

2021 ANNUAL CLIMATE SUMMARY



GOVERNMENT OF FIJI
MINISTRY OF INFRASTRUCTURE
& METEOROLOGICAL SERVICES

FIJI METEOROLOGICAL SERVICE

Highlights



Severe tropical cyclone Ana was the only TC that had a direct impact on Fiji during 2021. Ana brought heavy rain, which resulted in severe flooding, especially in the Central and Northern Divisions. TC Ana claimed one life while five people were reported missing in Fiji.



The national average mean air temperature for Fiji in 2021 was 4th warmest on record. Furthermore, the most recent decade ending in 2021 was also warmest on record in Fiji. The national average mean, maximum and minimum air temperatures between 1959 and 2021 have increased by 0.9°C, 1.0°C and 0.9°C, respectively.



Fiji's national average rainfall for 2021 was 2984mm, which was 126% of the long-term average. Fiji's rainfall continue to display large year-to-year variability associated with the El Niño and La Niña events. Extreme rainfall events were recorded during the year, including rainfall associated with TC Ana, and due to lingering active troughs of low pressure in other months.



Sea-level rise near Fiji measured by satellite altimeters from 1992 to 2021 was between 3-4mm/yr. A state of the art sea level monitoring station at the Lautoka Wharf had a similar relative sea level trend with 3.8mm/yr. The mean annual sea surface temperatures in many areas of the southern half of Fiji's EEZ were warmest on record in 2021.

Large Scale Climate Drivers

El Niño Southern Oscillation (ENSO)

The year-to-year variability in Fiji's climate is strongly influenced by the ENSO phenomena. The two extremes of this phenomena are El Niño and La Niña. While no two El Niño and La Niña events are the same, they tend to have some impacts on Fiji's climate. El Niño events often lead to drier than usual condition over Fiji, which can result in drought events. On the other hand, La Niña events usually brings more rainfall than usual, which can lead to floods, especially during the Wet Season from November to April.

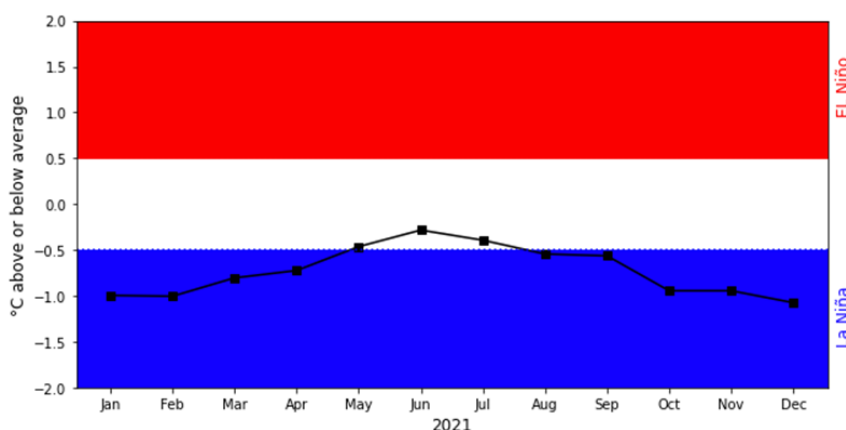


Figure 1: Monthly NINO3.4 anomalies indicate that the Pacific Ocean was leaning towards La Niña during the beginning of the year, but it transitioned into ENSO-neutral phase during May and remained neutral till October and by December La Niña was established in the tropical Pacific. Data source: NOAA.

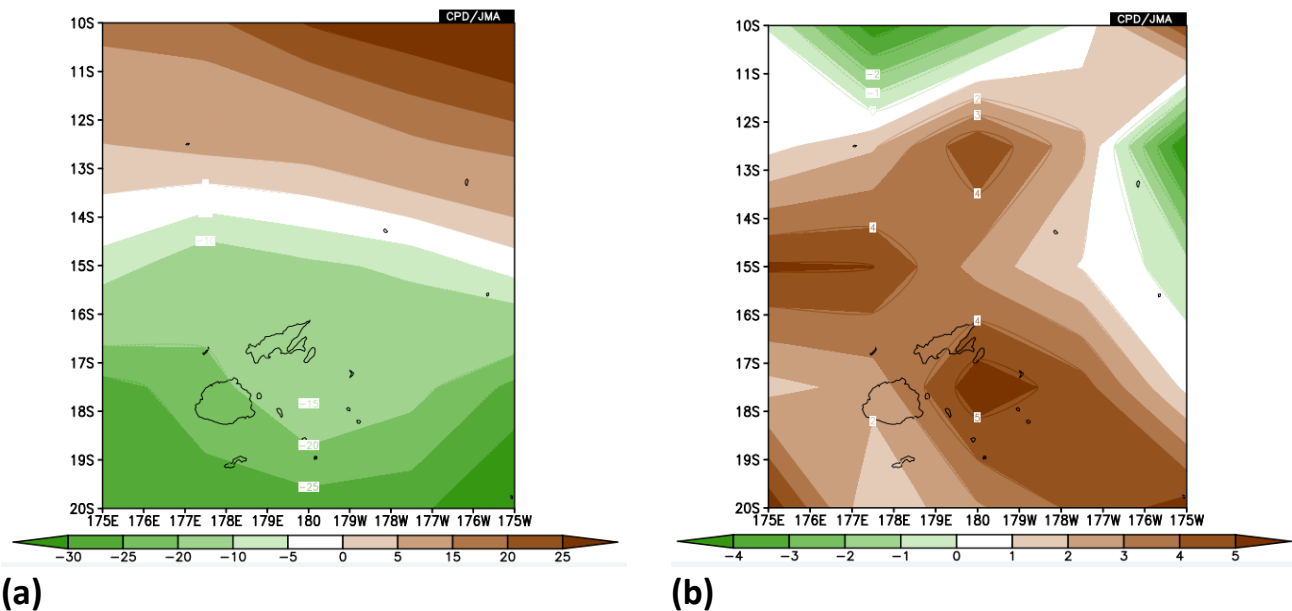
The tropical Pacific was in a weak to moderate state of La Niña during January to April followed by ENSO-neutral state from May to October, with Ocean Nino Index (ONI) values leaning towards a weak La Niña. However, due to lack of coupling between the oceanic and atmospheric indicators, a fully established La Niña event was declared later in the year, in December.

Warmer than usual sea surface temperatures were concentrated in the western Pacific, while cooler than average sea surface temperatures continued to persist in the eastern Pacific at the beginning of 2021. The cool anomalies in the eastern equatorial Pacific started decaying by March, however a number of atmospheric indicators remained at La Niña levels. A transition to ENSO-neutral state was made in May as most of the atmospheric and oceanic indicators were in agreement with neutral conditions. ENSO-

Large Scale Climate Drivers (Cont.)

neutral conditions prevailed until October, but some of the oceanic and atmospheric indicators remained at La Niña thresholds.

The warm sea surface waters in the western half of the equatorial Pacific Ocean began to show signs of cooling from latter part of November. By December, cool anomalies started strengthening in the eastern equatorial Pacific Ocean. The cooling continued and there was a clear coupling response from the atmosphere, which indicated establishment of a La-Niña event in the tropical Pacific. The 2020-2021 La Niña, followed by a transition to ENSO neutral conditions and there was re-establishment of La Niña event at the end of 2021, prompting scientist to call it a double-dip La Niña.



(a) **(b)**
Figure 2: Outgoing longwave (OLR) radiation anomalies for (a) January to February; and (b) August to December 2021. Enhanced cloud cover (negative OLR anomalies) persisted over the Fiji Group during January to February 2021, while suppressed cloud cover (positive OLR anomalies) was present during August to December 2021. Image source: Japan Meteorological Agency.

Fiji's weather at the beginning of the year displayed La Niña like pattern, with the South Pacific Convergence Zone (SPCZ) displaced south of its normal position, away from the Fiji Group. Consequently, most parts of the country were wetter than usual during the first two months. As the year progressed, Fiji's climate varied with some months

Large Scale Climate Drivers (Cont.)

experiencing wetter than usual condition and others drier than normal. Fiji's climate was typical of La Niña during the last two months of the year with wetter than normal condition experienced at most places.

Madden Julian Oscillation (MJO)

The Madden Julian Oscillation (MJO) is an eastward moving pulse of rainfall and cloudiness in the tropical Pacific, which usually begins in the Indian Ocean and then makes its way around the globe with a periodicity of 20-90 days. When the active phase of MJO is in the western Pacific then there is usually a surge in the convective activity in the southwest Pacific. The South Pacific Convergence Zone becomes more active, with formation of a number of low pressure systems, tropical disturbances, tropical depressions and tropical cyclones within a period of two to three weeks in the region around Fiji.

During 2021, nine active MJO pulses passed through the western Pacific. The strongest of these pulses were in January, February, April followed by a pulse in December (Figure 3). Two very strong MJO pulse were in the western Pacific from January 21 to 21 February. During this pulse, Tropical Cyclone Ana, Bina and Lucas formed in the region. Severe tropical cyclone Ana resulted in storm force winds and significant rainfall over many parts of Fiji. Moreover, Tropical Cyclone Bina extended the heavy rains and gale winds associated with Ana while TC Lucas did not have any significant influence on Fiji's climate.

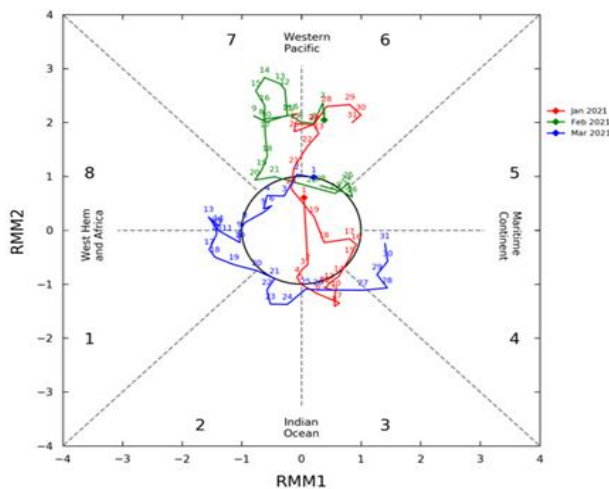
During 1-2 March, a weak MJO pulse emerged in the western Pacific. An active MJO passed through the western Pacific from April 5-25, but it did not have any significant influence on Fiji's climate. Four weak MJO pulse hovered around the western Pacific during 30-31 May, 1-4 June, 23-28 July and 14-15 October.

Note: All normal in this summary is with respect to 1981-2010 average unless stated otherwise.

Large Scale Climate Drivers (Cont.)

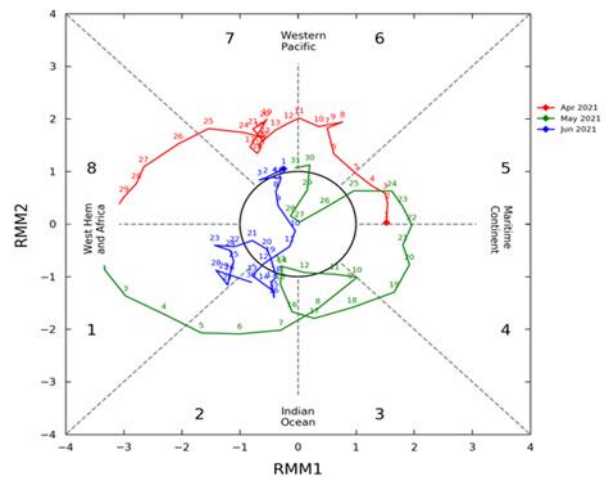
In the later part of the year, an active MJO pulse was present in the western Pacific, from 2-31 December, with Tropical Cyclone Ruby forming during this time, however, the system did not have any direct impact on Fiji.

(RMM1, RMM2) phase space for 01-Jan-2021 to 31-Mar-2021



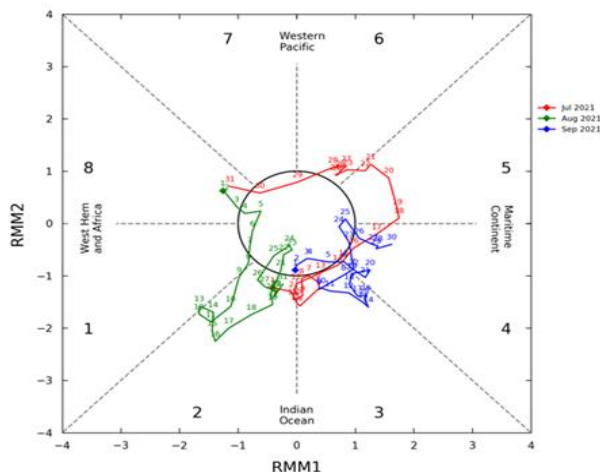
(a)

(RMM1, RMM2) phase space for 01-Apr-2021 to 30-Jun-2021



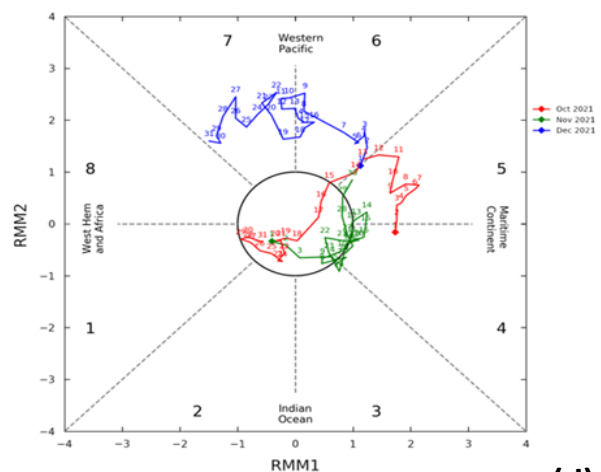
(b)

(RMM1, RMM2) phase space for 01-Jul-2021 to 30-Sep-2021



(c)

(RMM1, RMM2) phase space for 01-Oct-2021 to 31-Dec-2021



(d)

Figure 3: The MJO phase diagram illustrates the progression of the MJO through locations along the equator around the globe. When the index is within the centre circle the MJO is considered weak. Outside of this circle the index is strong and will usually move in an anti-clockwise direction as the MJO moves from west to east. Phases 6 and 7 are western Pacific. Data source: BoM.

Rainfall

Fiji's national average rainfall for 2021 was 2984mm, which was 126% of the long-term average. This ranks 2021 as the 7th wettest year in 64 years of record (Figure 4).

Fiji's national annual average rainfall is not showing any significant increasing or decreasing trend between 1958 to 2021, with a large year-to-year variability associated with the El Niño and La Niña events (Figure 5). Similarly, the national average Wet (November to April) and Dry (May to October) Seasons also have no significant trends.

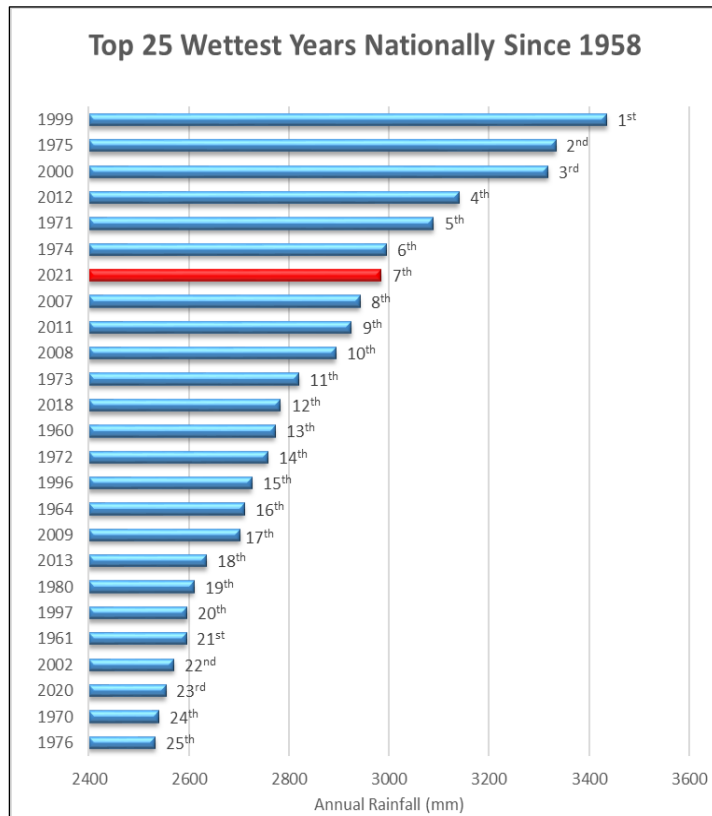


Figure 4: National average annual rainfall ranking.

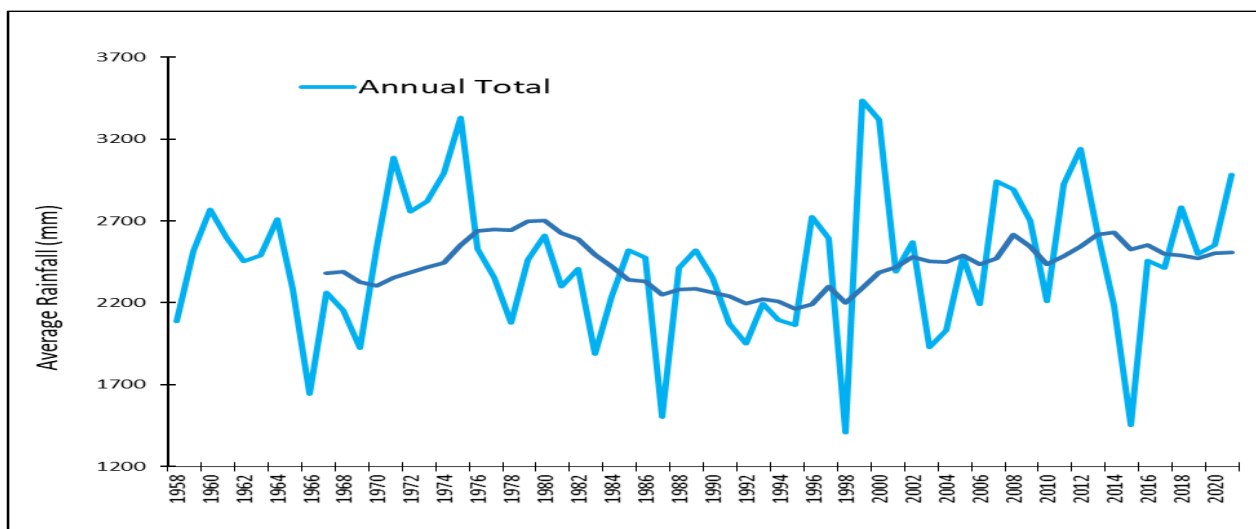


Figure 5: Time series of national average annual and decadal running mean rainfall from 1958 to 2021.

Rainfall (Cont.)

The annual total rainfall in 2021 at individual rainfall monitoring stations was near normal or above normal across the country. Out of the 20 rainfall monitoring sites, 10 registered above normal rainfall and 10 recorded near normal rainfall (Figure 6).

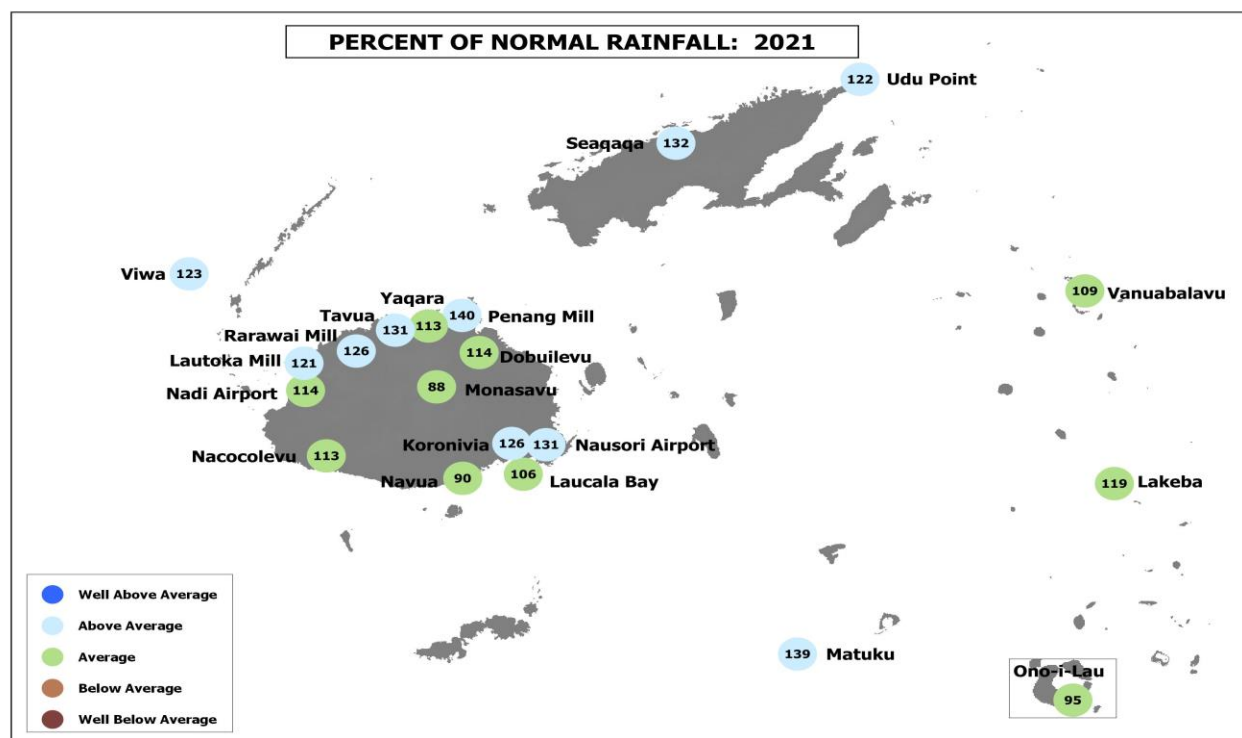


Figure 6: Percent of normal (1981 to 2010 mean) rainfall in 2021 at various rainfall monitoring stations across the country.

The rainfall was significantly wetter than usual in January, May and December, with Tropical Cyclone Ana having a substantial contribution to the rainfall in January (Figure 7). A new rainfall record for May was set at Lakeba, Matuku, Nausori Airport, Vanuabalavu and Nasinu since observations began in 1928, 1950, 1956, 1985 and 2009 respectively.

In contrast, April, June and August were significantly drier than normal (Figure 7). During August, extended period of dry days were recorded, especially in the Western and Eastern Divisions and parts of the Central and Northern Divisions. The Momi to Rakiraki corridor, Yasawa and Mamanuca Groups and northern half of Vanua Levu recorded less than five rain days during August.

Rainfall (Cont.)

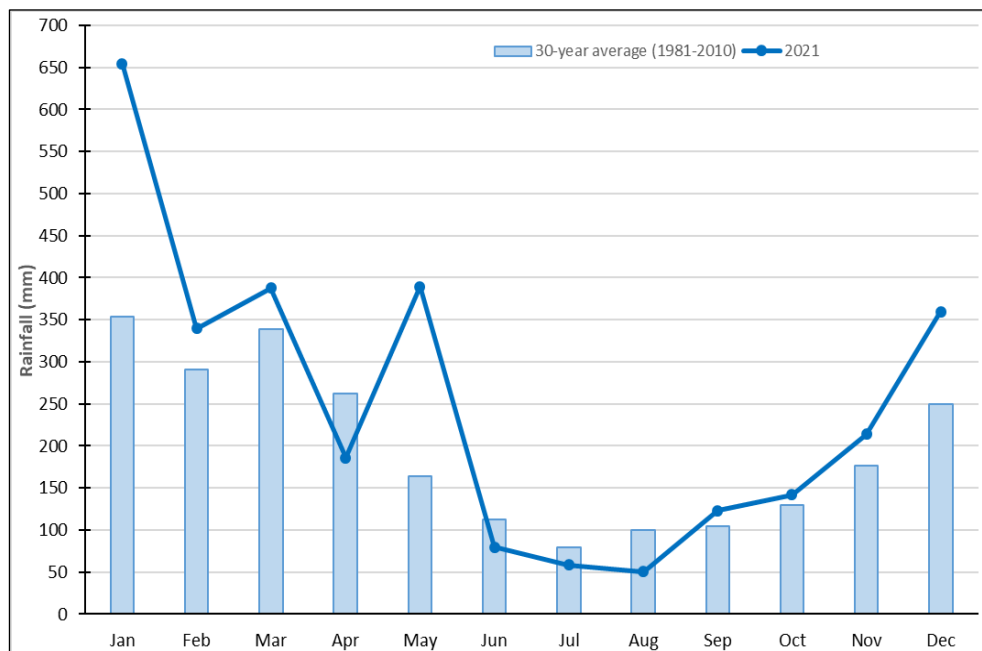


Figure 7: National average monthly rainfall during 2021 compared with the long-term average (1981-2010).

Overall, the wettest location during 2021 was Nadarivatu with 5278mm of the annual total rainfall, followed by Monasavu with 4327mm, Nasinu with 3878mm and

Nausori with 3692mm. On the other hand, Ono-i-Lau was the driest site with 1469mm of rainfall, followed by Sigatoka with 1733mm, Momi with 1811mm and Nacocolevu with 1925mm.

The highest 24hour rainfall recorded during 2021 was at Nadarivatu with 506mm on January 28th, followed by 436mm of rainfall a day later (29th January), with 350mm at Seaqaqa and 296mm at Dobuilevu, both on 30th January and Vanuabalavu with 288mm on 3rd May.

Air Temperatures

Mean Air Temperature

The year 2021 was 4th year warmest on record in Fiji with the national average mean air temperature of 26.2°C, which was 0.6°C warmer than the normal (Figure 8).

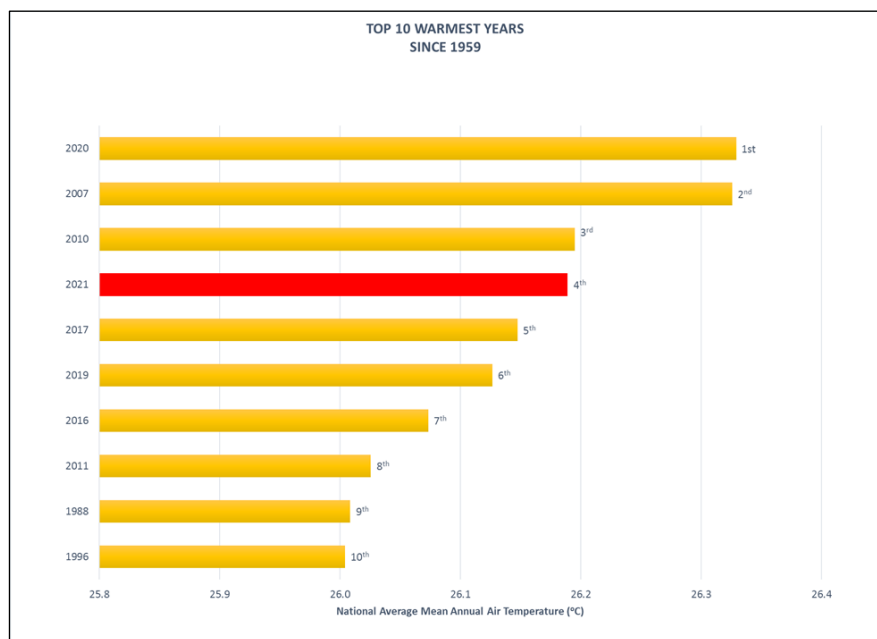


Figure 8: Top 10 warmest national average mean air temperatures for Fiji.

The most recent decade ending in 2021 was also warmest on record in Fiji. This pattern has continued with every new decade being warmer than all previous decades since 1960s (Figure 9).

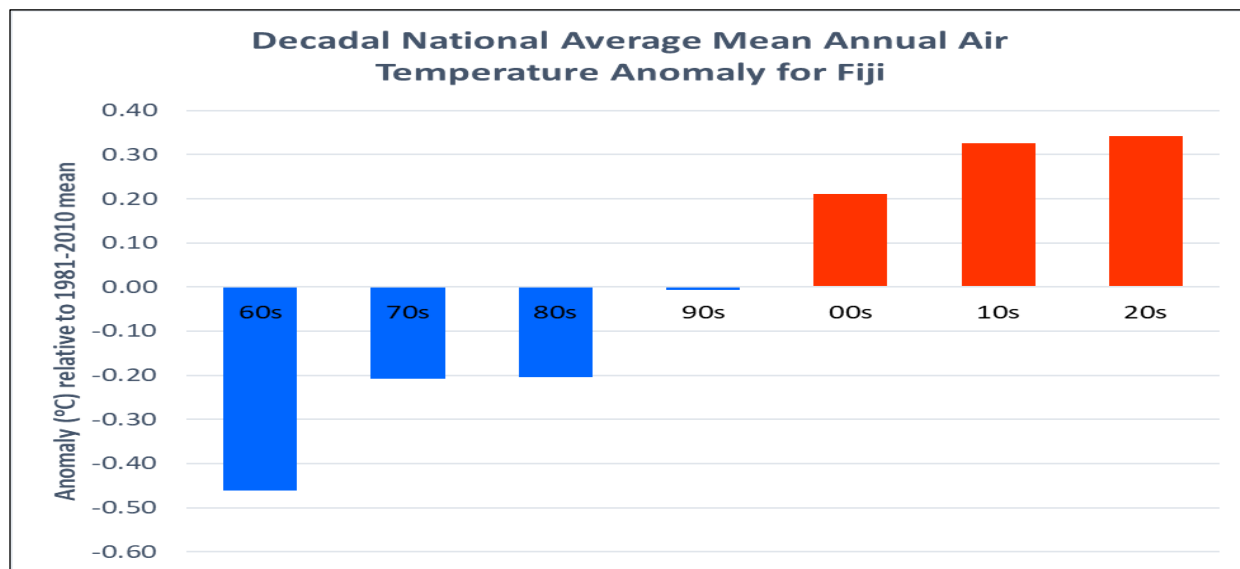


Figure 9: Decadal national average mean annual air temperature anomalies for Fiji.

Air Temperatures (Cont.)

The national mean annual air temperature has increased by 0.9°C between 1959 and 2021 (statistically significant rise at 95% confidence level) (Figure 10). This trend is consistent with the global pattern of rising air temperatures as greenhouse gas concentration increases in the atmosphere.

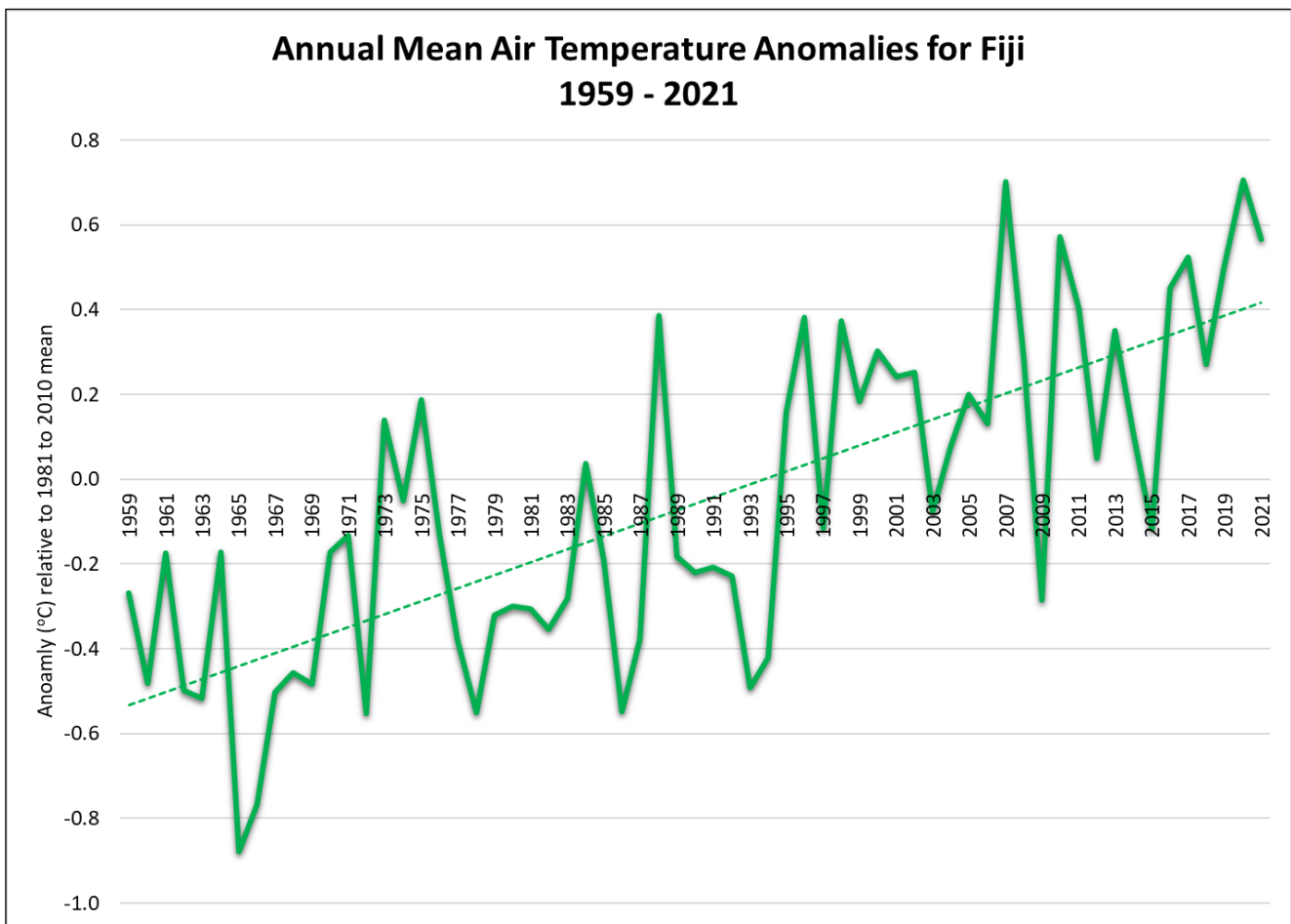


Figure 10: Time series of national average mean annual air temperature anomaly relative to 1981-2010 mean together with the associated trend.

Air Temperatures

(Cont.)

Maximum and Minimum Air Temperatures

The country's national average annual maximum air temperature during 2021 was 29.9°C, which was 0.6°C warmer than the normal. This categorizes it as the warmest national annual maximum air temperature since 1959. The year 1998 is second warmest on record, followed by 2020 and 2007.

The national average annual minimum air temperature during 2021 was 22.5°C, which was 0.5°C warmer than the normal. This ranks as the 7th warmest annual minimum air temperature on record since 1959.

The national average maximum air temperature has increased by 1.0°C between 1959 and 2021 (statistically significant rise at 95% confidence level). Similarly, the national average minimum air temperature has increased by 0.9°C between 1959 and 2021 (statistically significant rise at 95% confidence level) (Figure 11).

On average, the warmest location on average during 2021 was Yaqara and Keiyasi both with the annual mean maximum air temperature of 31.7°C, followed by Lautoka Mill and Rarawai Mill (Ba) both with 31.2°C. On the other hand, the coolest annual mean maximum air temperature was registered at Monasavu with 24.3°C, followed by Nadarivatu with 24.8°C, Ono-i-Lau with 28.5°C and Udu Point with 28.9°C.

The highest daily maximum air temperature during the year was recorded at Keiyasi with 36.6°C on November 22nd, Navua (Tokotoko) and Lomaivuna with both 36.1°C on December 15th and January 20th, respectively, and Levuka with 35.9°C on January 15th.

The coolest nights on average during 2021 was recorded at Nadarivatu with the annual minimum air temperature of 17.5°C, followed by Monasavu with 18.1°C, RKS Lodonu with 20.1°C and Lomaivuna with 20.2°C. In contrast, the warmest nights on average were recorded at Viwa with annual minimum air temperature of 24.7°C, followed by Levuka with 24.5°C, Saqani with 23.7°C, Ellington (Ra) with 23.7°C and Ono-i-Lau with 23.5°C.

Air Temperatures (Cont.)

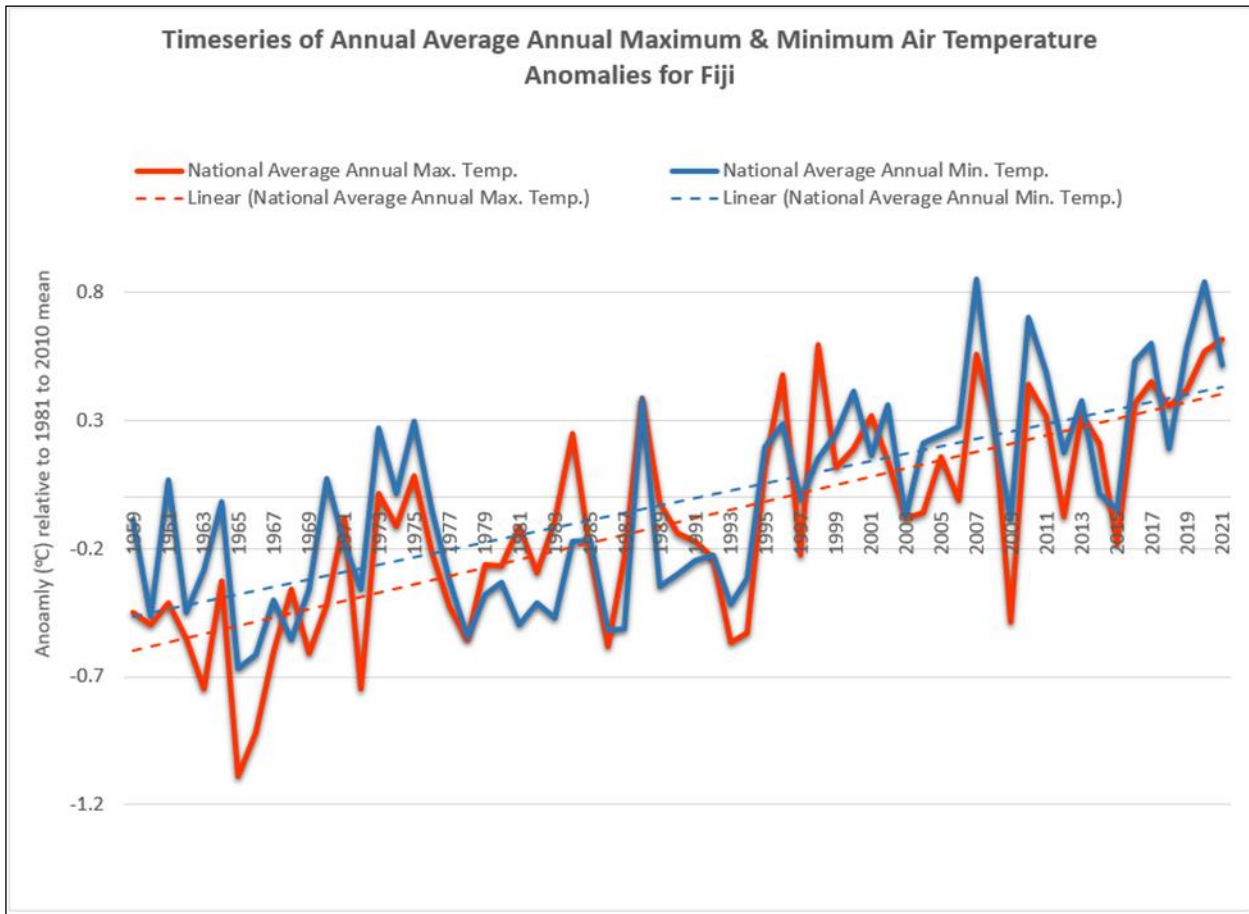


Figure 11: Time series of national average annual maximum and minimum air temperature anomalies of Fiji relative to 1981-2010 mean, together with the associated trends. The minimum air temperature is showing a slightly stronger warming trend than the maximum air temperature.

The lowest daily minimum air temperature for the year was experienced at Nadarivatu with 9.9°C, 10.2°C, 10.3°C and 10.4°C, on August 4th, October 13th, August 5th and August 3rd, respectively.

Note: The national average mean, maximum and minimum air temperatures have been calculated based on in-situ observations at 5 high quality meteorological stations, namely, Nadi Airport, Rarawai Mill, Laucala Bay, Nausori Airport and Vunisea.

Sunshine

The annual sunshine hours were near normal (within 10% of normal) at Nadi Airport, Laucala Bay (Suva), Doboilevu, Koronivia and Monasavu. The total annual bright sunshine hours at Nadi Airport, Laucala Bay, Doboilevu, Koronivia and Monasavu was 2344 hours, 2046 hours, 1827 hours, 1826 hours and 1237 hours, respectively (Table 1).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Nadi	141	147	193	231	156	190	232	235	213	267	223	116	2344
Suva	210	150	146	184	124	151	168	168	140	225	200	181	2046
Doboilevu	172	83	169	163	140	164	116	160	137	217	189	117	1827
Koronivia	159	132	157	149	133	134	81	164	130	203	188	196	1826
Monasavu	86	95	116	76	87	91	102	131	91	156	112	96	1237

Table 1: Total monthly and annual bright sunshine hours for 2021.

Nadi Airport recorded 93% of normal annual bright sunshine hours during the year. The station's highest total monthly bright sunshine of 267 hours was registered in October, while the lowest of 116 hours was in December (Table 1).

Doboilevu recorded 104% of normal bright sunshine hours during 2021. The station's highest total monthly bright sunshine of 217 hours was registered in October, while the lowest of 83 hours was in February (Table 1).

The annual total bright sunshine at Laucala Bay was 106% of the normal. October was also the sunniest month at Laucala Bay (Suva), with 225 hours of total bright sunshine, while May recorded the least with 124 hours (Table 1).

Koronivia experienced 107% of the normal sunshine hours during 2021. The sunniest month at Koronivia was October with 203 hours of bright sunshine, while the minimum was recorded in July with 81 hours (Table 1).

The annual total bright sunshine at Monasavu was 98% of the normal. The sunniest month at Monasavu was October with 156 hours of total bright sunshine, while April recorded the least with 76 hours (Table 1).

Winds

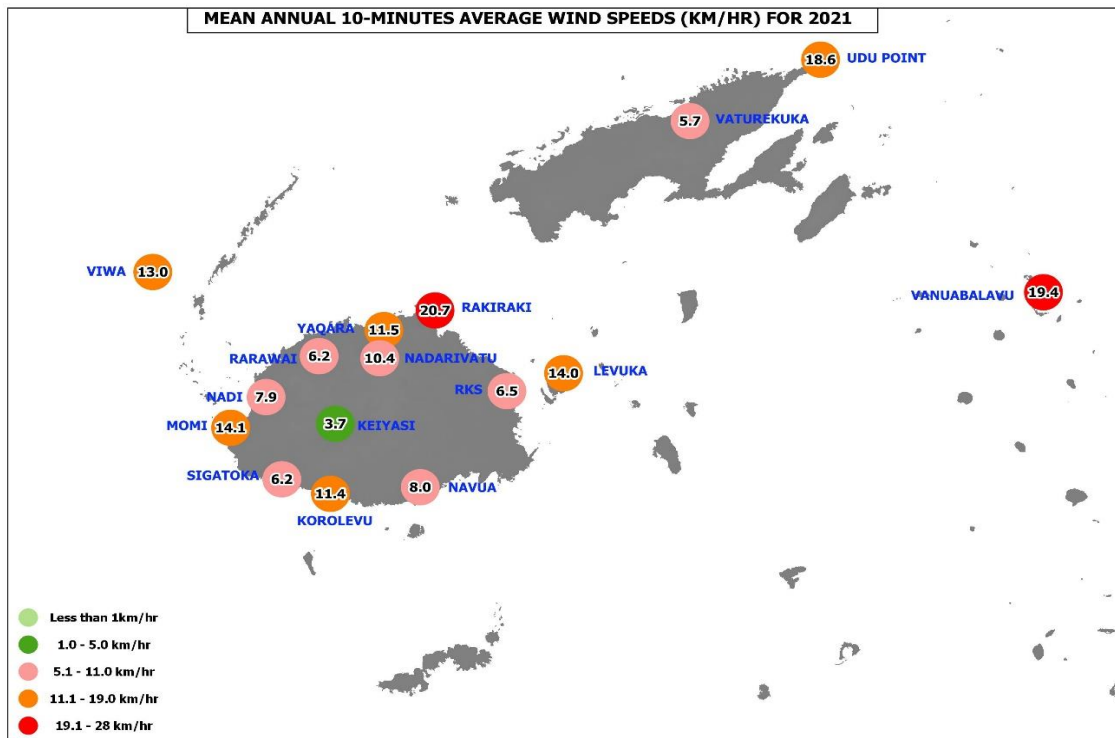


Figure 12: Mean annual 10-minute average wind speeds (km/hr) in 2021.

In 2021, the highest mean annual 10-minutes wind speed was recorded at Rakiraki with 20.7km/hr, followed by Vanuabalavu with 19.4km/hr. On the other hand, Keiyasi registered light winds with annual mean 10-minutes wind of 3.7km/hr.

The most extreme wind during the year was registered during the passage of severe tropical cyclone (TC) Ana from 30th January to 1st February. The highest recorded sustained wind was observed at Rakiraki with 96km/hr, followed by Levuka with 95km/hr, Udu Point with 84km/hr and Vunisea (Kadavu) with 80km/hr. The highest observed wind gust during the passing of TC Ana was at Rakiraki with 134km/hr, followed by Vunisea (Kadavu) with 126km/hr, Levuka with 125km/hr and Yaqara with 124km/hr.

Tropical Cyclones (TCs)

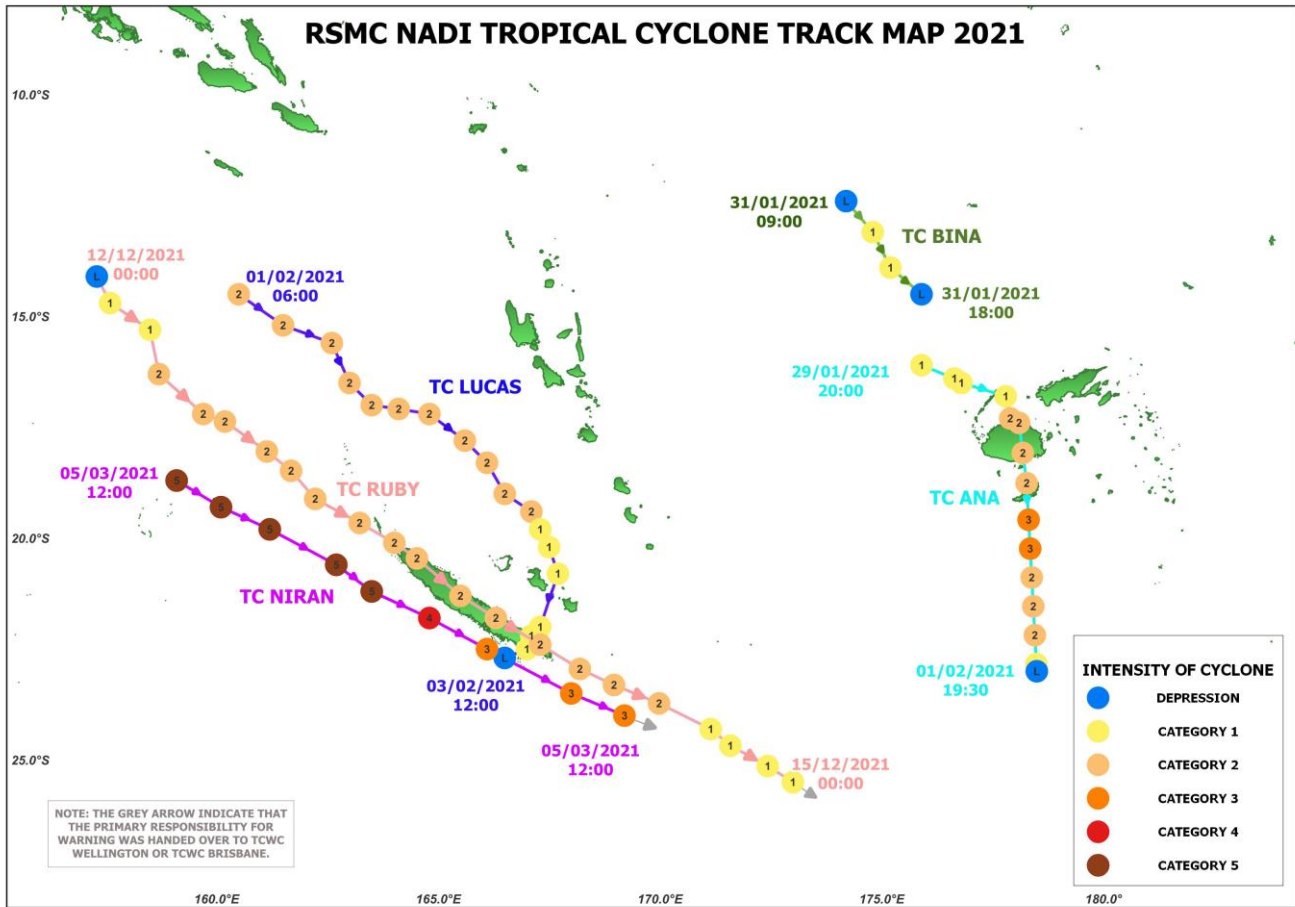


Figure 13: Track maps of TCs which occurred in the RSMC Nadi-TCC area of responsibility during 2021.

In 2021, five TCs occurred in the Regional Specialized Meteorological Centre Nadi – Tropical Cyclone Centre (RSMC Nadi-TCC) area of responsibility (AoR) (Figure 13). One TC (Niran) attained Category 5 intensity, one Category 3 (Ana), two Category 2 (Lucas & Ruby), while Bina attained a maximum intensity of Category 1. TC Ana was the lone cyclone that had a direct impact on Fiji.

Severe TC Ana was named on January 30th when it was about 340km northwest of Nadi. Tropical cyclone Ana began to track east-southeast towards the Fiji Group and intensified into a Category 2 system over the Bligh waters. Ana made landfall near Rakiraki as a Category 2 system. It made its way across Viti Levu in a south-southeast direction and exited Viti Levu near Navua. Ana continued to track south across the Kadavu passage and made landfall on the eastern tip of Kadavu on January 31st. After

Tropical Cyclones

(Cont.)

passing Kadavu, the cyclone further intensified into a Category 3 system. Ana was declassified to a tropical low on February 2nd after losing its tropical cyclone characteristics. TC Ana 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. TC Ana claimed one life while five people were reported missing in Fiji.

TC Bina was a short lived system. Intensifying to a Category 1 cyclone on January 31st, Bina soon became very disorganized and was downgraded to a tropical depression on February 1st. The system further weakened to a low pressure within the same day. While not classified as a tropical cyclone during landfall, Bina extended the heavy rains and gale winds associated with cyclone Ana, which struck Fiji.

TC Lucas moved from the Australian region into the RSMC Nadi-TCC AoR as a Category 2 system on February 1st. Lucas maintained a steady southwestward heading, gradually weakening into a Category 1 cyclone north of New Caledonia on February 2nd. Lucas made landfall in New Caledonia as a Category 2 system. Numerous houses and utilities were damaged in Loyalty Islands. Lucas claimed 2 lives in Gold Coast, Australia.

Severe TC Niran left the Australian region, moving east, as a Category 5 system on March 5th. Niran continued weakening as it skirted the southeastern coast of New Caledonia as a Category 3 system. Niran caused extensive damage in New Caledonia with reports of power outages, rough seas, damaged roads, crops and houses.

TC Ruby left the Australian region, moving southeast and affecting New Caledonia as a Category 2 system on December 13th. Ruby brought heavy rain and strong winds in New Caledonia and Solomon Islands with reports of damaged infrastructure and power outages.

Note: All date in this report is in Fiji Standard Time.

Sea Surface Temperatures (SSTs)

The sea surface temperatures in Fiji's Exclusive Economic Zone (EEZ) were warmer than normal during the year, with anomalies of $+0.5^{\circ}\text{C}$ to $+1.0^{\circ}\text{C}$ in most of the Fiji region. However, anomalies of between $+1.0^{\circ}\text{C}$ to $+1.5^{\circ}\text{C}$ were recorded west of Viti Levu and anomalies of between -0.5°C to 0.0°C were recorded in waters between Viti Levu and Vanua Levu (Figure 14(a)). The annual mean sea surface temperatures in the Fiji waters ranged from 26°C to 29°C during 2021 (Figure 14(b)).

Parts of Fiji recorded extreme sea surface temperatures during the year. In 2021, Matuku, Totoya and waters to the south west of Viti Levu registered record high mean annual sea surface temperatures since 1982 (Figure 15)

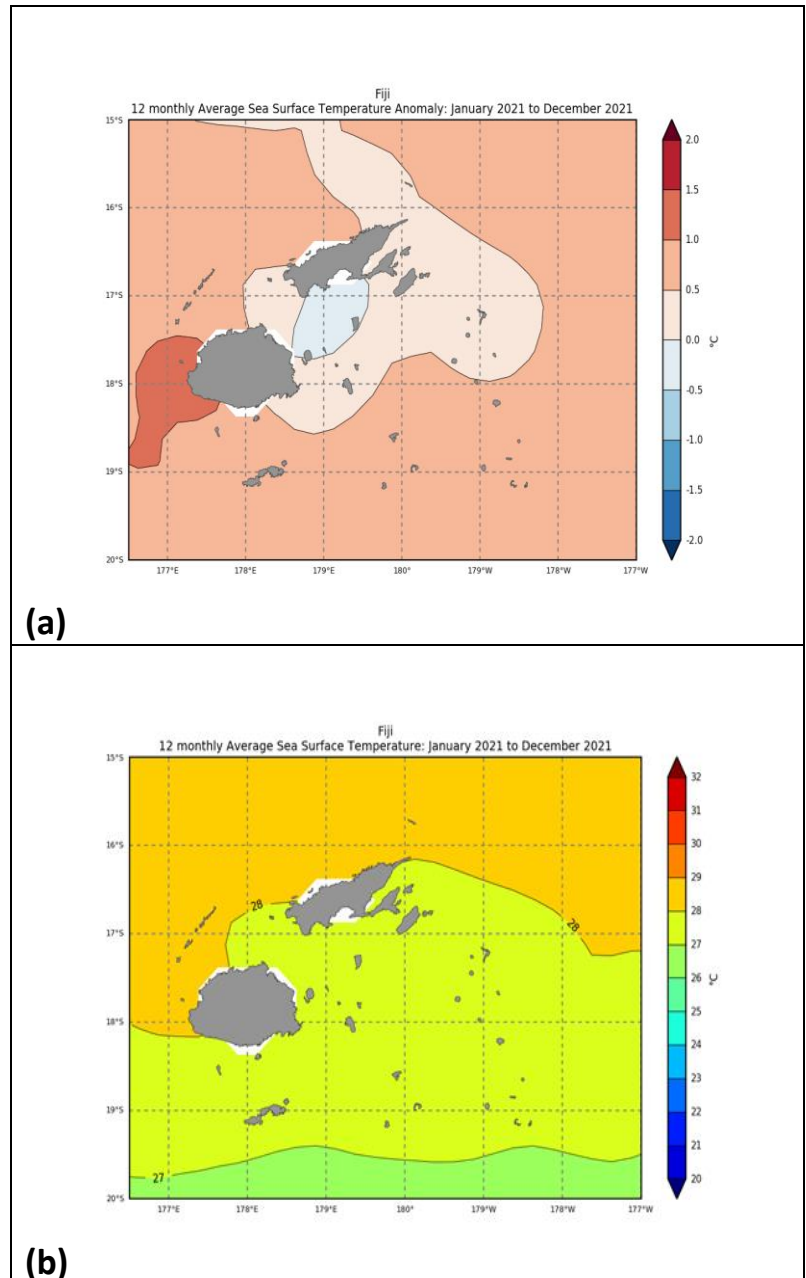


Figure 14: (a) Mean annual sea surface temperature difference from the normal (1971 to 2000 average); and (b) Mean annual sea surface temperature for 2021. Source: Pacific Community.

Sea Surface Temperatures (SSTs)

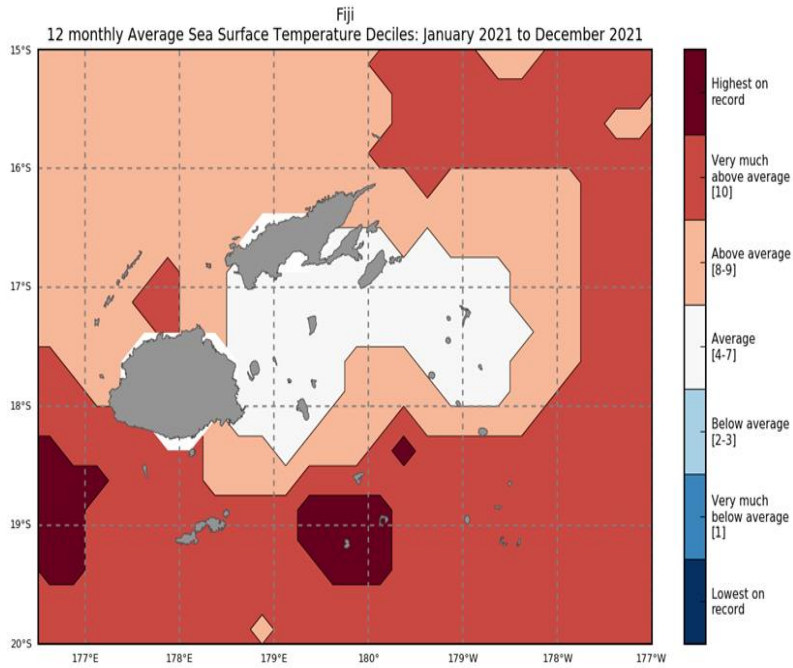


Figure 15: Ocean surface temperature ranking for 2021 since 1982. Source: Pacific Community.

The sea surface temperatures across the Fiji region is showing a positive trend since 1950, with rise of 0.0 to 0.1°C/decade in the most of Fiji’s EEZ and increase of 0.1 °C to 0.2°C/decade to the far north (Figure 16). The tidal gauge at Lautoka Wharf recorded an increase in the ocean waters of 0.2°C/decade between 1993 to 2021.

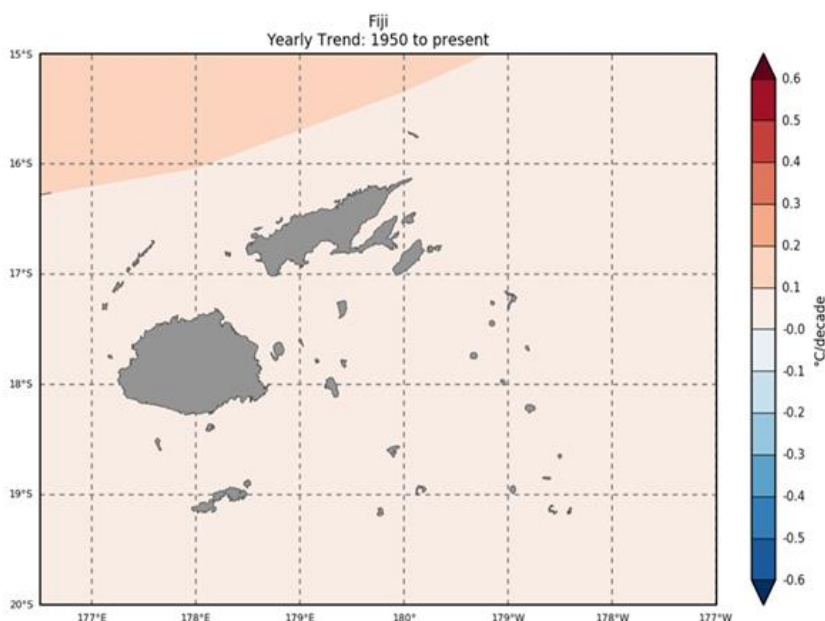
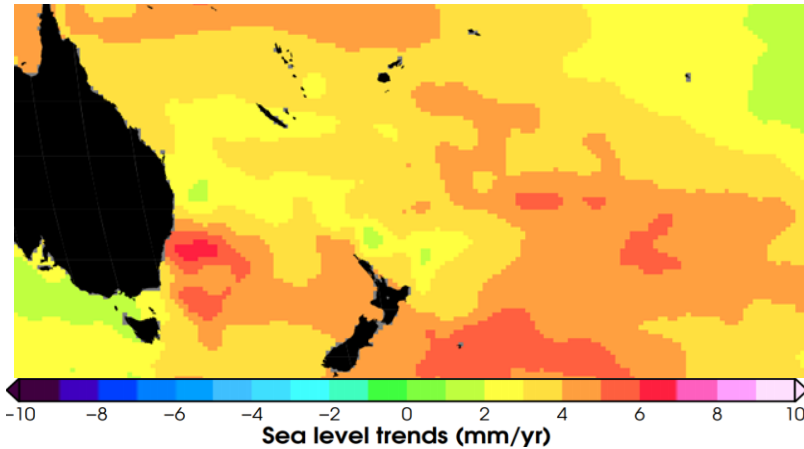


Figure 16: Average ocean surface temperature change since 1950. Source: Pacific Community.

Sea Level

The rise in sea-level near Fiji measured by satellite altimeters (Figure 17) from 1992 to 2021 was between 3-4mm/year. A state of the art sea level monitoring station at the



Lautoka Wharf had a similar relative sea level trend with 3.8mm/year between 1993 to 2021, which is a statistically significant increasing trend at 95% confidence level (Figure 18). This rate of change near Fiji is comparable to the rate of global mean sea level rise of 3.4mm/year since 1993.

Figure 17: Sea level trend in the Pacific Island region between 1992 to 2021 as per the satellite measurement.

Source: NOAA/Laboratory for Satellite Altimetry.

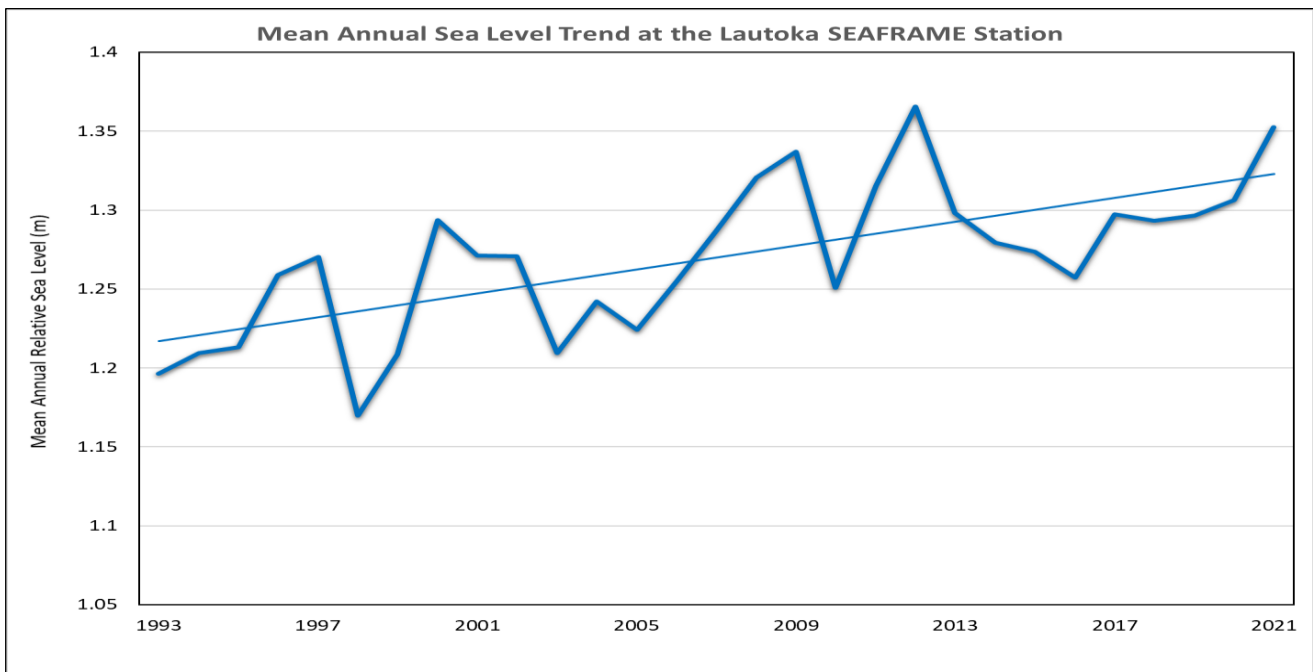


Figure 18: Mean annual relative sea level trend at the Lautoka SEAFRAME station. Data source: Pacific Community.

Note: Sea level at Vatia Wharf could not be analysed due to missing data.

Notable Weather Events

Flash Flooding in the Western Division due to an active Convergence Zone – January

An active convergence zone resulted in widespread rainfall across the country on the 28th and 29th, especially in the Western Division (Figure 19). Western Viti Levu particularly experienced widespread flooding on the 29th. High intensity rainfall resulted in major flooding in Ba, Tavua and Rakiraki. Parts of Sigatoka, Nadi and Lautoka also

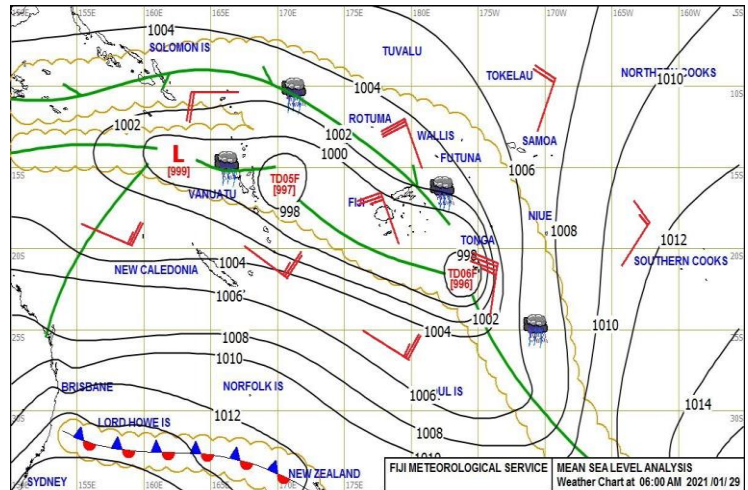


Figure 19: Mean sea level analysis at 6am on January 29th.

experienced flash floods. Over a 24-hour period between 28th - 29th, Nadarivatu recorded a high rainfall reading of 506mm, seconded by Vatukaceveceva with 330mm, Ellington (Ra) with 223mm, Navala with 221mm, Toge with 217mm and Penang Mill with 212mm. Rakiraki town was inundated with flood waters on the 28th, which included a number of other low lying areas and crossings around Ra. A life was lost when a villager drowned while trying to cross flooded Waikubukubu River in Nadarivatu.



Figure 20: (a) Flash flooding in parts of Nadi back road on January 29th; (b) Flooding in Ba town on January 29th; and (c) Korovou flats between Tavua town and Nadarivatu Road closed due to flooding on January 29th. Picture credit: FBC News.

Notable Weather Events

(Cont.)

Storm Force Winds, Storm Surges, Flooding and Landslides due to Tropical Cyclone (TC) Ana – January

Tropical Cyclone Ana was the second notable weather event of the year in Fiji. It was a Category 2 system when it made landfall near Ra on the 31st. Crossing through Viti Levu, Ana eventually exited near Navua. Continuing south, Ana made landfall again as a Category 2 system on the eastern half of Kadavu. During this time, gale to storm force winds were recorded over Viti Levu, Kadavu, Lomaiviti Group and as far as Vanua Levu. The highest recorded sustained wind was observed at Rakiraki with 96km/hr, followed by Levuka with 95km/hr, Udu Point with 84km/hr and Vunisea (Kadavu) with 80km/hr. 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. There were reports of storm surges at Galoa Island Kadavu), parts of northern Tailevu and along the coastal areas of Viti Levu, Vanua Levu, Yasawa and Mamanuca.

TC Ana also brought in heavy rainfall all over the country, a majority of the rain centered over the Central and Northern Divisions and northwestern Viti Levu. A number of stations recorded very heavy rainfall on the 30th with Dreketilailai and Nadarivatu observing 352mm of rainfall, followed by Seaqqa with 350mm, Qawa with 300mm, Penang Mill with 287mm, Nayarabale with 278mm and Vatukacevaceva with 272mm. The intense rainfall resulted in severe flooding, especially over the Central and Northern Divisions. Labasa recorded one of its worst flooding events again in 2021, while the previous major flood was associated with severe tropical cyclone Ami in 2003.

A 49 year old man was reported to have drowned in Waikubukubu Village, Nadarivatu and 5 people were reported missing.

Due to prolonged rainy conditions brought by TC Ana, landslide occurred in Soasoa Labasa on the 31st, whereby a house was displaced and severely damaged. There were also reports of landslides in Dilkusha, Nausori, in Tailevu and some parts of Suva on the 31st.

Notable Weather Events (Cont.)

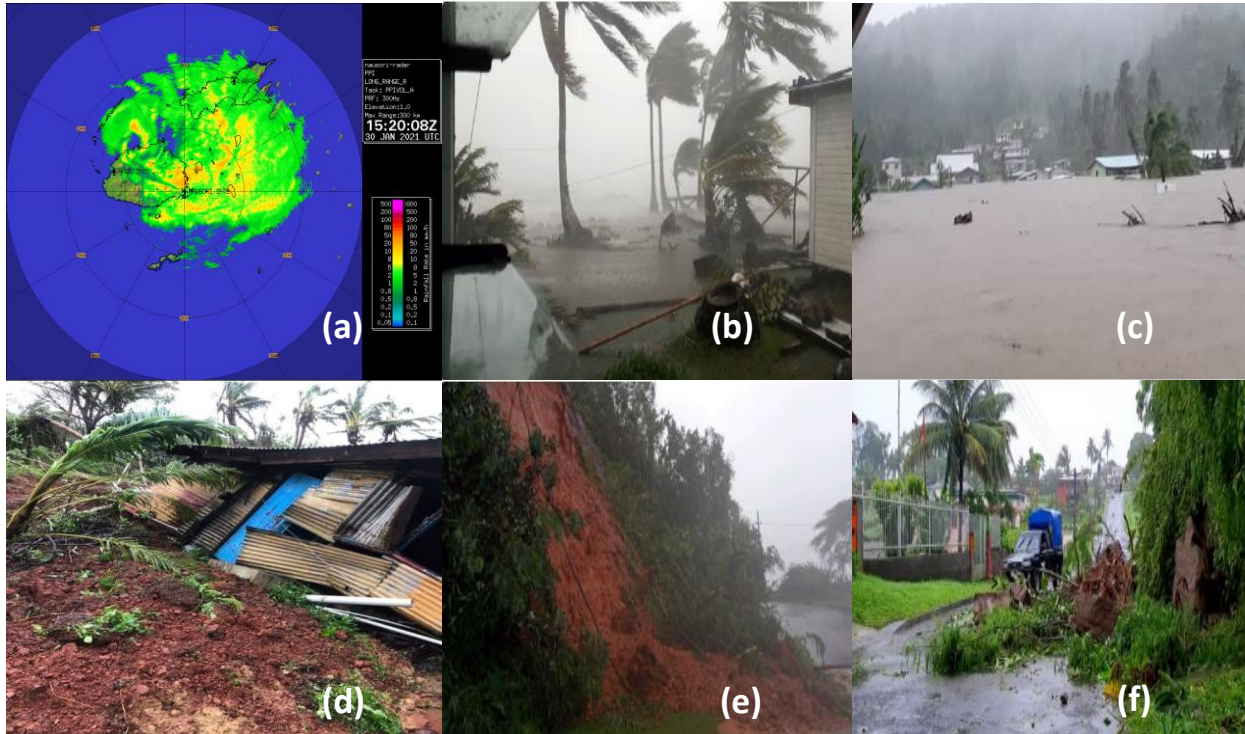


Figure 21: (a) Tropical cyclone Ana on the RADAR network in Fiji at 3.20am on January 31st; (b) Nananu village in Tailevu facing the brunt of storm surges (c) Wailotua No.1 village underwater on January 31st; (d) Landslide at Soasoa Labasa on January 31st; (e) Landslide at Dilkusha, Nausori on January 31st; and (f) Fallen rocks due to landslide at Waimanu Road on January 31st. Picture credit: FBC News.

Flash flooding in the Western & Northern Divisions - February

A trough of low-pressure affected the Western Division on the 13th. This resulted in major flash flooding around low-lying areas of Tavua including Nabuna Village, Kings Road near Tavua, and Yalandro area. Notable rainfall of 74.5mm/12hr was recorded at Nadarivatu station from 5pm on the 12th to 5am on the 13th.

The second episode of flash flooding occurred from the 27th to 28th when another active trough of low pressure affected the Fiji Group. Localized heavy rainfall led to flash flooding in the Western Division, especially Ba and Tavua areas on the 27th and parts of

Notable Weather Events (Cont.)

Vanua Levu on the 28th.

Notable 3hour rainfalls of 50mm were recorded at Yaqara and 88.5mm at Tavua Reservoir site, between 10am to 1pm on the 27th. The Tagitagi (Tagitagi) area was inundated with flash floods, while in Ba the Rarawai Flat and the areas around Ba market were flooded on the 27th. In the Northern Division, a number of roads and crossings were flooded on the 28th. These included Lalakoro Road, Zailav Crossing at Batiri Road in Seaqaqa, Boubale Crossing at Bulileka Road in Labasa and Qelemumu Crossing at Coqeloa Road in Labasa. Accumulated rainfall of 100.5mm/3hr was recorded at Nayarabale station.



Figure 22: (a) Flooded Kings Road in Tavua on February 13th (Picture credit: Fiji Roads Authority); (b) Flooded Boubale Crossing in Labasa on February 28th (Picture credit: Fijivillage).

Flash flooding in the Western & Central Divisions - March

Heavy rain associated with an active trough of low pressure occurred on two separate occasions, both resulting in flash flooding.

The first episode of flash flooding occurred between the 1st and 2nd when heavy rain affected the Western Division. A number of roads in Nadi and Lautoka were closed due to flash flooding on the 1st. Furthermore, major flash floods occurred in Ba and in low-lying areas of Tavua. There were reports of flood inundation in some parts of Ba town

Notable Weather Events (Cont.)

on the 2nd. The highest 24-hour rainfall of 123mm was recorded at Rarawai Mill (Ba) on the 1st.

The second episode of flash flooding occurred on the 25th when another active trough of low pressure resulted in rain and squally thunderstorms over the Fiji Group. Localized heavy rainfall led to surface flooding in many parts of the Western and Central Divisions, especially at Laucala Bay, Suva. Significant rainfall were recorded at Laucala Bay and Lakeba stations with 126mm and 124mm, respectively on the 25th.



Figure 23: (a) Flooded Ba town on March 2nd (Picture credit: Fijivillage); (b) Surface flooding around Laucala Bay in Suva on March 25th. (Picture credit: FBC News).

Mini Tornado on 25th November due to intense thunderstorm activity

A mini tornado affected the greater Nadi area on the 25th between 2.30pm to 3pm. This was a result of a thunderstorm activity over the greater Nadi area and the tornado dissipated when the thunder clouds dissipated. Apart from debris flying in the air, there were no significant damages sustained during the tornado.



Figure 24: Debris flying in the air during a mini tornado in Votualevu, Nadi. Picture credit: Fijivillage.

FIJI METEOROLOGICAL SERVICE Private Mail

Bag (NAP 0351)

Nadi Airport, Fiji.

Ph: +679 6724888, +679 9904395

Fax: +679 6724050

Email: climate@met.gov.fj

Also online at <http://www.met.gov.fj>