

Fiji Meteorological Service

ISO 9001:2015
certified Climate Services

Volume: 20 Issue: 10
Issued: September 27, 2024

Climate Outlook for Hydro-electricity Generation from October to December 2024

Current Conditions

Fiji's Climate

The weather across the country from 1st to 26th September was dominated by a few troughs of low-pressure systems, resulting in afternoon showers, while fine weather prevailed during most of the analyzed period.

There were 18 rainfall stations that reported in, for the compilation of this bulletin, with 6 stations reporting *well below average*, 7 *below average*, and 3 *average*, and 2 stations reporting *above average* rainfall.

Monasavu's total monthly rainfall (until 26th September) was 203mm, which is *below average* (70% of *normal*), when compared against the WMO standard 30-year average.

During July to 26th September, Monasavu recorded 757mm of rainfall, which was 104% of the *normal*, while in the past 6 months (April to 26th September), 1785mm of rainfall was recorded (102% of the *normal*) at the station (Figure 1).

El Niño Southern Oscillation (ENSO) Status

The El Niño–Southern Oscillation (ENSO) is currently neutral. Sea surface temperatures (SSTs) are currently above average in the central and western Pacific Ocean, while near to below average SSTs are being observed in the central-eastern and eastern Pacific Ocean.

The Southern Oscillation Index (SOI) for August 2024 was 7.8, with the 5-month running mean of 0.4. The latest 30-day value to 22nd September 2024 was 3.2.

Trade winds have been above average across the western and central tropical Pacific, while near-average winds were observed elsewhere. Cloudiness near the equatorial Date Line has been below average for most of September, resulting in above average outgoing longwave radiation. Overall, ENSO indicators are still showing signs of ENSO neutral conditions.

El Niño-Southern Oscillation and Monasavu Climate Predictions

El-Niño Southern Oscillation Prediction

Global climate models on average favor a transition from an ENSO-neutral state to a La Niña during the September to November period. However, this La Niña event is likely to be weak and short lived.

Minimum & Maximum Air Temperature Predictions - October & October to December 2024:

Minimum and maximum temperatures are both likely to be *above normal* across Viti Levu and Vanua Levu during October, as well as the October to December 2024 period (Figure 3).

Rainfall Predictions:

Fortnightly: 29th September - 5th October & 6th - 12th October

Rainfall across Viti Levu is likely to be above median from 29th September to 5th October, as well as from 6th to 12th October.

October 2024

There is 75% chance of receiving at least 141mm of

rainfall at Nadarivatu station, 75% chance of at least 155mm of rainfall at Nadarivatu Dam and Monasavu, and 75% chance of receiving at least 172mm of rainfall at Wailoa. There is moderate confidence in this forecast (Table 1).

October to December 2024

For the October to December 2024 period, there is 75% chance of receiving at least 823mm of rainfall at Nadarivatu station, 75% chance of at least 864mm of rainfall at Nadarivatu Dam and Monasavu, and 75% chance of receiving at least 883mm of rainfall at Wailoa. There is currently high confidence on the generated outlook (Table 1).

Summary

There are chances of wetter than normal conditions for the Western Division in both October, as well as the October to December period, with a transition to a La Niña state likely during the September to November period. There is a moderate confidence in the October rainfall prediction, while there is high confidence in the October to December rainfall outlook.

Figure 1

Monthly Rainfall Distribution at Monasavu until 26th September 2024

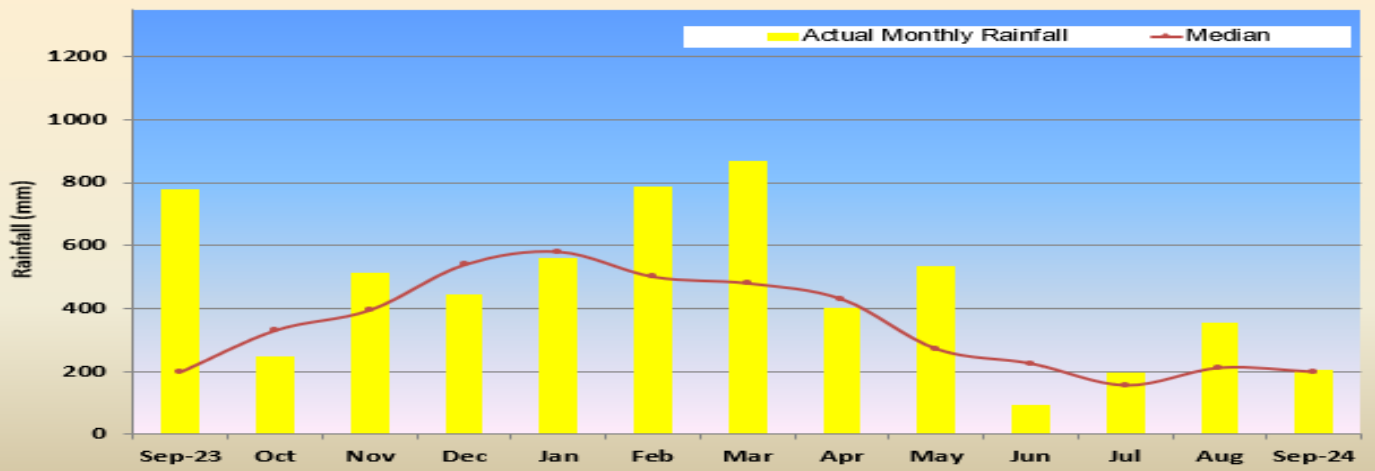


Table 1: Rainfall Outlook: October & October to December 2024

October Outlook				
	25% chance of at least (mm)	50% chance of at least (mm)	75% chance of at least (mm)	Forecast Confidence
Nadarivatu station	297	253	141	Moderate
Nadarivatu Dam	319	271	155	Moderate
Monasavu Dam	319	271	155	Moderate
Wailoa	332	274	172	Moderate
October to December Outlook				
	25% chance of at least (mm)	50% chance of at least (mm)	75% chance of at least (mm)	Forecast Confidence
Nadarivatu station	1183	1070	823	High
Nadarivatu Dam	1231	1109	864	High
Monasavu Dam	1231	1109	864	High
Wailoa	1271	1122	883	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: 29th September – 5th October & 6th - 12th October

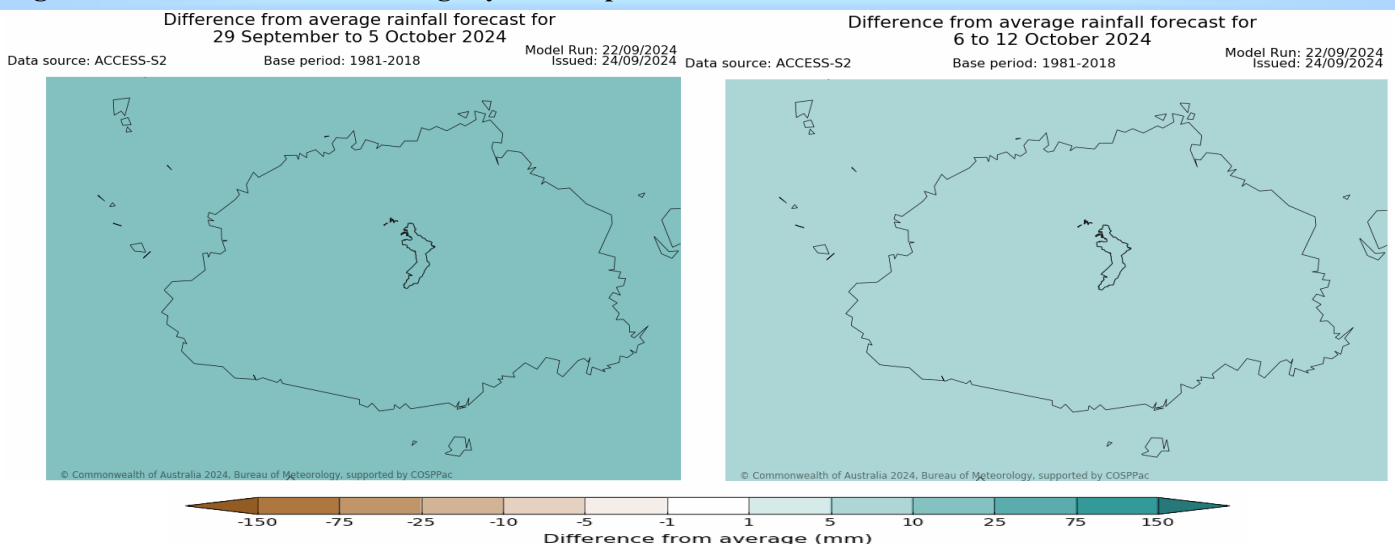


Figure 2: Rainfall Outlook: October & October to December 2024

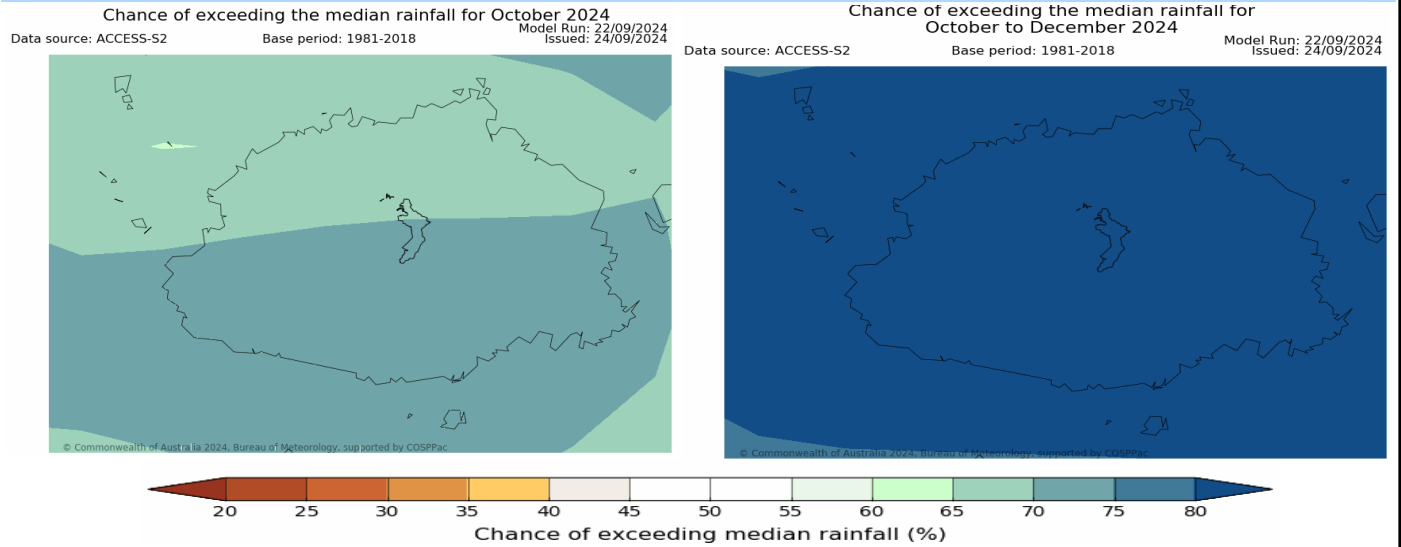
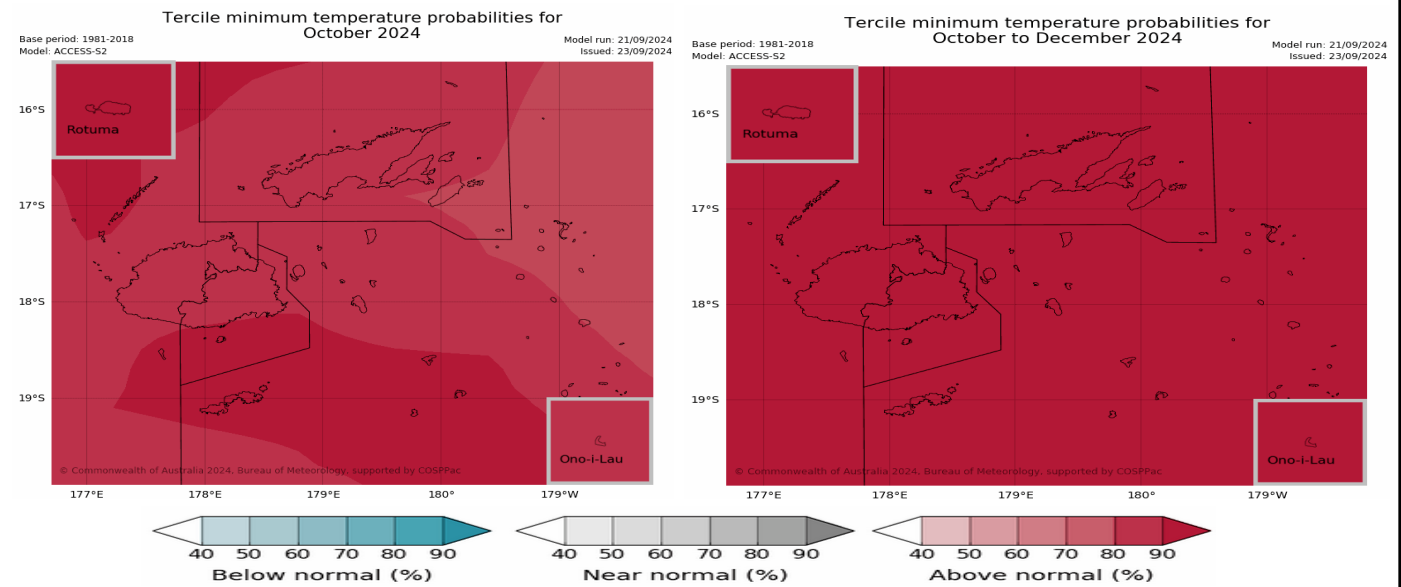
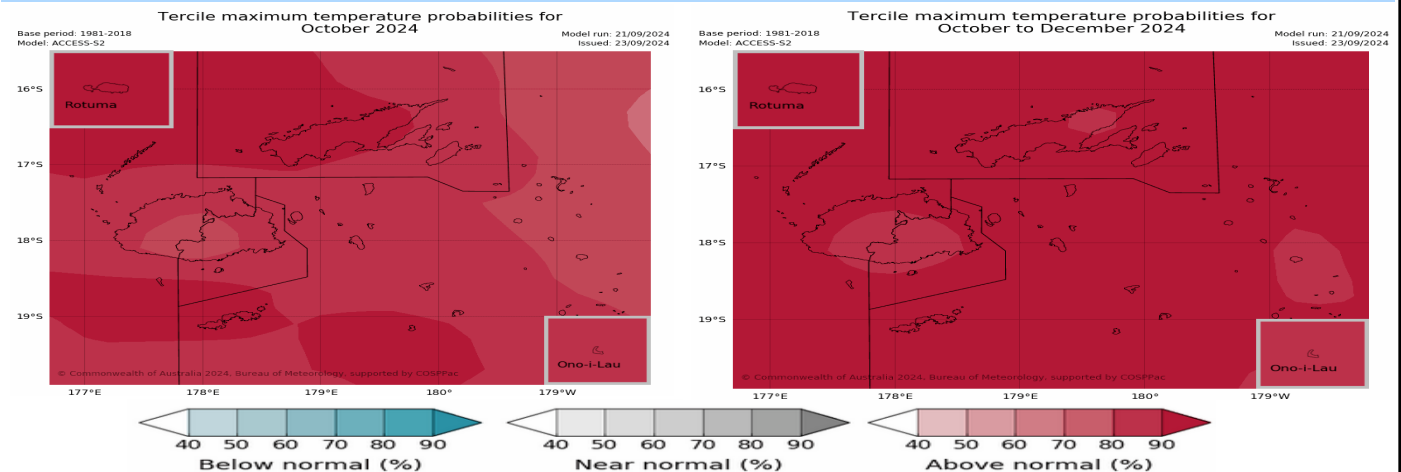


Figure 3: Minimum Air Temperature Predictions: October & October to December 2024



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

Figure 3: Maximum Air Temperature Predictions: October & October to December 2024



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