



Fiji Meteorological Service

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Climate Outlook for Hydro-electricity Generation from March to May 2024

Current Conditions

Fiji's Climate

The weather across the country during 1st to 28th February was dominated by a series of trough of low pressure systems, disturbances, afternoon showers and thunderstorms. Showers, thunderstorms, and heavy rainfall were experienced over most parts of Fiji.

Overall, out of the 21 rainfall stations that reported in, in time for the compilation of this bulletin, 2 stations recorded *well above average*, 14 *above average*, 3 *average*, and 2 recorded *below average*.

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

The total monthly rainfall for Monasavu (until 27th February) was 759mm, which was 146% of the *normal*. During December to 27th February, Monasavu recorded 1753mm of rainfall, which was 101% of the *normal*, while in the past 6 months (September to 27th February), 3293mm of rainfall was registered (120%

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 eastern Pacific Ocean.

The Southern Oscillation Index (SOI) for January 2024 was +3.7, with the 5-month running mean of –5.5. The latest 30-day value to 26th February 2024 was –15.8.

Trade wind strength has been generally close to average over the equatorial Pacific, while cloudiness near the Date Line have been below average since starting of February 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 consistent with an El Niño event.

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. A transition to ENSO-neutral state is likely during April to June 2024.

Minimum & Maximum Air Temperature Predictions - March & March to May 2024:

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

Rainfall Predictions:

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

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

March 2024

There is 75% chance of receiving at least 298mm of rainfall at Nadarivatu station, 75% chance of at least 305mm of rainfall at Nadarivatu Dam, Monasavu, and

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

March to May 2024

For the March to May 2024 period, there is 75% chance of receiving at least 653mm of rainfall at Nadarivatu station, 75% chance of at least 688mm of rainfall at Nadarivatu Dam and Monasavu, and 75% chance of receiving at least 716mm of rainfall at Wailoa. There is high skill on the generated outlook (Table 1).

Summary

Most parts of Viti Levu are likely to experience *average to below average* rainfall in March, while drier conditions are likely for the March to May 2024 period. 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 27th February 2024

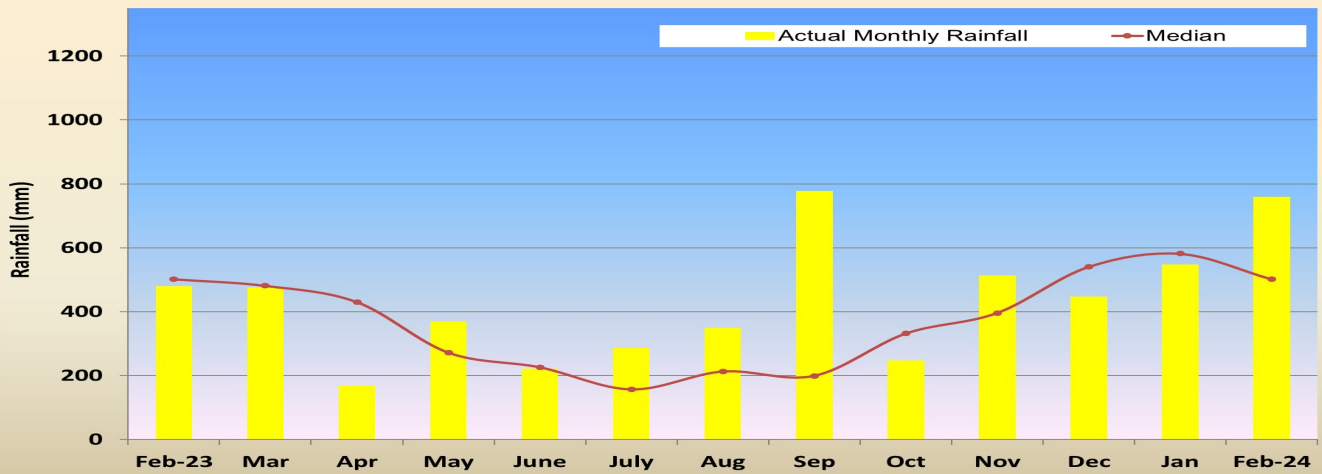


Table 1: Rainfall Outlook: March & March to May 2024

March Outlook				
	25% chance of at least (mm)	50% chance of at least (mm)	75% chance of at least (mm)	Forecast Confidence
Nadarivatu station	534	371	298	High
Nadarivatu Dam	552	386	305	High
Monasavu Dam	552	386	305	High
Wailoa	550	407	305	High
March to May				
	25% chance of at least (mm)	50% chance of at least (mm)	75% chance of at least (mm)	Forecast Confidence
Nadarivatu station	1035	870	653	High
Nadarivatu Dam	1078	901	688	High
Monasavu Dam	1078	901	688	High
Wailoa	1064	945	716	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 March & 10th - 23rd March

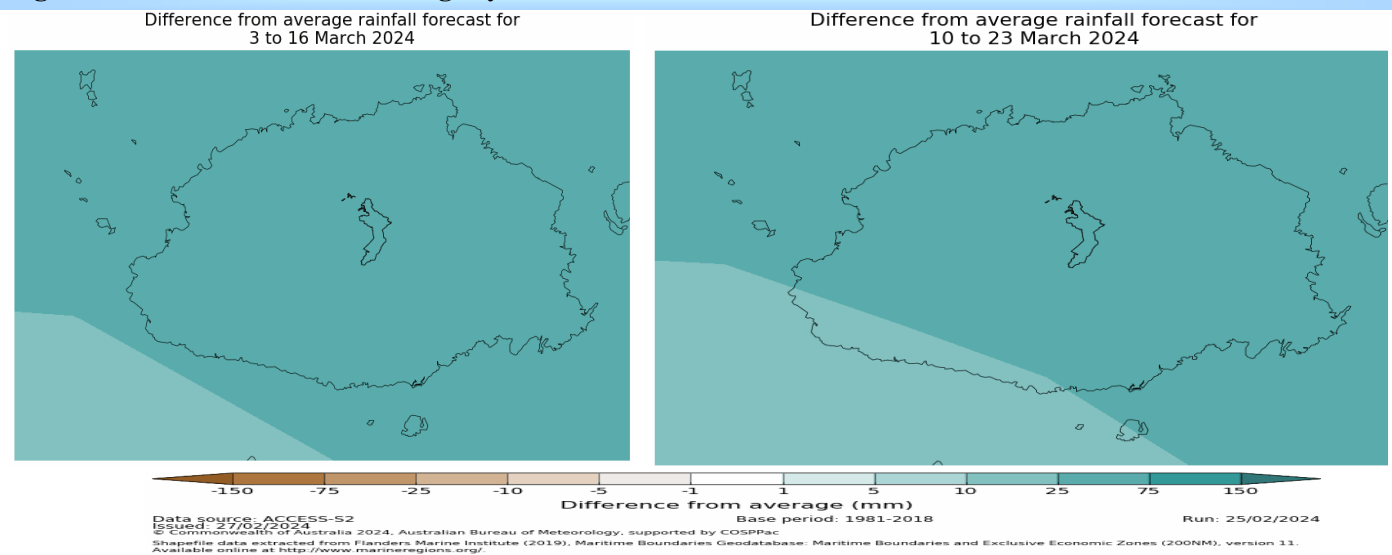


Figure 2: Rainfall Outlook: March & March to May 2024

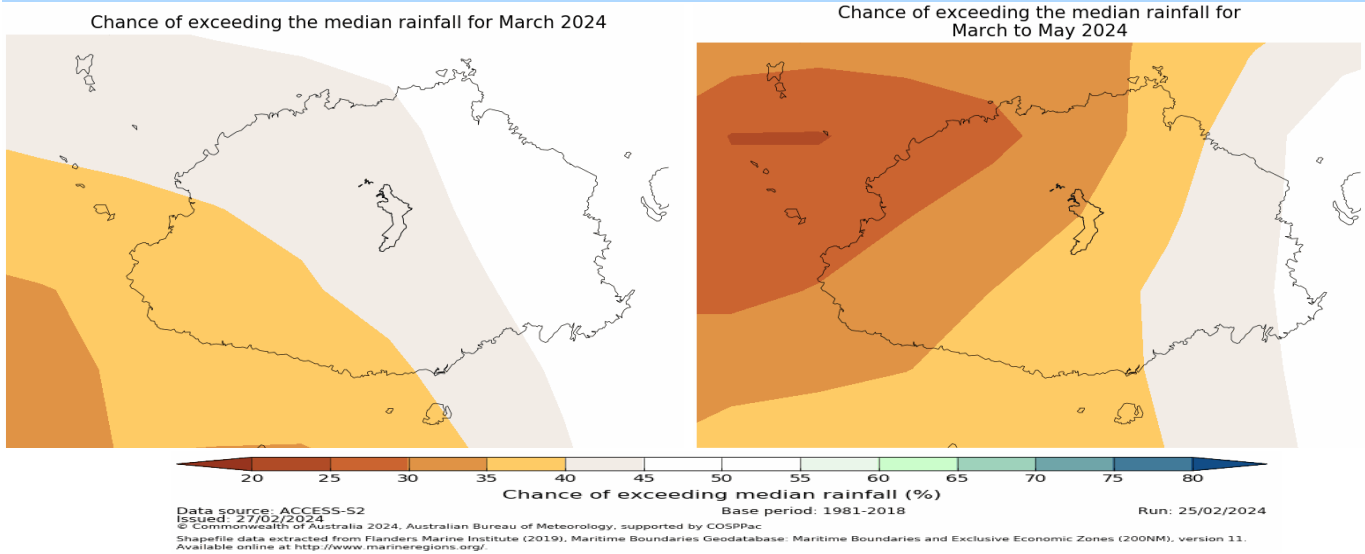
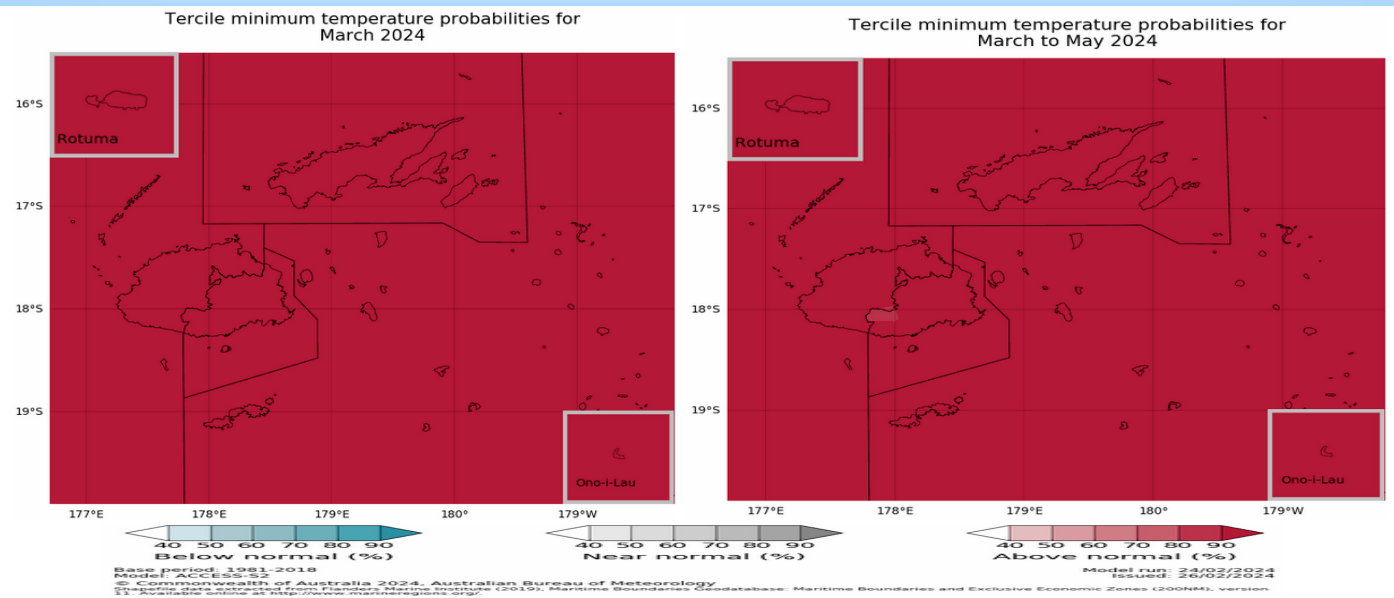
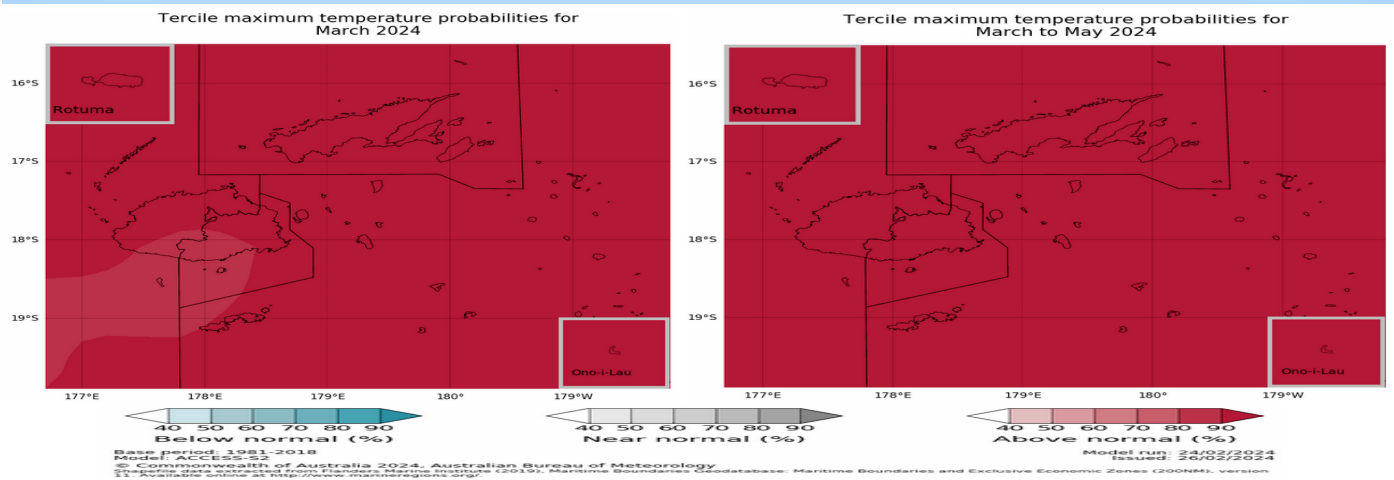


Figure 3: Minimum Air Temperature Predictions: March & March to May 2024



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

Figure 3: Maximum Air Temperature Predictions: March & March to May 2024



Maximum air temperatures are likely to be *above normal* across Viti Levu and Vanua Levu, during March and March to May 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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