



Fiji Meteorological Service

ISO 9001:2015
certified Climate Services

Volume: 20 Issue: 2
Issued: January 31, 2023

Climate Outlook for Hydro-electricity Generation from February to April 2024

Current Conditions

Fiji's Climate

The weather across the country during 1st to 30th January was dominated by a series of trough of low pressure systems, and afternoon showers and thunderstorms. Showers, thunderstorms, and heavy rainfall were experienced over some parts of the country.

Overall, out of the 20 rainfall stations that reported in, in time for the compilation of this bulletin, 2 stations recorded *well above average*, 4 *above average*, 10 *average*, and 4 recorded *below average*.

At Monasavu, when comparing the total monthly rainfall against the 30-year average, *average* rainfall was received at Monasavu during January 2024.

The total monthly rainfall for Monasavu (until 29th January) was 533 mm, which was 80% of the *normal*. During November to 29th January, Monasavu recorded 1493mm of rainfall, which was 89% of the *normal*, while in the past 6 months (August to 29th January), 2870mm of rainfall was registered (116% of the

normal) (Figure 1).

El Niño Southern Oscillation (ENSO) Status

An El Niño event continues to persist within the tropical Pacific Ocean. The sea surface temperatures (SSTs) are warmer than average across the tropical, with the largest anomalies in the central and central Pacific Ocean.

The Southern Oscillation Index (SOI) for December 2023 was -2.4, with the 5-month running mean of -8.8. The latest 30-day value to 27th January 2024 was 7.0.

Trade wind strength has been generally close to average over the equatorial Pacific, while cloudiness near the Date Line have been above average since starting of 2024. This is an indication that the atmospheric impacts of El Niño are weakening in the tropical Pacific.

Overall, the atmospheric and oceanic indicators are indicative of an El Niño.

El Niño-Southern Oscillation and Monasavu Climate Predictions

El-Niño Southern Oscillation Prediction

Climate models on average show that the current El Niño has likely passed its peak, with the event likely to continue through the March to May 2024 period.

Minimum & Maximum Air Temperature Predictions - February & February to April 2024:

Both minimum and maximum temperatures are likely to be *above normal* across Viti Levu and Vanua Levu during February and February to April 2024 period (Figure 3).

Rainfall Predictions:

Fortnightly: 3rd - 16th February & 10th - 23rd

February

Rainfall is expected to be *below normal* for most parts of Viti Levu during the mentioned fortnights.

February 2024

There is 75% chance of receiving at least 242mm of rainfall at Nadarivatu station, 75% chance of at least 242mm of rainfall at Nadarivatu Dam and Monasavu, and 75% chance of at least 243mm of rainfall at

Wailoa. There is high confidence in this forecast (Table 1).

February to April 2024

For the February to April 2024 period, there is 75% chance of receiving at least 805mm of rainfall at Nadarivatu station and 75% chance of at least 848mm of rainfall at Nadarivatu Dam and Monasavu, and 75% chance of receiving at least 891mm of rainfall at Wailoa. There is very high skill on the generated outlook (Table 1).

Summary

Due to the current El Niño event, Viti Levu is likely to experience drier conditions in February, as well as February to April 2024. However, given that we are currently in the tropical cyclone season, there is potential for increased weather activity in our region. Any developments near Fiji is likely to result in *average to above average* rainfall.

Figure 1 Monthly Rainfall Distribution at Monasavu until 29th January 2024

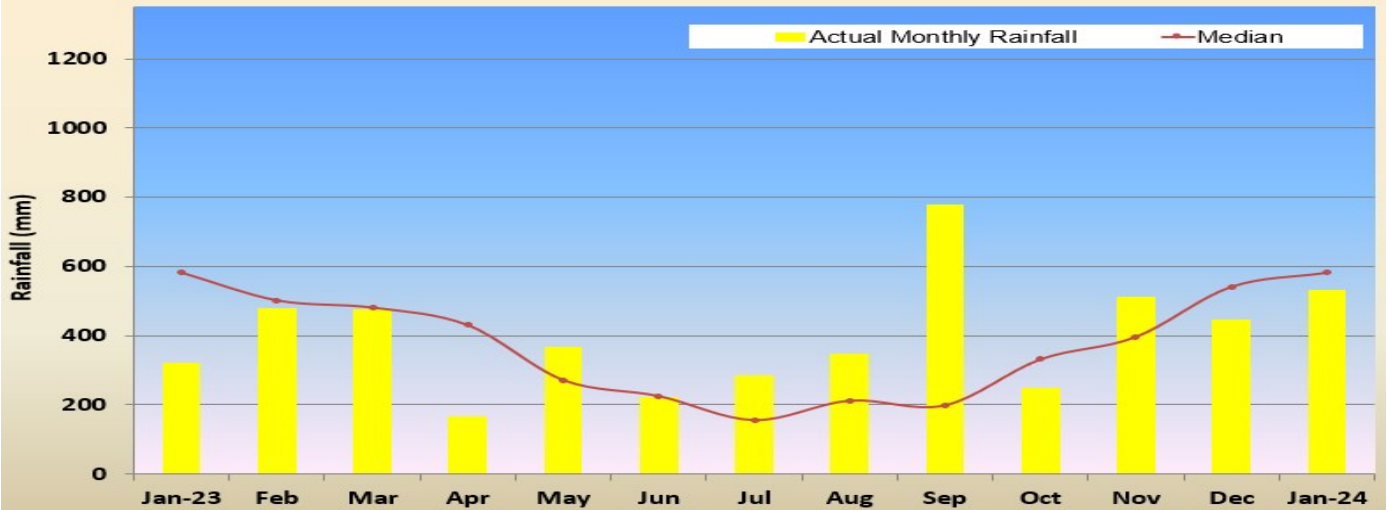


Table 1: Rainfall Outlook: February & February to April 2024

February Outlook				
	25% chance of at least (mm)	50% chance of at least (mm)	75% chance of at least (mm)	Forecast Confidence
Nadarivatu station	460	372	242	High
Nadarivatu Dam	479	378	242	High
Monasavu Dam	479	378	242	High
Wailoa	467	387	243	High
February to April Outlook				
	25% chance of at least (mm)	50% chance of at least (mm)	75% chance of at least (mm)	Forecast Confidence
Nadarivatu station	1236	1050	805	Very high
Nadarivatu Dam	1258	1063	848	Very high
Monasavu Dam	1258	1063	848	Very high
Wailoa	1287	1104	891	Very high

The table above provides 25%, 50% and 75% chances of each station receiving the amount of rainfall mentioned above.

Figure 1: Rainfall Outlook: Fortnightly: 3rd - 16th February & 10th - 23rd February

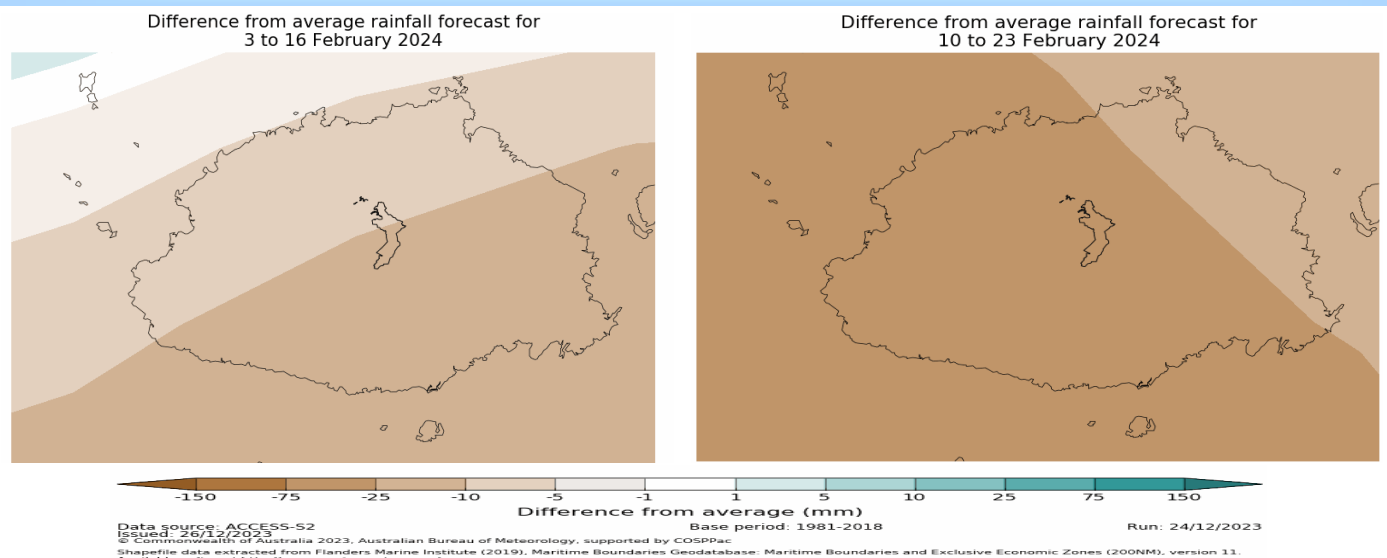


Figure 2: Rainfall Outlook: February & February to April 2024

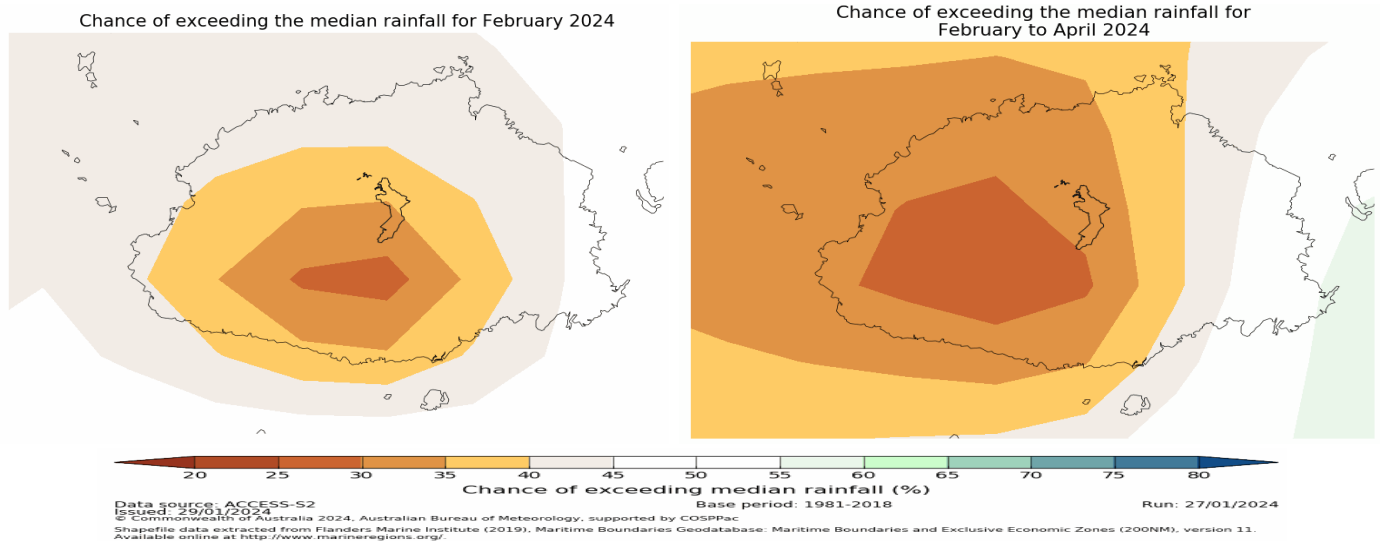
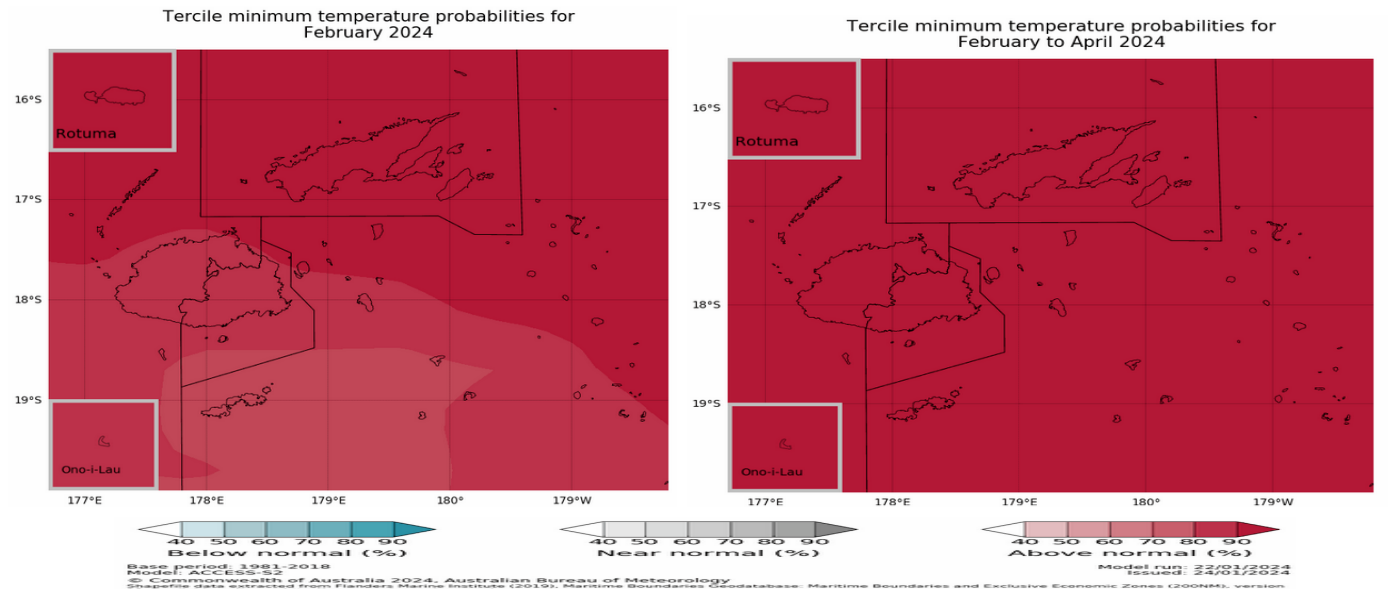
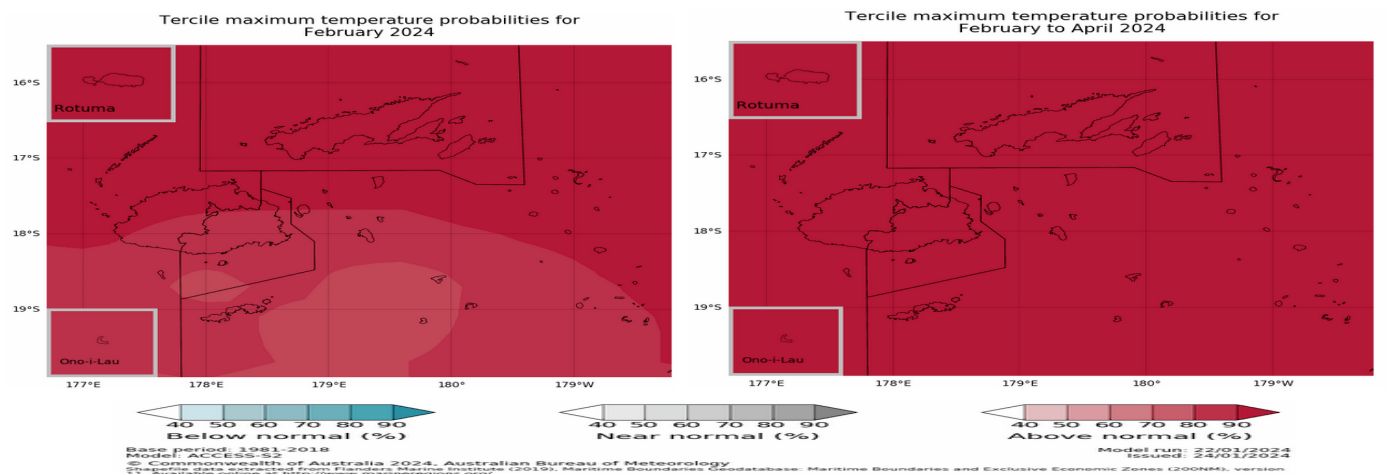


Figure 3: Minimum Air Temperature Predictions: February & February to April 2024



Minimum air temperatures are expected to be *above normal* across Viti Levu and Vanua Levu, during February and February to April 2024 period. *Source: ACCESS-S2 Model.*

Figure 3: Maximum Air Temperature Predictions: February & February to April 2024



Maximum air temperatures are likely to be *above normal* across Viti Levu and Vanua Levu, during February and February to April 2024 period. *Source: ACCESS-S2 Model.*

Explanatory Notes

Climate Outlook for Hydro-electricity Generation is produced to provide advisories to Energy Fiji Limited (EFL). It aims to provide advanced warning on climate abnormalities for planning on economic generation mix and hydro-storage optimization.

Climate (Rainfall/Air Temperature) Outlook

Above normal – indicates that the rainfall/temperature value lies in the highest third of observation recorded in the standard 30 year normal period.

Near normal – indicates that the rainfall/temperature value lies in the middle third of observation recorded in the standard 30 year normal period.

Below normal – indicates that the rainfall/temperature value lies in the lowest third of observation recorded in the standard 30 year normal period.

Climatology – means that there are equal chances of receiving below normal, normal and above normal rainfall.

Median – rainfall value which marks the level dividing the ranked data set in half, that is, the midpoint of the ordered (lowest to highest) monthly or yearly rainfall totals.

Above Median – rainfall value that lies above the median value.

Below Median – rainfall value that lies below the median value.

El Niño Southern Oscillation (ENSO)

ENSO is the principal driver of the year-to-year variability of Fiji's climate. There are three phases of this phenomenon, *El Niño*, *La Niña* and *Neutral* conditions. El Niño or La Niña events are a natural part of the global climate system and usually recur after every 2 to 7 years. It normally develops around April to June, attains peak intensity between December to February and usually starts to decay around April to June period the following year. While most events last for a year, some have persisted for up to 2 years. It should be also noted that no two El Niño or La Niña events are the same. Different events have different impacts, but most exhibit some common climate characteristics.

Usually there is a lag effect on Fiji's climate with ENSO events, that is, once an El Niño or La Niña event is established in the tropical Pacific, it may take 2-6 months before its impact is seen on Fiji. Similarly, once an event finishes, it can take 2-6 months for climate to normalise.

El Niño events are associated with warming of the central and eastern tropical Pacific. El Niño events usually result in reduction of Fiji's rainfall. Often the whole of Fiji is affected in varying degrees and it is quite unusual for one part of the country to experience a prolonged dry spell, while the other is in a wet spell. The relationship and level of rainfall suppression is greater in the Dry Zone than in the Wet Zone. It is the suppression of rainfall during the Cool/Dry Season (May to October) that is normally of most concern. A reduction in Cool/Dry Season rainfall in the Dry Zone results in little or no rainfall until the next Wet Season. While usually the strength of an ENSO event is proportional to its impact on Fiji, at times weak event can also have a significant impact.

La Niña events are associated with cooling of the central and eastern tropical Pacific. Usually La Niña results in wetter than normal conditions for Fiji, occasionally leading to flooding during the Warm/Wet Season (November to April).

During *Neutral* condition, neither El Niño nor La Niña is present, it has little effect on global climate, meaning other climate influences are more likely to dominate.

Lag effects – means that there is a delay in a change of some aspect of climate due to influence of other factors that is acting slowly.

Climate bulletins that can be viewed together with this bulletin include:

- 1) *Fiji Climate Summary* at <https://www.met.gov.fj/index.php?page=FijiClimateSummary> (issued monthly)
- 2) *Fiji Climate Outlook* at <https://www.met.gov.fj/index.php?page=ClimateOutlook> (issued monthly)

This information is prepared as soon as ENSO, climate and oceanographic data is received from recording stations around Fiji and Meteorological Agencies around the world. While every effort is made to verify observational data, Fiji Meteorological Service does not guarantee the accuracy and reliability of the analyses presented, and accepts no liability for any losses incurred through the use of this information and its contents. The information may be freely disseminated provided the source is acknowledged. For further clarification and expert advice, please contact the Fiji Meteorological Service HQ, Namaka, Nadi.

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