Fiji Meteorological Service

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Climate Outlook for Hydro-electricity Generation from November 2024 to January 2025

Current Conditions

Fiji's Climate

October was dominated by few troughs of low-pressure systems, resulting in heavy rain, while fine weather prevailed during the rest of the analyzed period. Periods of localized heavy rainfall led to flash flooding in some parts of the Western and Central Division during the month.

There were 19 rainfall stations that reported in, for the compilation of this bulletin, with 1 station reporting *well below average,* 3 *below average,* 4 *average,* 10 *above average* and 1 station reporting *well above average* rainfall.

The total monthly rainfall at Monasavu, until 30th October was 389mm, which is in *average* category (93% of *normal*), when compared against the WMO standard 30-year average.

During August to 30th October, Monasavu recorded 951mm of rainfall, which was 100% of the *normal*, while in the past 6 months (May to 30th October), 1775mm of rainfall was recorded (105% of the *normal*) at the station (Figure 1).

El Niño Southern Oscillation (ENSO) Status

A La Niña Watch is currently in place. Sea surface temperatures (SSTs) are currently above average in the western and far eastern Pacific Ocean, while below average SSTs are being observed in the central and eastern Pacific Ocean.

The Southern Oscillation Index (SOI) for September 2024 was –1.0, with the 5-month running mean of 0.1. The latest 30-day value to 28th October 2024 was 3.8.

Trade winds have been above average across the central tropical Pacific, and near-average in the western tropical Pacific. Cloudiness near the equatorial Date Line has been below average for most of October. Overall, ENSO indicators are still showing signs of ENSO neutral conditions, with La Niña development likely in the coming months .

El Niño-Southern Oscillation and Monasavu Climate Predictions

El-Niño Southern Oscillation Prediction

Global climate models on average favor borderline La Niña conditions during the November 2024 to January 2025 period. However, this La Niña event is likely to be weak and short lived.

Minimum & Maximum Air Temperature Predictions - November & November 2024 to January 2025:

Day and night time temperatures are both likely to be *above normal* across Viti Levu and Vanua Levu during November, as well as the November 2024 to January 2025 period (Figure 3).

Rainfall Predictions:

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

There is no strong biasness for drier or wetter than usual conditions across Viti Levu from 3rd to 16th November. Rainfall across Viti Levu is likely to be above median from 10th to 23rd November.

November 2024

There is 75% chance of receiving at least 169mm of rainfall at Nadarivatu station, 75% chance of at least 186mm of rainfall at Nadarivatu Dam and Monasavu, and 75% chance of receiving at least 211mm of rainfall at Wailoa. There is moderate confidence in this forecast (Table 1).

November 2024 to January 2025

For the November 2024 to January 2025 period, there is 75% chance of receiving at least 1156mm of rainfall at Nadarivatu station, 75% chance of at least 1211mm of rainfall at Nadarivatu Dam and Monasavu, and 75% chance of receiving at least 1178mm of rainfall at Wailoa. There is currently very high confidence on the generated outlook (Table 1).

Summary

Wetter than normal conditions are likely for November, as well as the November 2024 to January 2025 period. There is a moderate confidence in the November rainfall prediction, while there is a very high confidence in the November 2024 to January 2025 rainfall outlook.

Figure 1 Monthly Rainfall Distribution at Monasavu until 30th October 2024

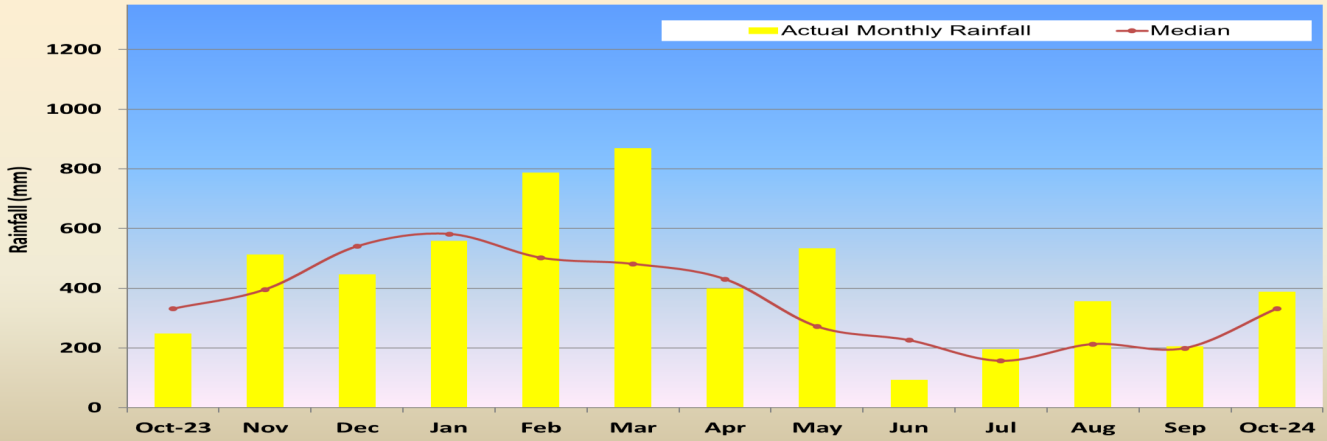


Table 1: Rainfall Outlook: November & November 2024 to January 2025

November Outlook				
	25% chance of at least (mm)	**50% chance of at least (mm)**	**75% chance of at least (mm)**	**Forecast Confidence**
Nadarivatu station	360	268	169	Moderate
Nadarivatu Dam	389	285	186	Moderate
Monasavu Dam	389	285	186	Moderate
Wailoa	420	291	211	Moderate
November to January Outlook				
	25% chance of at least (mm)	**50% chance of at least (mm)**	**75% chance of at least (mm)**	**Forecast Confidence**
Nadarivatu station	1738	1470	1156	Very High
Nadarivatu Dam	1795	1560	1211	Very High
Monasavu Dam	1795	1560	1211	Very High
Wailoa	1754	1437	1178	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 November & 10th - 23rd November

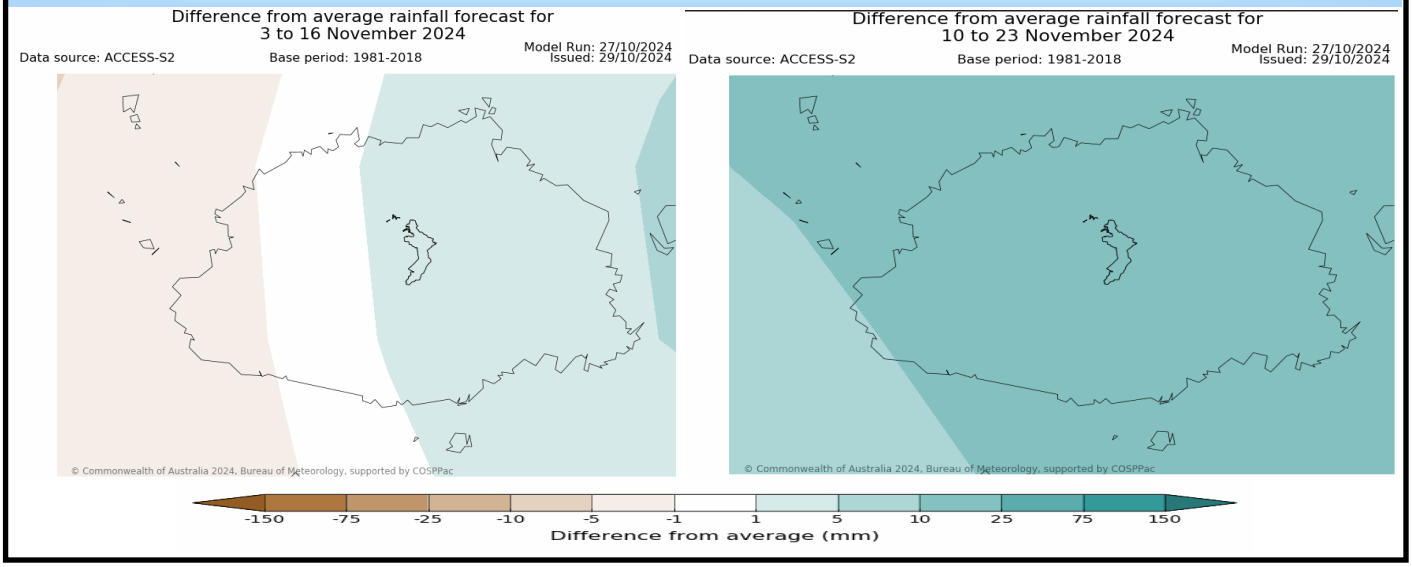


Figure 2: Rainfall Outlook: November & November 2024 to January 2025

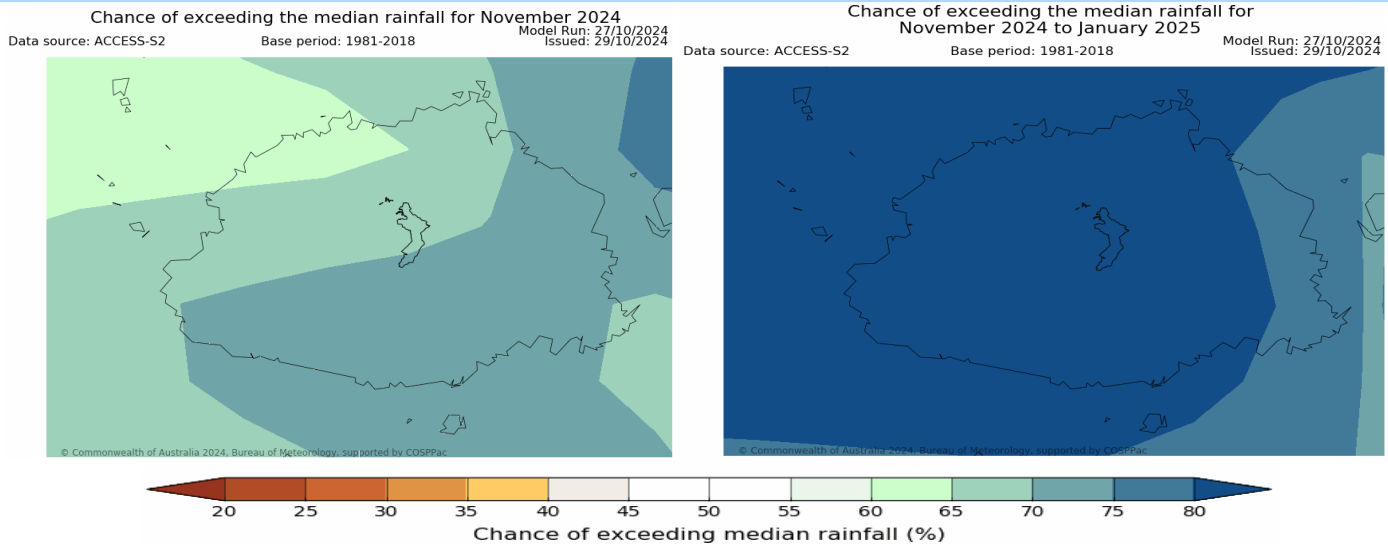
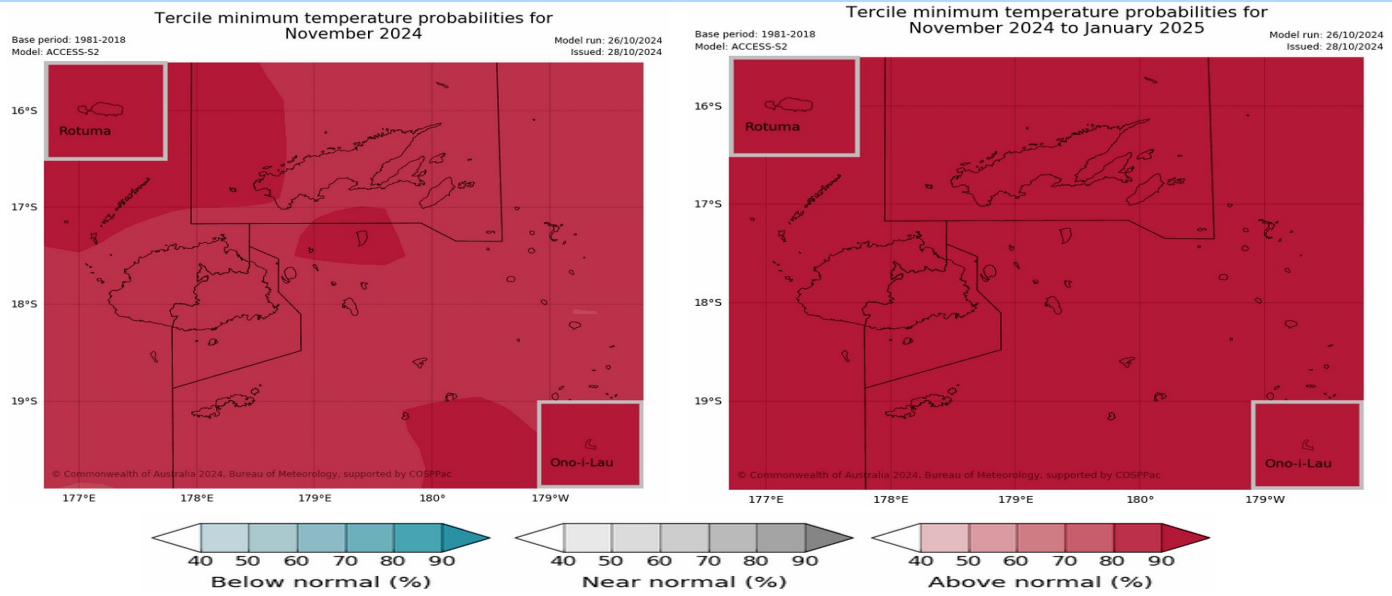
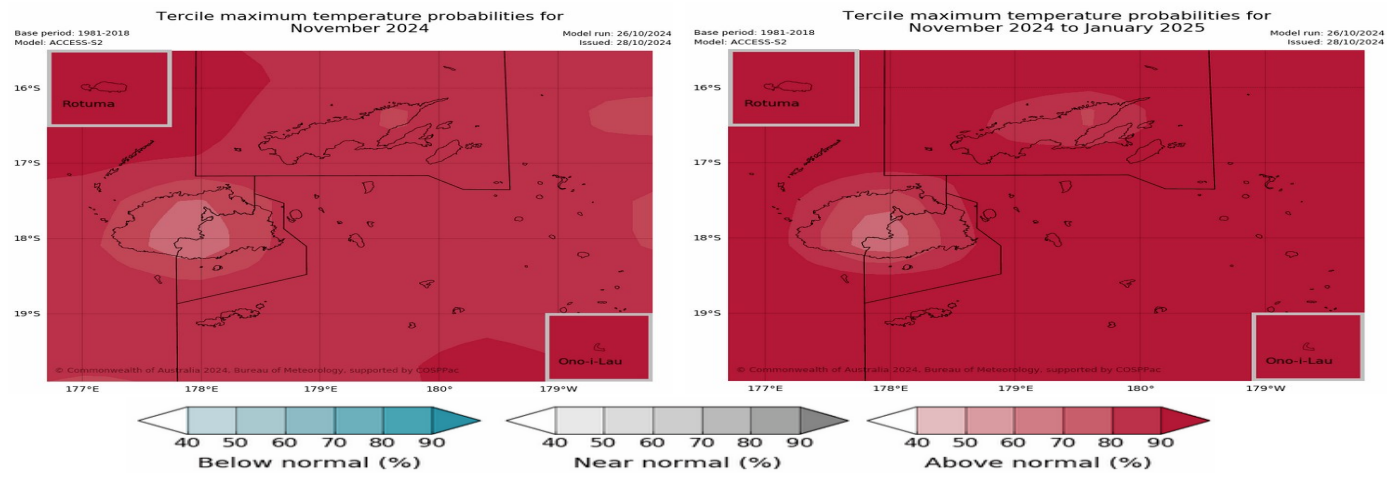


Figure 3: Minimum Air Temperature Predictions: November & November 2024 to January 2025



Minimum air temperatures are expected to be *above normal* across Viti Levu and Vanua Levu, during November and November 2024 to January 2025 period. *Source: ACCESS-S2 Model.*

Figure 3: Maximum Air Temperature Predictions: November & November 2024 to January 2025



Maximum air temperatures are likely to be *above normal* across Viti Levu and Vanua Levu, during November and November 2024 to January 2025 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)*

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