoka), Viwa and Matuku with all 25. On the other hand, Saqani experienced least number of rain days with 15, followed by Vaturekuka (Labasa), Nadarivatu and Monasavu with all 18, and Seaqaqa with 19.

*Figure 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 ≥ 0.1mm*
***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

Generally *near normal* or *above normal* maximum air temperatures were observed over the Fiji Group during January. Out of the 19 climate stations, 10 recorded anomalies within ±0.5°C from the *normal*, 6 ≥0.5°C, while 3 recorded anomalies ≤-0.5°C (Table 2 & Figures 2-5).

Warmest days on average during the month was at Levuka with a mean monthly maximum air temperature of 32.8°C, followed by Keiyasi with 32.2°C, Lomaivuna with 32.1°C, Seaqaqa with 32.0°C, and Saqani and Tokotoko (Navua) with both 31.9°C. On the other hand, the coolest day time temperatures on average was observed at Nadarivatu with mean monthly maximum air temperature of 24.9°C, followed by Monasavu with 25.7°C, Ellington (Ra) with 29.3° C, Vaturekuka (Labasa) with 30.1°C and Udu Point with 30.2°C.

A period of very warm condition was experienced across the country from around 10th to the 21st. Lomaivuna recorded maximum air temperature as high as 36.1°C (20th), followed by Levuka with 35.9°C (15th) and Tokotoko (Navua) with 35.5°C (15th). On the other hand, the lowest maximum air temperature during the month was recorded at Nadarivatu with 21.4°C on the 3rd, followed by Monasavu with 22.1° C on the 29th, and Lomaivuna with 25.7°C on the 29th.

There was no new record maximum air temperature set during the month.

### B. Minimum Night-time Air Temperatures

*Near normal* or *above normal* minimum air temperatures were recorded over most parts of the country during the month. Of the 19 stations, 9 recorded anomalies ≥+0.5°C from the *normal*, 8 within ±0.5°C, while Yasawa-i-Rara and Penang Mill registered anomalies ≤ -0.5°C (Table 2 & Figures 2-5).

The coolest place on average during the month was Nadarivatu with a mean monthly minimum air temperature of 18.8°C, followed by Monasavu with 19.7°C, Lomaivuna with 21.8°C, and Vaturekuka (Labasa) with 22.5°C. On the other hand, the warmest nights on average during the month were at Levuka and Viwa with both registering mean monthly minimum air temperature of 25.3°C, followed by Rotuma with 25.2°C and Matuku with 25.0°C .

Occasionally cool nights were observed during the month. Nadarivatu recorded the lowest daily minimum air temperature during the month with 15.0°C, followed by Monasavu with 17.5°C and Rarawai Mill (Ba) with 19.8°C, all on the 27th. On the other hand, the warmest daily minimum air temperature was recorded at Kubulau with 27.8°C on the 9th, followed by Matuku with 27.3°C on the 17th and Rotuma and Viwa with both 27.0°C on the 19th and 21st, respectively.

There was no new record minimum air temperature set during the month.

## TABLE 1. CLIMATE RECORDS ESTABLISHED IN JANUARY 2021

There was no new record established during the month.

***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 2021

| | RAINFALL | | | | | AIR TEMPERATURES | | | | | | | | | SUNSHINE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TOTAL | RAIN | MAX. | | | AVERAGE DAILY | | | | EXTREME | | | | | TOTAL | |
| | | * | DAYS | FALL | | MAX. | # | MIN. | # | MAX. | | MIN. | | | | * |
| | MM | % | + | MM | ON | C | | C | | C | ON | C | ON | | HRS | % |
| NADI AIRPORT | 539 | 158 | 22 | 90 | 28 | 31.0 | -0.5 | 23.9 | 0.9 | 33.7 | 13 | 22.0 | 27 | | 141 | 67 |
| SUVA/LAUCALA BAY | 578 | 163 | 24 | 130 | 30 | 31.7 | 0.6 | 24.7 | 0.5 | 35.1 | 21 | 23.5 | 31 | | 155 | 80 |
| NACOCOLEVU | 379 | 136 | 26 | 46 | 12 | 31.7 | 0.3 | 23.4 | 1.1 | 34.1 | 16 | 22.1 | 7 | | 109 | 60 |
| ROTUMA | 672 | 191 | 25 | 110 | 29 | 30.9 | -0.1 | 25.2 | 0.3 | 33.1 | 21 | 23.4 | 30 | | 201 | 120 |
| VIWA | 372 | 138 | 22 | 71 | 21 | 31.4 | -0.1 | 25.3 | 0.2 | 33.3 | 19 | 23.9 | 24 | | | |
| UDU POINT | 582 | 154 | 21 | 111 | 30 | 30.2 | -0.6 | 24.3 | -0.1 | 32.1 | 21 | 22.0 | 25 | | | |
| SAVUSAVU AIRFIELD | STATION TEMPORARILY CLOSED | | | | | | | | | | | | | | | |
| LABASA AIRFIELD | STATION TEMPORARILY CLOSED | | | | | | | | | | | | | | | |
| NABOUWALU | STATION TEMPORARILY CLOSED | | | | | | | | | | | | | | | |
| KORONIVIA | 441 | 119 | 22 | 139 | 28 | 31.0 | 0.4 | 23.8 | 0.9 | 33.0 | 22 | 22.5 | 1 | | | |
| NAUSORI AIRPORT | 554 | 156 | 22 | 120 | 30 | 31.5 | 1.0 | 23.7 | 0.4 | 34.5 | 21 | 22.0 | 2 | | | |
| NAVUA/TOKOTOKO | 433 | 115 | 27 | 63 | 25 | 31.9 | 1.5 | 23.6 | 1.5 | 35.5 | 15 | 22.0 | 19 | | | |
| MONASAVU | 1038 | 158 | 26 | 221 | 30 | 25.7 | 0.2 | 19.7 | 0.7 | 28.5 | 19 | 17.5 | 27 | | | |
| LAUTOKA AES | 676 | 179 | 23 | 139 | 28 | 31.1 | -0.2 | 23.9 | 0.1 | 34.0 | 19 | 22.5 | 3 | | | |
| BA/RARAWAI MILL | 829 | 194 | 22 | 175 | 28 | 31.1 | -1.1 | 22.6 | 0.2 | 34.1 | 19 | 19.8 | 27 | | | |
| PENANG MILL | 1008 | 249 | 23 | 287 | 30 | 31.2 | 0.4 | 23.5 | -0.5 | 34.0 | 19 | 21.2 | 27 | | | |
| MATEI AIRFIELD | STATION TEMPORARILY CLOSED | | | | | | | | | | | | | | | |
| VANUABALAVU | 224 | 92 | 21 | 54 | 31 | 30.5 | 0.4 | 24.6 | -0.0 | 31.9 | 22 | 22.9 | 25 | | | |
| LAKEBA | 488 | 201 | 22 | 218 | 27 | 31.6 | 1.3 | 24.0 | 0.0 | 33.5 | 17 | 21.6 | 27 | | | |
| YASAWA | 343 | 145 | 19 | 74 | 30 | 31.4 | 0.4 | 23.4 | -1.1 | 34.9 | 19 | 21.0 | 8 | | | |
| VUNISEA | 447 | 182 | 24 | 83 | 2 | 30.7 | 0.6 | 24.7 | 1.2 | 32.7 | 15 | 23.2 | 22 | | | |
| MATUKU | 379 | 163 | 20 | 161 | 30 | 30.3 | 0.1 | 25.0 | 0.7 | 32.5 | 18 | 22.1 | 31 | | | |
| ONO-I-LAU | 295 | 167 | 25 | 81 | 31 | 30.5 | 0.8 | 24.8 | 0.6 | 32.6 | 17 | 22.5 | 2 | | | |
| YAQARA AWS | 859 | 276 | 21 | 202 | 30 | 31.8 | | 24.1 | | 33.9 | 10 | 22.1 | 27 | | | |
| LEVUKA AWS | 775 | | 25 | 170 | 30 | 32.8 | | 25.3 | | 35.9 | 15 | 23.9 | 3 | | | |
| KEIYASI AWS | 713 | | 22 | 202 | 28 | 32.2 | | 22.7 | | 35.4 | 7 | 21.5 | 1 | | | |
| LOMAIVUNA AWS | 546 | | 18 | 162 | 30 | 32.1 | | 21.8 | | 36.1 | 20 | 20.8 | 1 | | | |
| NADARIVATU AWS | 2160 | | 25 | 506 | 28 | 24.9 | | 18.8 | | 27.2 | 19 | 15.0 | 27 | | | |
| RKS LODONI AWS | 400 | | 15 | 192 | 30 | 31.2 | | 23.1 | | 33.7 | 20 | 21.8 | 4 | | | |
| MOMI AWS | 405 | | 18 | 98 | 28 | U/S | | 24.3 | | U/S | | 22.7 | 4 | | | |
| SIGATOKA AWS | 260 | | 24 | 44 | 29 | 31.0 | | 23.1 | | 34.0 | 21 | 21.7 | 7 | | | |
| ELLINGTON (RA) AWS | 991 | | 22 | 260 | 30 | 29.3 | | 23.4 | | 30.7 | 14 | 21.7 | 3 | | | |
| WAINIKORO AWS | 894 | | 21 | 179 | 30 | 31.0 | | 23.3 | | 34.1 | 18 | 21.7 | 1 | | | |
| SAQANI AWS | U/S | | | | | 31.9 | | 24.6 | | 33.9 | 12 | 22.9 | 3 | | | |
| VATUREKUKA AWS | U/S | | | | | 30.1 | | 22.5 | | 32.5 | 26 | 21.2 | 1 | | | |
| SEAQAQA AWS | 1019 | 237 | 22 | 350 | 30 | 32.0 | | 24.4 | | 34.5 | 19 | 22.3 | 10 | | | |
| KOROLEVU AWS | 349 | | 21 | 57 | 24 | 31.8 | | 23.1 | | 34.6 | 21 | 21.9 | 9 | | | |
| KORO ISLAND AWS | U/S | | | | | U/S | | U/S | | | | | | | | |
| KUBULAU AWS | 441 | | 18 | 105 | 28 | 30.4 | | 23.5 | | 31.9 | 21 | 22.2 | 10 | | | |
| DOBUILEVU TB3 | 812 | 200 | 22 | 269 | 30 | | | | | | | | | | | |
| NASINU TB3 | 463 | | 23 | 126 | 30 | | | | | | | | | | | |
| TAVUA TB3 | 830 | 232 | 22 | 183 | 28 | | | | | | | | | | | |

| | TEMPERATURE( C) | | | HUMIDITY | | WIND | SUN RAD | |
|---|---|---|---|---|---|---|---|---|
| | | DRY | WET | RH% | VP | | %OF | MJ/ |
| | MEAN | (AVERAGE AT 9AM) | | | | KT | POS | SQ.M |
| NADI AIRPORT | 27.4 | 28.2 | 25.2 | 78 | 29.6 | 6.2 | 36 | 16.1 |
| SUVA/LAUCALA BAY | 28.2 | 28.7 | 25.8 | 79 | 30.9 | | 40 | 9$ |
| NACOCOLEVU | 27.5 | 28.2 | 26.1 | 85 | 32.3 | | 29 | 17$ |
| ROTUMA | 28.0 | 28.6 | 26.2 | 83 | 32.1 | | 53 | 21$ |
| VIWA | 28.4 | 28.8 | 26.3 | 82 | 32.3 | | | |
| UDU POINT | 27.3 | 28.1 | | | | | | |
| SAVUSAVU AIRFIELD | STATION TEMPORARILY CLOSED | | | | | | | |
| LABASA AIRFIELD | STATION TEMPORARILY CLOSED | | | | | | | |
| NABOUWALU | STATION TEMPORARILY CLOSED | | | | | | | |
| KORONIVIA | 27.4 | 28.6 | 26.1 | 82 | 31.9 | | | |
| NAUSORI AIRPORT | 27.6 | 28.2 | 25.7 | 82 | 31.2 | 5.7 | | |
| NAVUA/TOKOTOKO | 27.8 | 28.7 | | | | | | |
| MONASAVU | 22.7 | 23.3 | 21.6 | 86 | 24.5 | | | |
| LAUTOKA AES | 27.5 | 28.2 | 26.0 | 84 | 32.1 | | | |
| BA/RARAWAI MILL | 26.8 | 28.1 | 25.6 | 82 | 30.9 | | | |
| PENANG MILL | 27.3 | 28.3 | 25.9 | 82 | 31.4 | | | |
| MATEI AIRFIELD | STATION TEMPORARILY CLOSED | | | | | | | |
| VANUABALAVU | 27.5 | 28.6 | 25.6 | 78 | 30.5 | | | |
| LAKEBA | 27.8 | 29.0 | 26.1 | 80 | 31.7 | | | |
| YASAWA | 27.4 | 28.3 | 26.4 | 86 | 33.1 | | | |
| VUNISEA | 27.7 | 28.5 | 26.0 | 81 | 31.7 | | | |
| MATUKU | 27.6 | 28.3 | 26.0 | 83 | 31.9 | | | |
| ONO-I-LAU | 27.7 | 28.3 | 26.1 | 84 | 32.2 | | | |

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

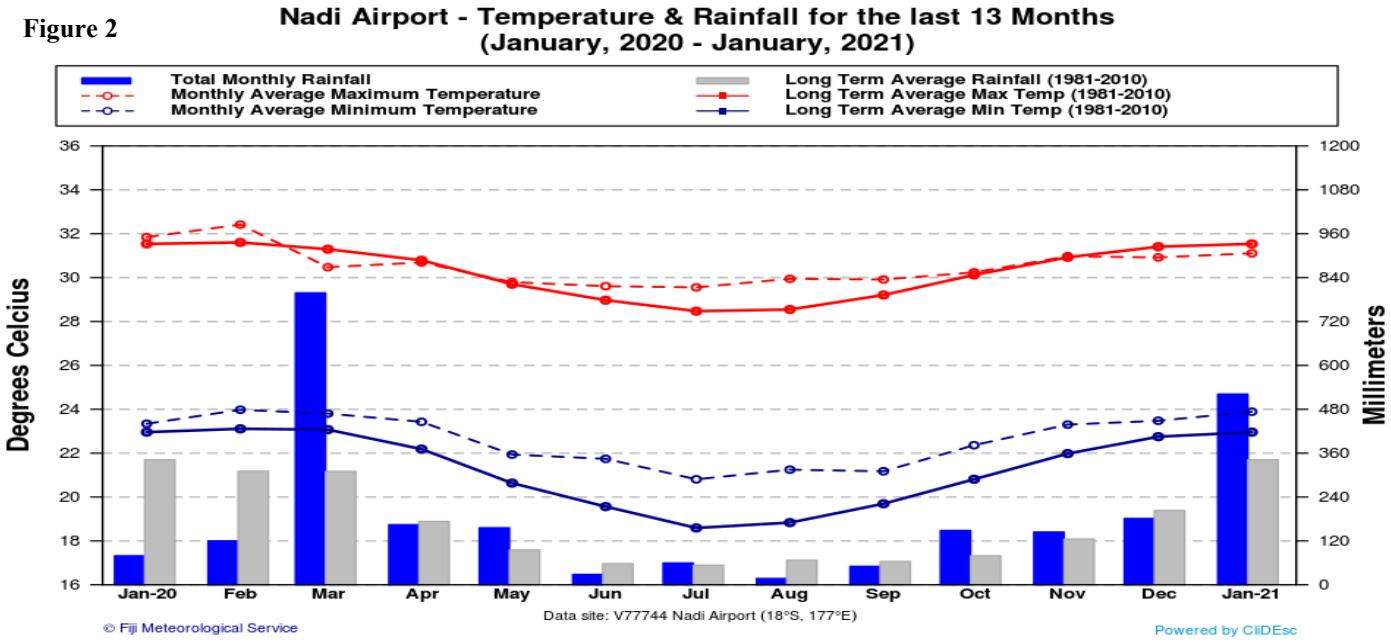



Figure 3

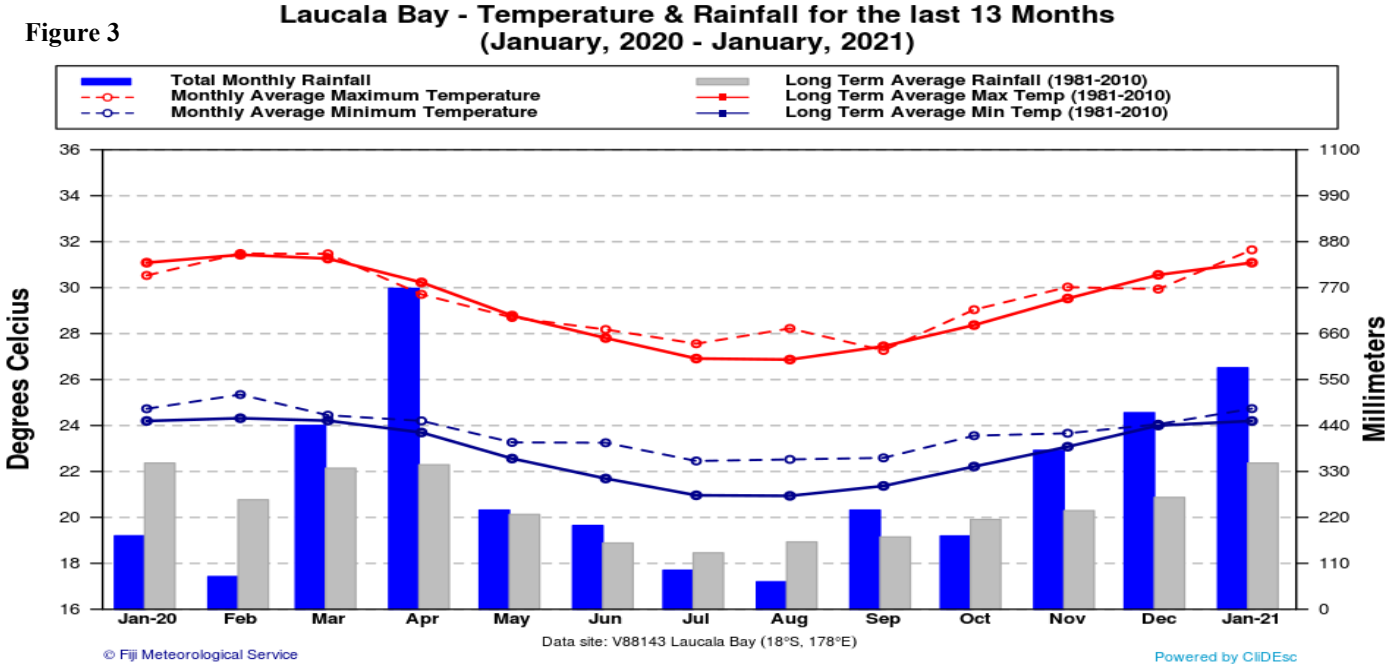



Figure 4

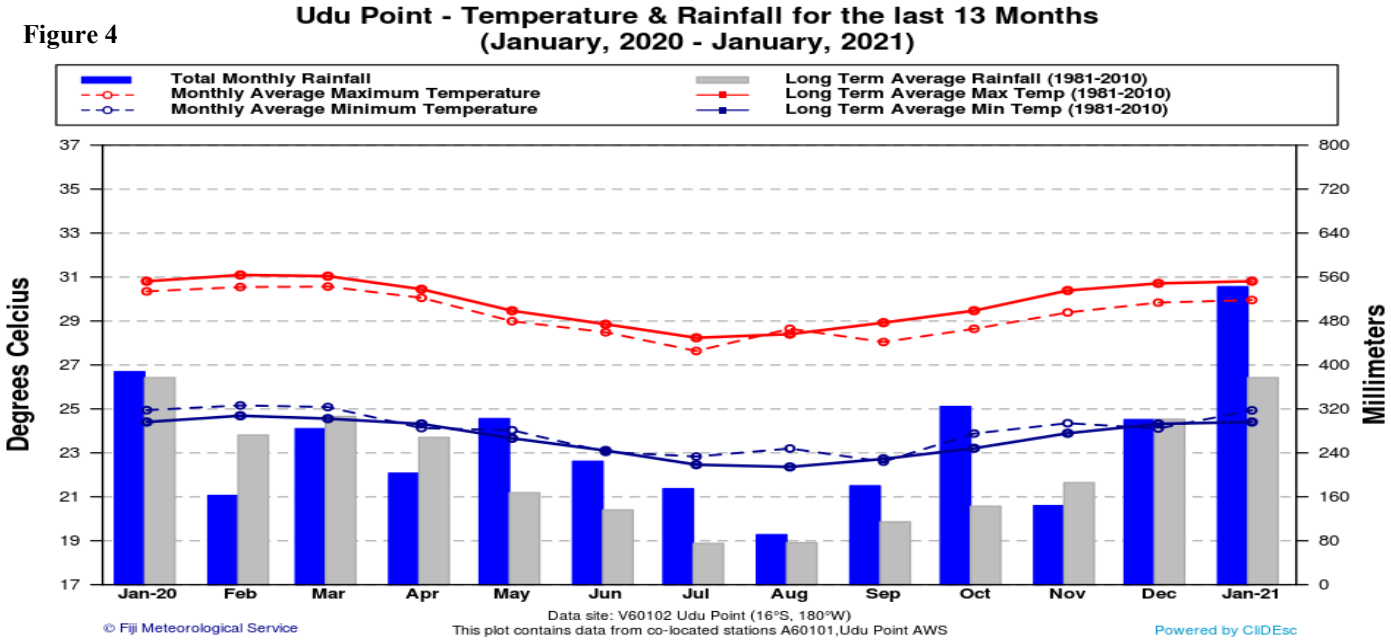
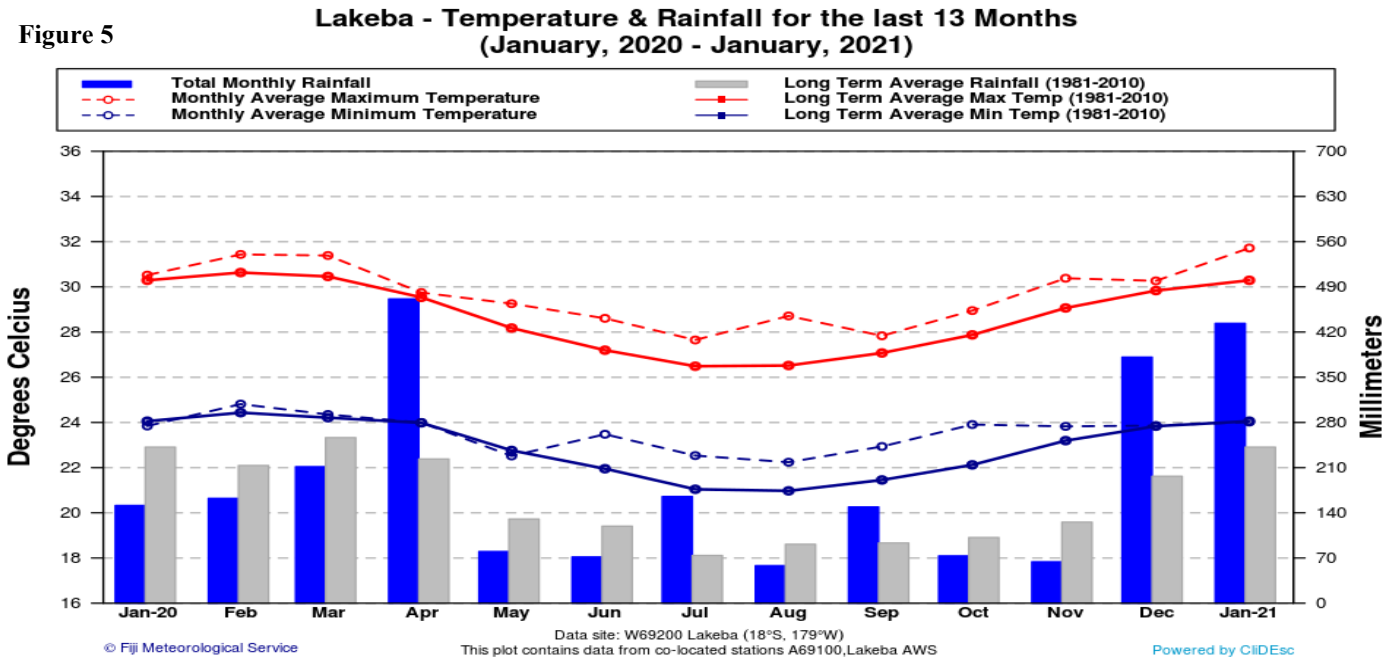


Figure 5




## 5. DAILY RAISED PAN EVAPORATION

*Figure 6*

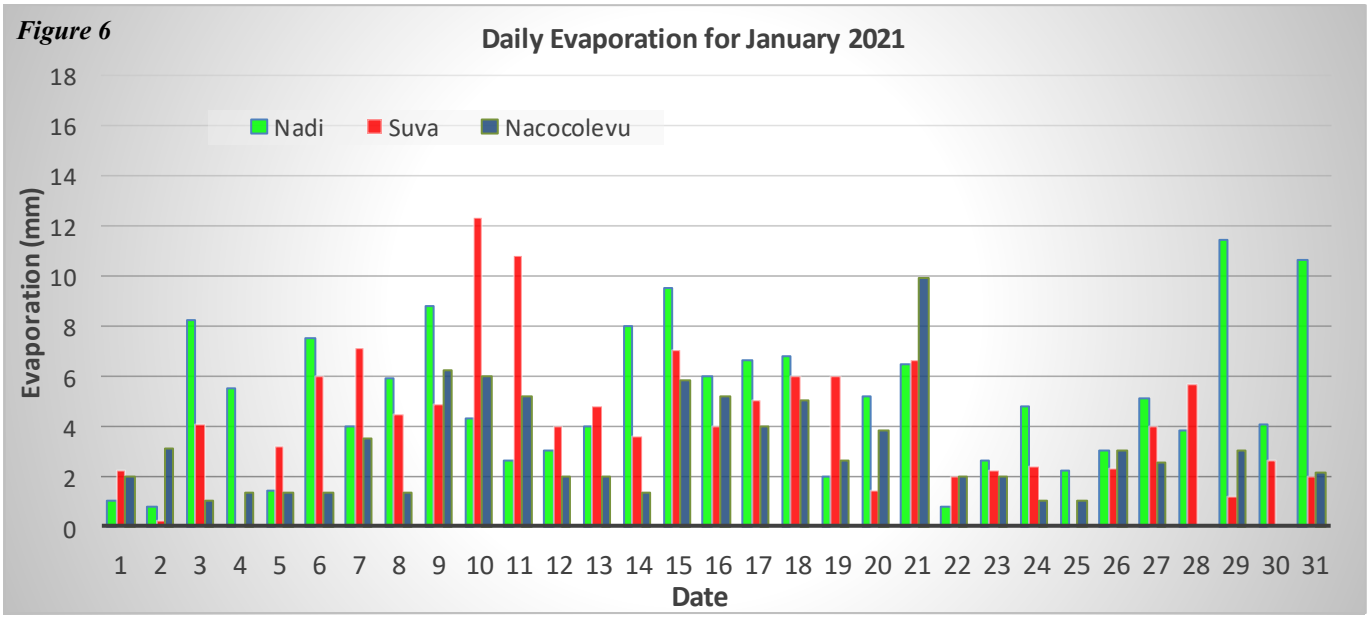



**Figure 6:** The total monthly evaporation at Nadi Airport, Laucala Bay (Suva) and Nacocolevu (Sigatoka) were 156mm, 128mm, and 90mm, respectively. Nadi's highest daily evaporation was 11.4mm on the 29th, with Suva's highest daily evaporation of 12.3mm on the 10th and Nacocolevu (Sigatoka) recorded its highest of 9.9mm on the 21st.

## 6. SOLAR RADIATION

*Figure 7*

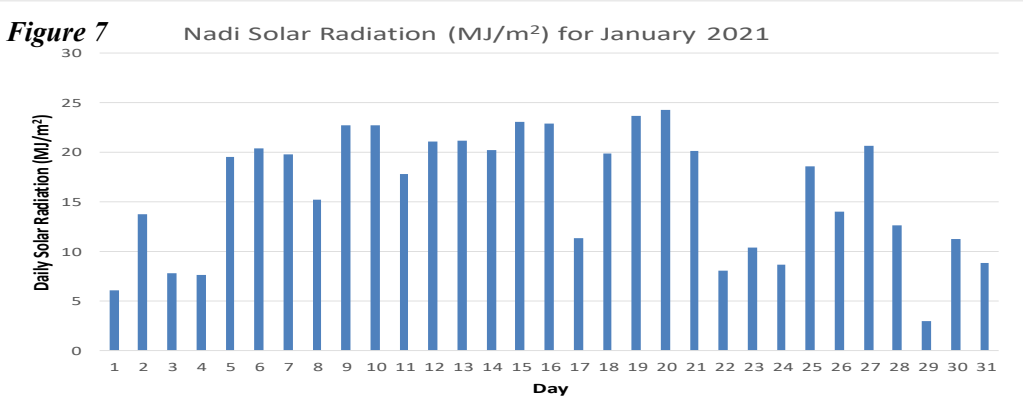



**Figure 7:**

The mean daily solar radiation at Nadi Airport during the month was 16.0MJ/m$^2$ compared to 21.2MJ/m$^2$ over 30 year average (1981 -2010).

## 7. WIND SUMMARY

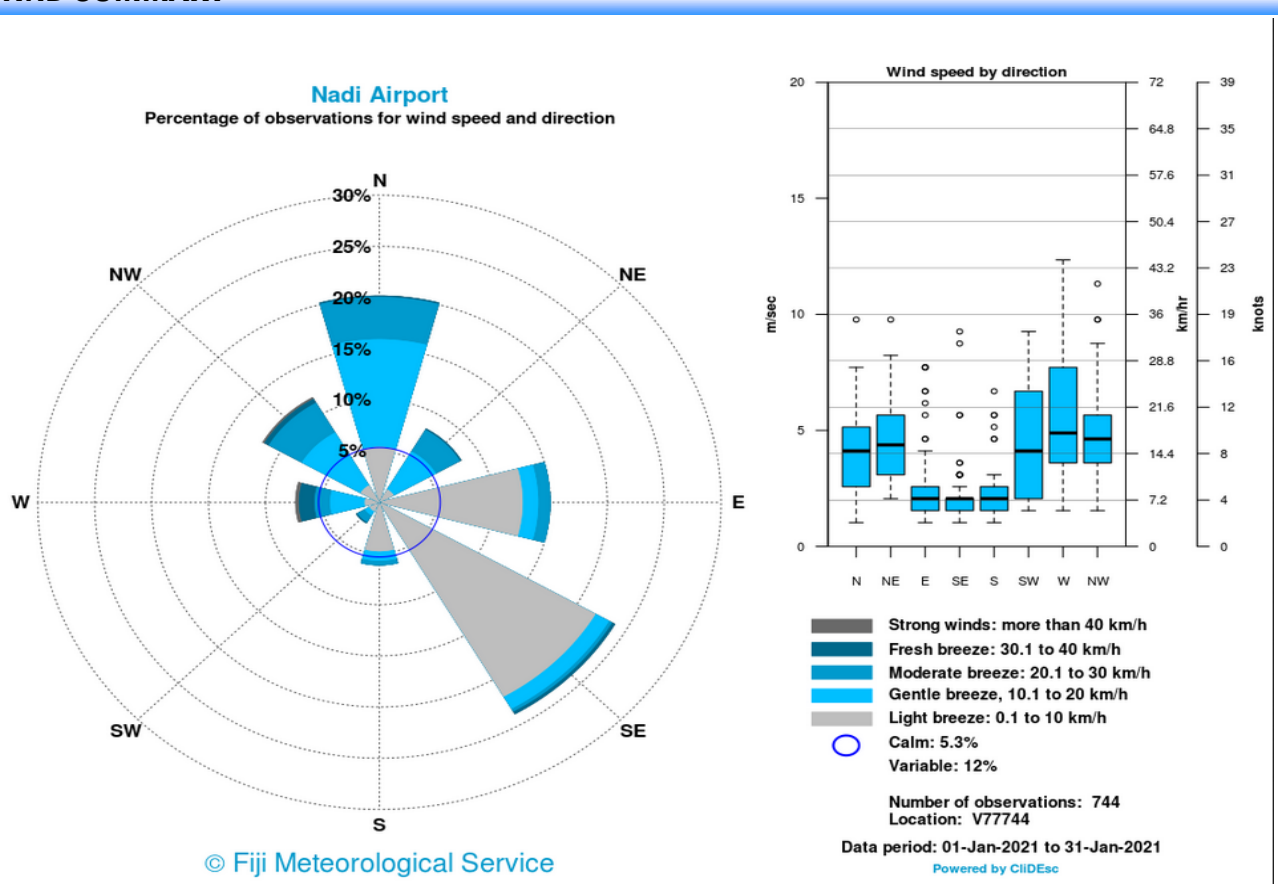



***Figure 8a***: Winds from southeast were dominant at Nadi Airport during the month, followed by north, then east. Wind strength were generally light to moderate at the station, but fresh to strong breeze was observed during the passage of TC Ana.

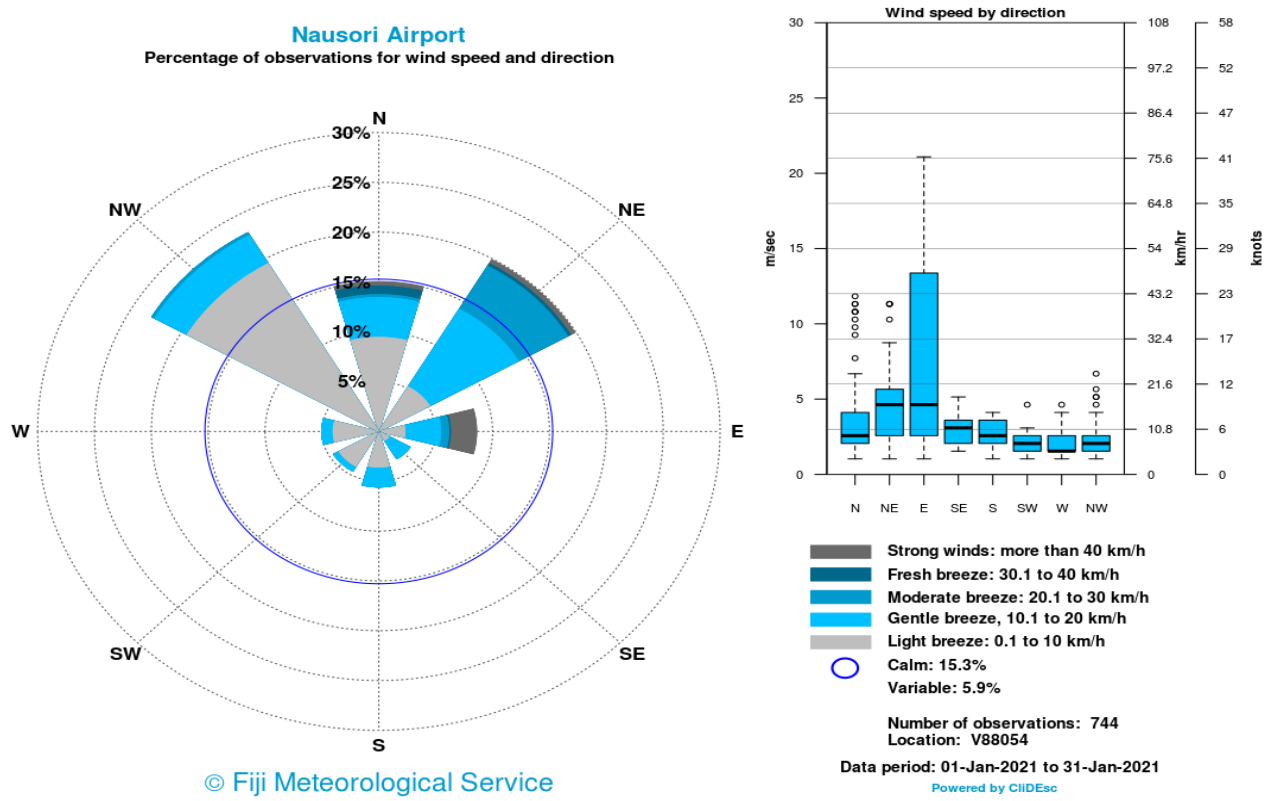



***Figure 8b:*** Winds from northwest were dominant at Nausori Airport, followed by northeast and then north. Light to strong winds were generally observed at the station, but TC Ana brought gale force winds.

## 8. SEA SURFACE TEMPERATURE (SST)

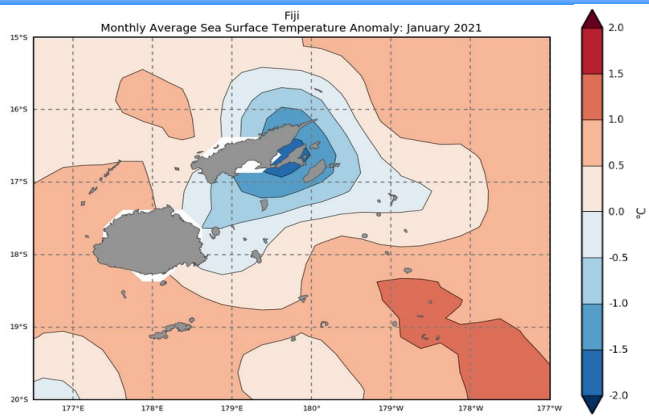



**Figure 9:**

Cool sea surface temperatures continued to persist around Vanua Levu post the passage of severe tropical cyclone Yasa over the island in December 2020.

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

## 9. CLOUD COVER

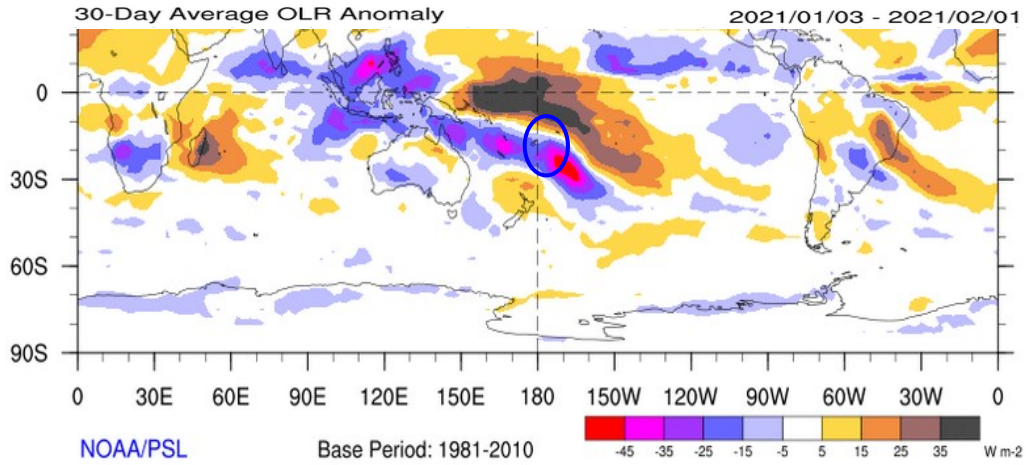



**Figure 10:**

Above normal cloud cover was present over the Fiji region during the month (Fiji in blue circle).

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

## 10. SEA LEVEL

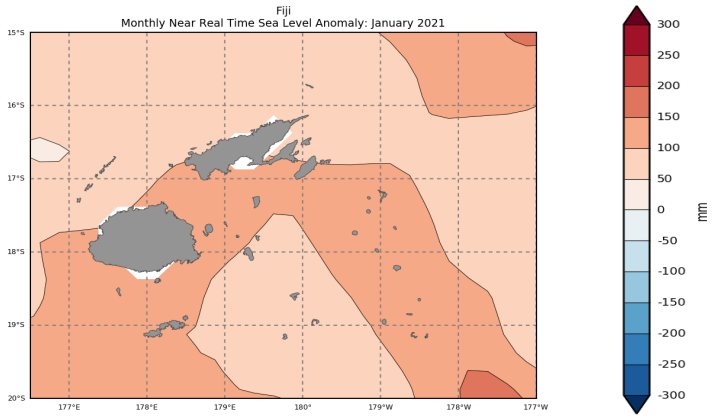



**Figure 11:**

Positive sea level anomalies were present in the Fiji Waters during the month, with anomalies of up to +10-15cm.

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

## 11. WIND ANOMALIES

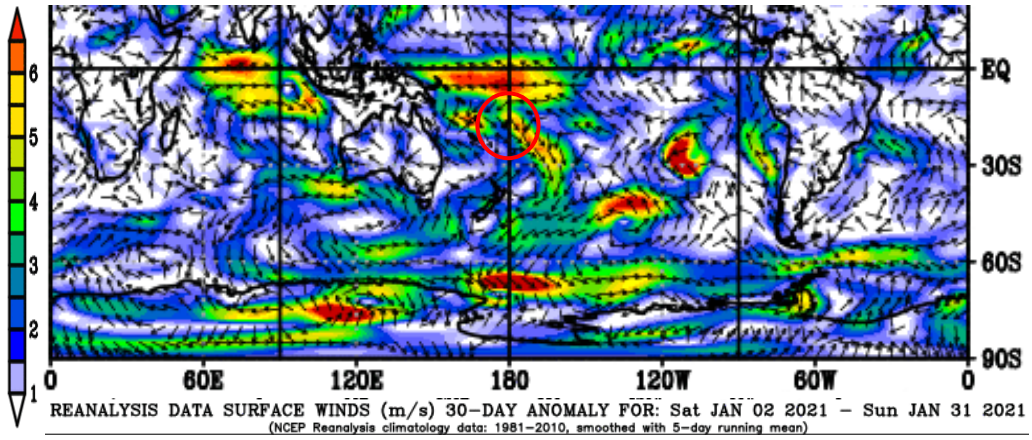



**Figure 12:**
North-westerly wind anomalies were observed over the Fiji Group during the month, with anomalies of up to 6.0m/s over the Northern and Eastern Divisions (base period: 1981-2010) (*Fiji in red circle*).

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

## 12. FLOODING: 28TH AND 29TH

The last week of January 2021 has brought about significant rainfall over the country which resulted in series of flash floods as well as major river flooding. There was widespread flooding in the Western Viti Levu on the 29th.

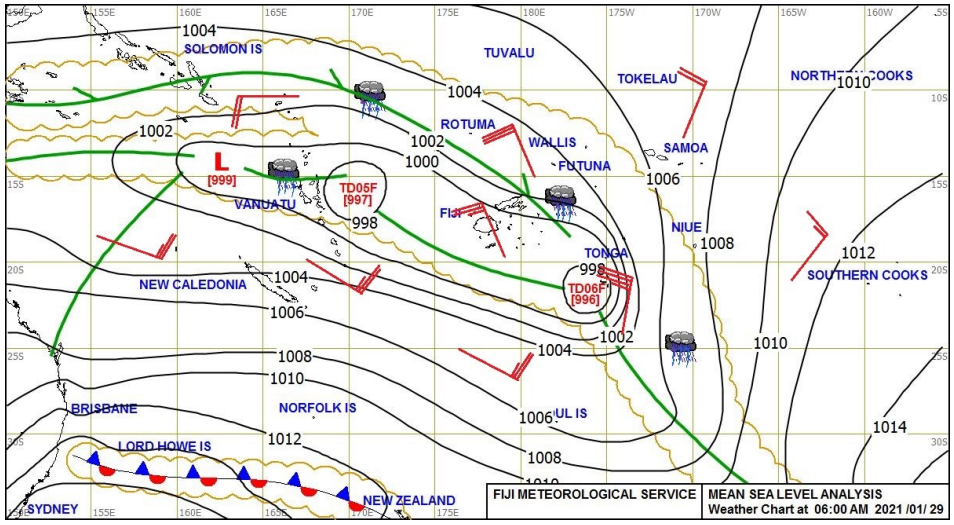



*Figure 13: Mean sea level analysis at 6am on the 29th.*

An active convergence zone resulted in widespread rainfall across the country on the 28th and 29th (Figure 13). Rainfall over the Western Division in particular was heavy. Over a 24-hour period from 9am on the 28th to the 9am on the 29th, Nadarivatu recorded an enormous 506mm of rainfall, followed by Vatukacevaceva with 330mm, Ellington (Ra) with 223mm, Navala with 221mm, Toge with 217mm and Penang Mill with 212mm. Consequently, Rakiraki town was inundated with flood waters on the 28th. A number of other low lying areas and crossings around Ra were also reported flooded. This included Narara Crossing, Drana Crossing, road to the Waimari Flat, Katudrau Crossing, Navatu School, surface flooding after Drauniivi School and Matewali Crossing.

Heavy precipitation continued on the 29th with Nadarivatu registering 436mm of rainfall, followed by Navala with 282mm, Bukuya with 245mm, Navunitawa with 241mm and Nanoko with 231mm. Over a 48-hour period from 9am on the 28th to 9am on the 30th, Nadarivatu recorded 942mm of rainfall, followed by Navala with 503mm of rainfall, Vatukacevaceva with 479mm, Toge with 430mm and Nanoko with 426mm.

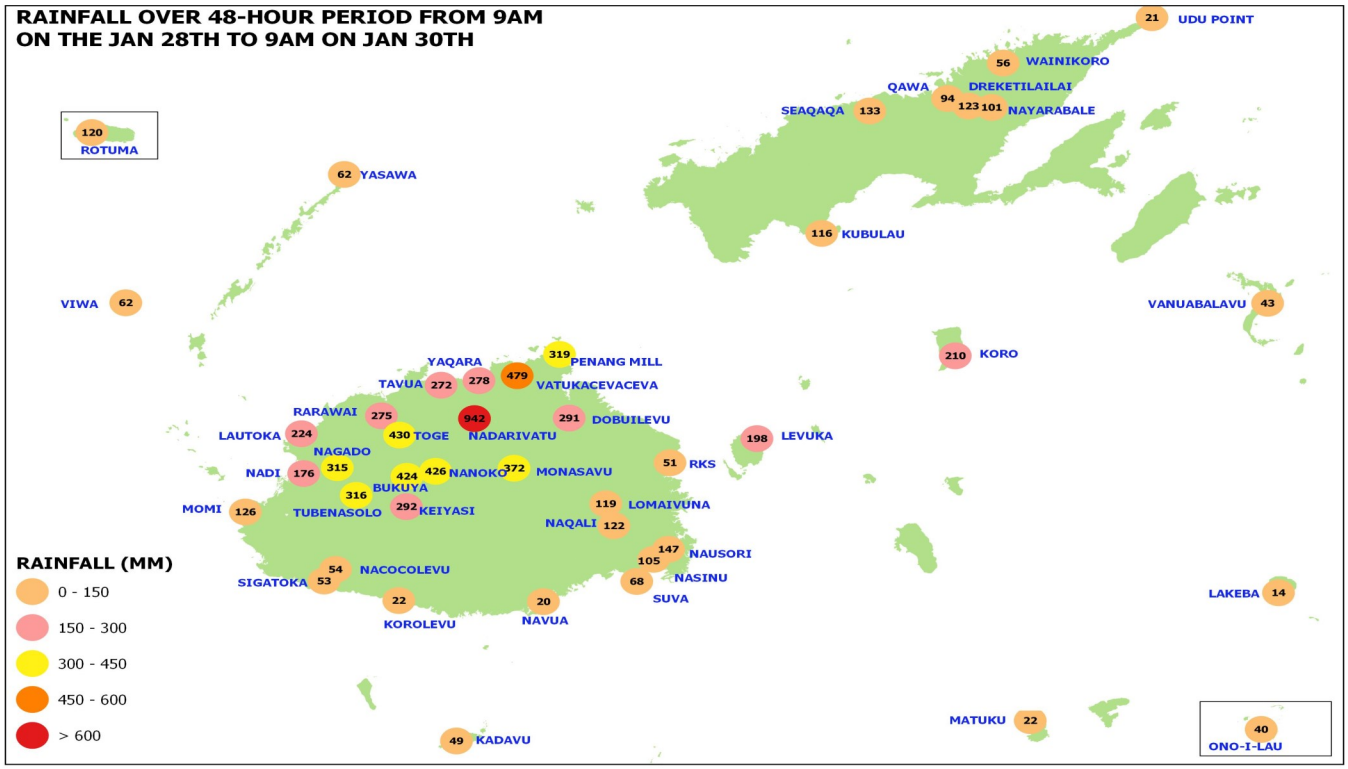



*Figure 14: Rainfall across the country over 48-hour period from 9am on the 28th to 9am on the 30th.*

These high intensity rainfall resulted in major flooding in Ba, Tavua and Rakiraki. Certain parts of Sigatoka, Nadi and Lautoka also experienced flash floods. Major towns such as Rakiraki, Tavua, Ba and Nadi were also inundated with flood waters. A life was lost when a villager drowned while trying to cross flooded Waikubukubu River in Nadarivatu.

## 13. TROPICAL CYCLONE ANA

Tropical cyclone Ana passed through the Fiji Group during the month. It made a landfall near Ra as a Category 2 system and then bisected through Viti Levu exiting near Navua. It continued its journey south making a landfall over eastern half of Kadavu at the same intensity. Most of the destructive winds around Ana were packed to the north and east of its centre. Consequently, gale to storm force winds were recorded over Viti Levu, Kadvu, Lomaiviti Group and as far as Vanua Levu. It also resulted in severe flooding, especially in the Central and Northern Divisions. Labasa recorded its worst flood since the flood associated with severe tropical cyclone Ami in 2003.

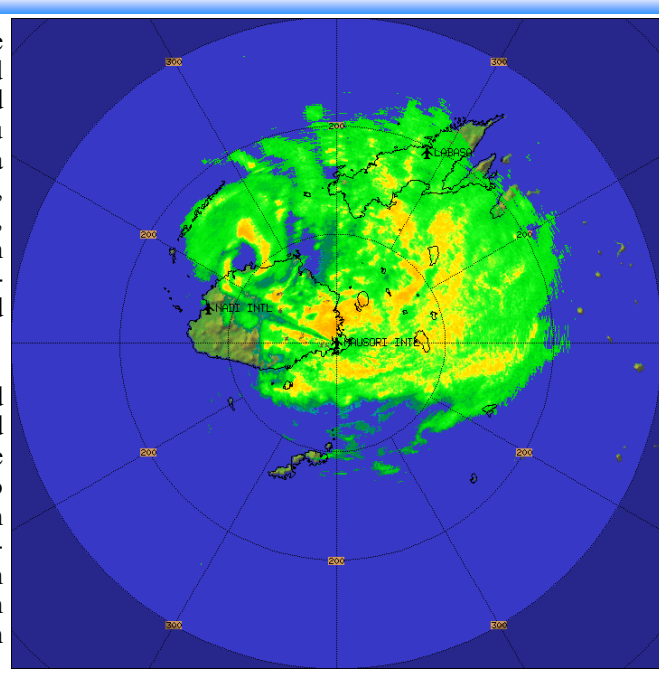



*Figure 15: Tropical cyclone Ana on the RADAR network in Fiji at 3.20am on the 31st, with the centre sitting just off the coast of Viti Levu.*

Tropical cyclone Ana originated from a low pressure analysed between Fiji and Vanuatu. It slowly tracked eastward toward Vanuatu and intensified into a tropical disturbance 05F on the 26th just northeast of Port Vila. TD05F was slow moving due to a blocking high pressure system to the south and a ridge of high pressure to the far east of the system. This slow movement enabled the system to further intensify into a Tropical Depression 05F on the 27th whilst slow moving just east of Vanuatu. It then began to track east-northeast towards the north of Fiji early on the 29th.

At 6am on the 30th, TD05F intensified into a tropical cyclone and was subsequently named 'Ana' about 340km northwest of Nadi. Tropical cyclone Ana began to track east-southeast towards the Fiji Group and passed the northern tip of the Yasawa Group at about 11pm on the 30th.

Ana further intensified into a Category 2 system over the Bligh waters. It reached very close to coast of Ra by around 1am on the 31st, but it started to track west over the waters and then supposedly made a clockwise loop upon reaching waters off the coast of Ba (Figure 15). Ana finally made a landfall near Rakiraki at about 6am on the day. It made its way across Viti Levu in a south-southeast direction and exited Viti Levu near Navua at about 2pm.

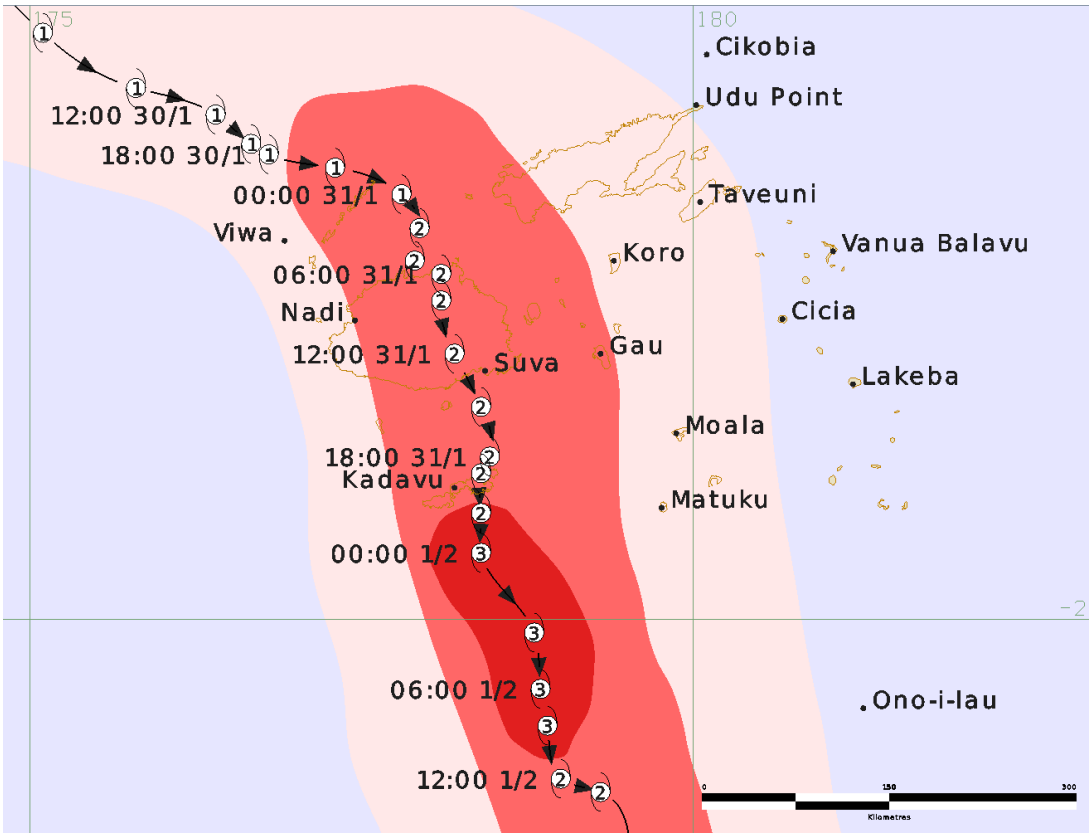



*Figure 16: Provisional track map of tropical cyclone Ana. Pink, dark pink and red colours indicate extent of gale, storm and hurricane force winds.*

Ana continued to track south across the Kadavu passage and made landfall on the eastern tip of Kadavu at about 6pm on the 31st. After passing Kadavu, the cyclone further intensified into a Category 3 system.

Ana continued to track south-southeast away from the Fiji Group and progressively weakened as it encountered high wind shear and cooler ocean waters. Ana was finally declassified to a tropical low at 6am on the 2nd after losing its tropical cyclone characteristics. The low level center was completely sheared from its convective cloud topping.

Ana resulted in very significant rainfall over the country, especially over the Northern and Central Divisions, and as well as northwestern Viti Levu. Over the 24-hour period from 9am on the January 31st to 9am on the February 1st, Dreketilailai registered 392mm of rainfall. Furthermore, a number of stations recorded very heavy rainfall from 9am on the 30th to 9am on the 31st with Dreketilailai and Nadarivatu observing 352mm of rainfall, followed by Seaqaqa with 350mm, Qawa with 300mm, Penang Mill with 287mm, Nayarabale with 278mm and Vatukacevaceva with 272mm (Figure 17). Over the 48-hour period from 9am on the January 30th to 9am on the February 1st, Dreketilailai received 744mm, followed by Nadarivatu with 563mm, Seaqaqa with 511mm, Qawa with 542mm, Nayarabale with 519mm and Seaqaqa with 511mm (Figure 18).

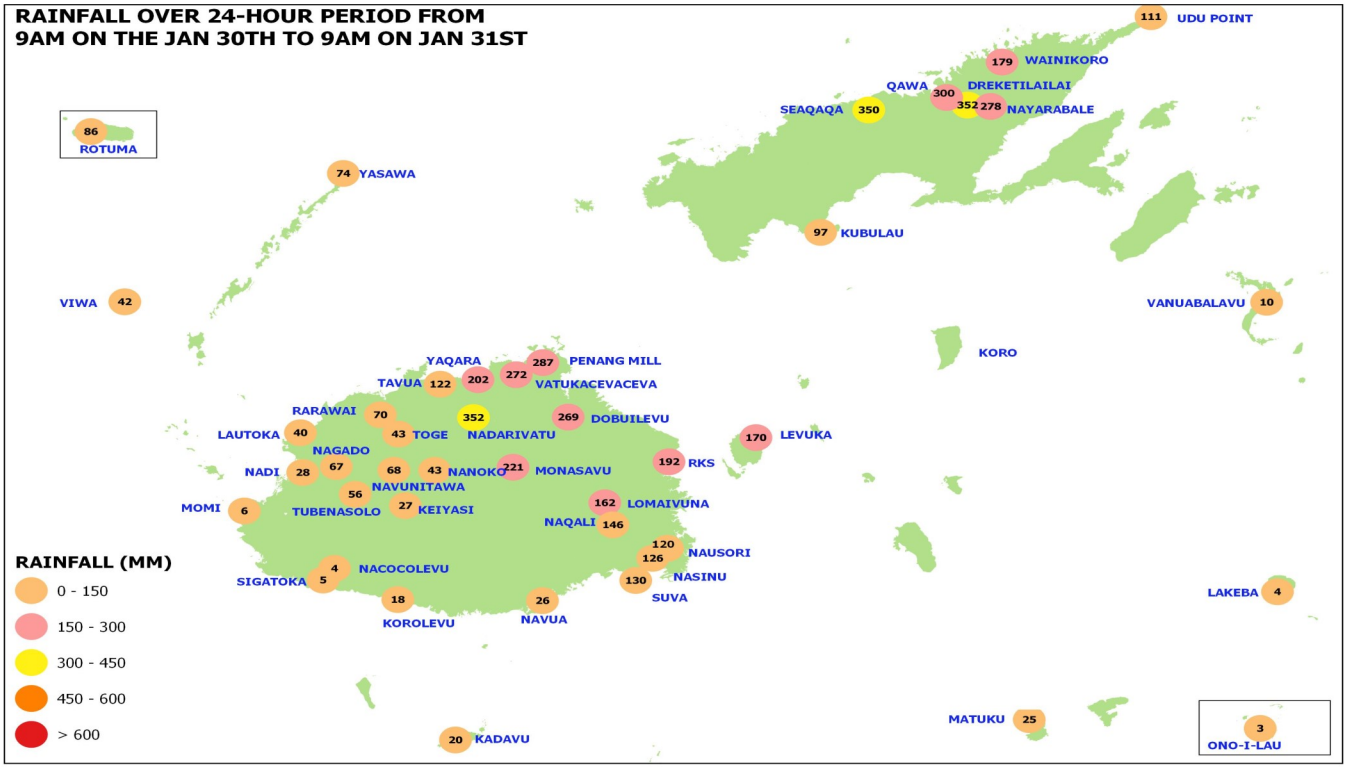



*Figure 17: Rainfall across the country over 24-hour period from 9am on the 30th to 9am on the 3st.*

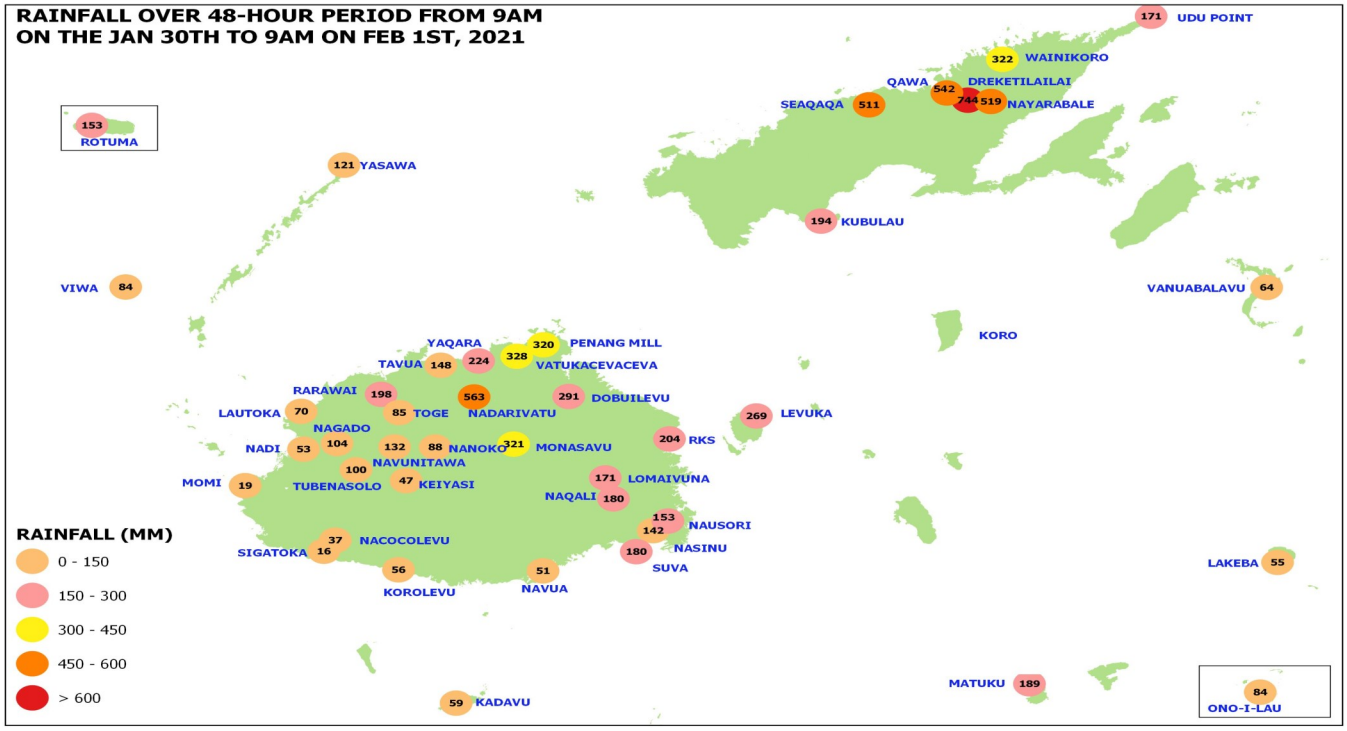



*Figure 18: Rainfall across the country over 48-hour period from 9am on the Jan 30th to 9am on the Feb 1st.*

High intensity rainfall in particular were recorded over north western and interior of Viti Levu, and Vanua Levu, with Penang Mill registering rainfall of up to 61mm/hr, followed by Nadarivatu with 58mm/hr and Seaqaqa with 55mm/hr.

While Ana attained maximum intensity of a Category 3 system, the land areas of Fiji escaped the hurricane force winds. Nonetheless, gale force winds covered most parts of the country, with the storm force winds extending to most of Viti Levu, Lomaiviti Group and parts of Vanua Levu. The highest recorded sustained wind was registered at Rakiraki with 96km/hr, followed by Levuka with 95km/hr, Udu Point with 84km/hr and Vunisea (Kadavu) with 80km/hr (Figure 19).

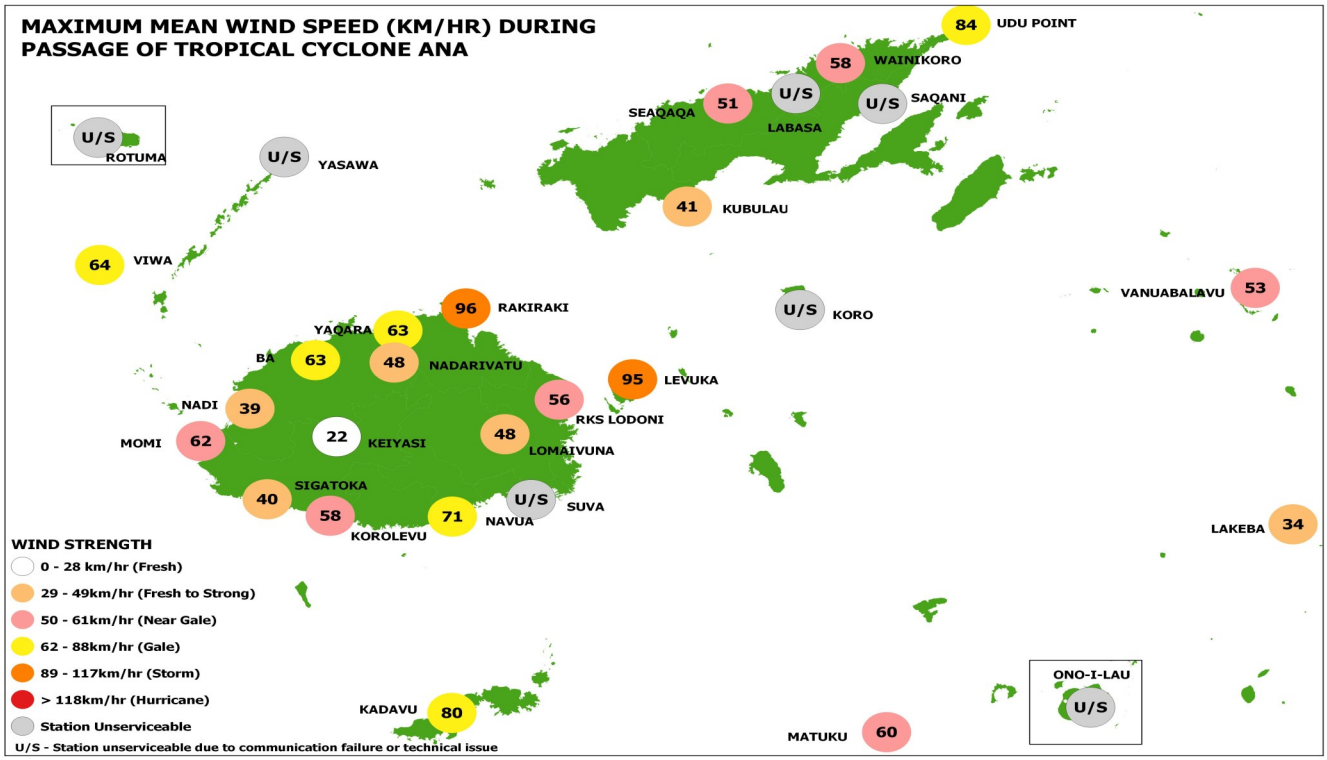



*Figure 19: Maximum recorded sustained winds during the passage of tropical cyclone Ana.*

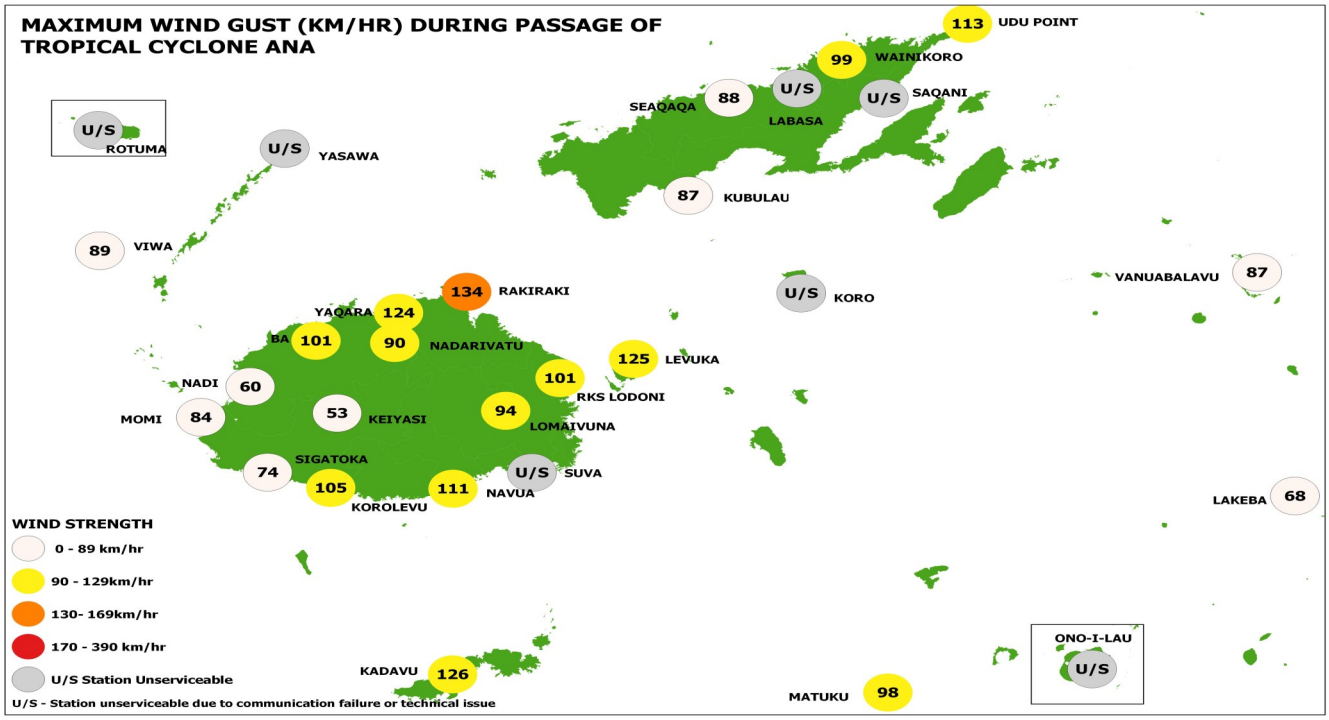



*Figure 20: Maximum recorded wind gusts during the passage of tropical cyclone Ana.*

The highest observed wind gust was at Rakiraki with 134km/hr, followed by Vunisea (Kadavu) with 126km/hr, Levuka with 125km/hr and Yaqara with 124km/hr (Figure 20).

The destructive storm to gale force winds resulted in damages to houses, utilities, trees, crops and vegetation. It also resulted in heavy swells that caused sea flooding and inundation in coastal areas.

Major river flooding were recorded over greater Vanua Levu on the January 31st till the February 1st (Figure 20). Labasa Town was badly impacted by the flood. Major river flooding was also reported along Wainibuka River in the upper Rewa catchment. Rewa River broke its bank in the early hours of 31st resulting in flooding of low lying areas of Rewa Delta. Rakiraki town was also inundated with flood waters. Apart from flooding, a number of landslides and roads slips were also recorded, especially on Vanua Levu, bringing major disruptions to road transportation network. At the time of this report, there was one causality from Bagata village in Savusavu, and two missing people from Cikobia Island.

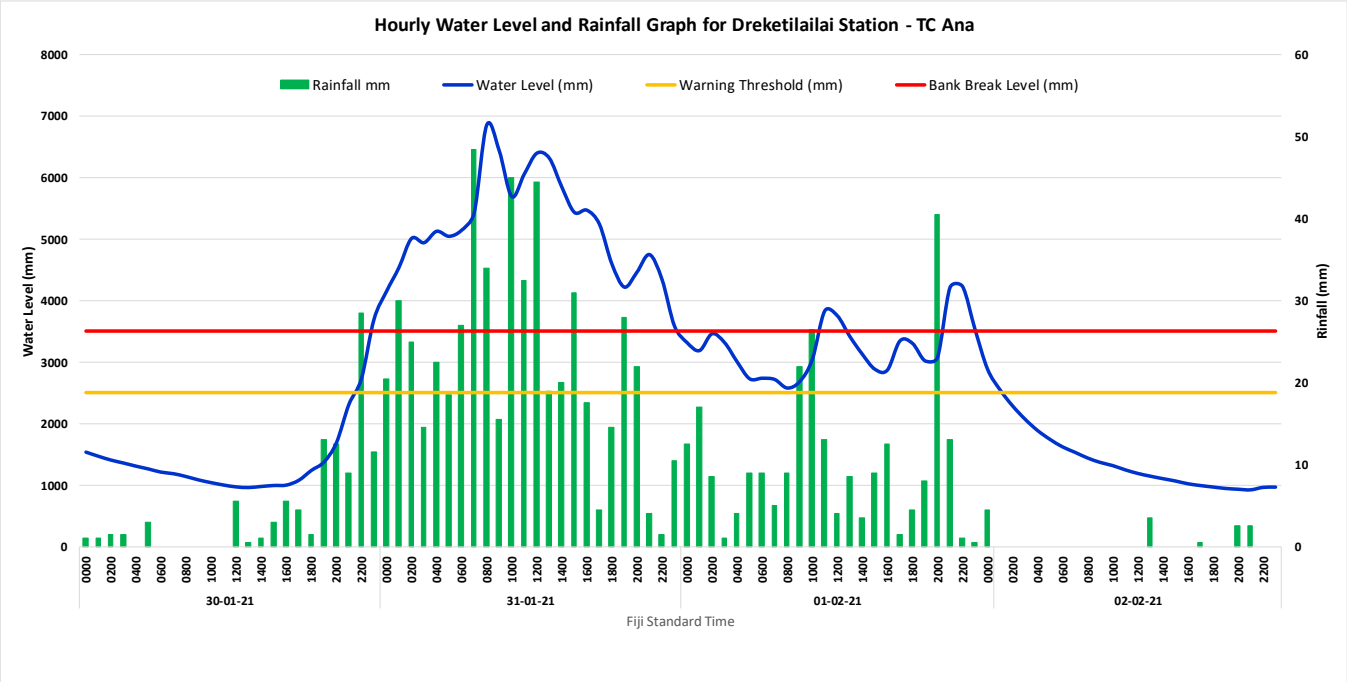



*Figure 21: Water level and rainfall graph for Dreketilailai, Vanua Levu.*

*Note: All date and time in this summary are in Fiji Standard Time. Also note that the analysis for tropical cyclone Ana is based on provisional data, which could change upon quality control of the data and the best track analysis.*