Fiji Meteorological Service

ISO 9001:2015 certified Climate Services

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Climate Outlook for Hydro-electricity Generation from December 2024 to February 2025

Current Conditions

Fiji's Climate

During 1st to 28th November, there were few troughs of low pressure systems lingering around the Fiji Group, that brought about significant rainfall. Episodes of localized intense rainfall, resulted in couple of flash flooding events, in some areas of the Central and Eastern Division.

There were 20 rainfall stations that reported in, in time for the compilation of this bulletin, with 1 station reporting *well below average,* 4 *below average,* 7 *average,* 6 *above average* and 2 stations reporting *well above average* rainfall.

The total monthly rainfall at Monasavu, until 28th November was 652mm, which is in *above average* category (151% of *normal*), when compared against the WMO standard 30-year average.

During September to 28th November Monasavu recorded 1256mm of rainfall, which was 110% of the *normal*, while in the past 6 months (June to 28th November, 1903mm 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 Pacific Ocean, while near to below average SSTs are being observed in the east-central Pacific and eastern Pacific Ocean.

The Southern Oscillation Index (SOI) for October 2024 was 4.2, with the 5-month running mean of 0.2. The latest 30-day value to 25th November 2024 was 5.1.

Trade winds have been stronger than average in the western Pacific and close to average across the central Pacific. Cloudiness has been below average since early September. Overall, ENSO indicators currently reflect neutral conditions, with the likelihood of La Niña developing 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 December 2024 to February 2025 period, with a return to ENSO-neutral conditions from January to March 2025 period.

Minimum & Maximum Air Temperature Predictions - December & December 2024 to February 2025:

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

Rainfall Predictions:
Fortnightly: 1st – 14th December & 8th - 21st December

Rainfall across Viti Levu is likely to be above median from 1st to 14th December , as well as from 8th to 21st December.

December 2024

There is 75% chance of receiving at least 307mm of rainfall at Nadarivatu station, 75% chance of at least 325mm of rainfall at Nadarivatu Dam and Monasavu, and 75% chance of receiving at least 329mm of rainfall at Wailoa. There is good confidence in this forecast (Table 1).

December 2024 to February 2025

For the December 2024 to February 2025 period, there is 75% chance of receiving at least 1215mm of rainfall at Nadarivatu station, 75% chance of at least 1250mm of rainfall at Nadarivatu Dam and Monasavu, and 75% chance of receiving at least 1243mm of rainfall at Wailoa. There is currently very high confidence on the generated outlook (Table 1).

Summary

Wetter than normal conditions are likely for the month of December, as well as the December 2024 to February 2025 period. There is a good confidence in the December rainfall prediction, while there is a very high confidence in the December 2024 to February 2025 rainfall outlook.

Figure 1

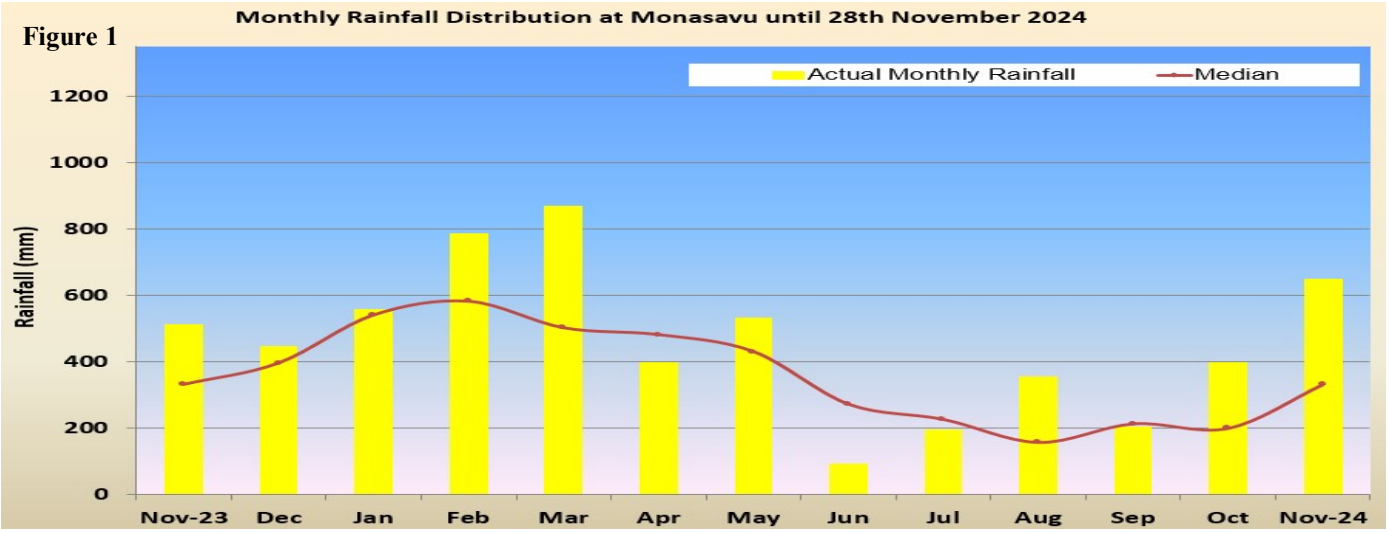


Table 1: Rainfall Outlook: December & December 2024 to February 2025

December Outlook				
	25% chance of at least (mm)	**50% chance of at least (mm)**	**75% chance of at least (mm)**	**Forecast Confidence**
Nadarivatu station	479	421	307	Good
Nadarivatu Dam	506	438	325	Good
Monasavu Dam	506	438	325	Good
Wailoa	490	420	329	Good
December to February Outlook				
	25% chance of at least (mm)	**50% chance of at least (mm)**	**75% chance of at least (mm)**	**Forecast Confidence**
Nadarivatu station	1831	1428	1215	Very High
Nadarivatu Dam	1862	1472	1250	Very High
Monasavu Dam	1862	1472	1250	Very High
Wailoa	1680	1422	1243	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: 1st – 14th December & 8th - 21st December

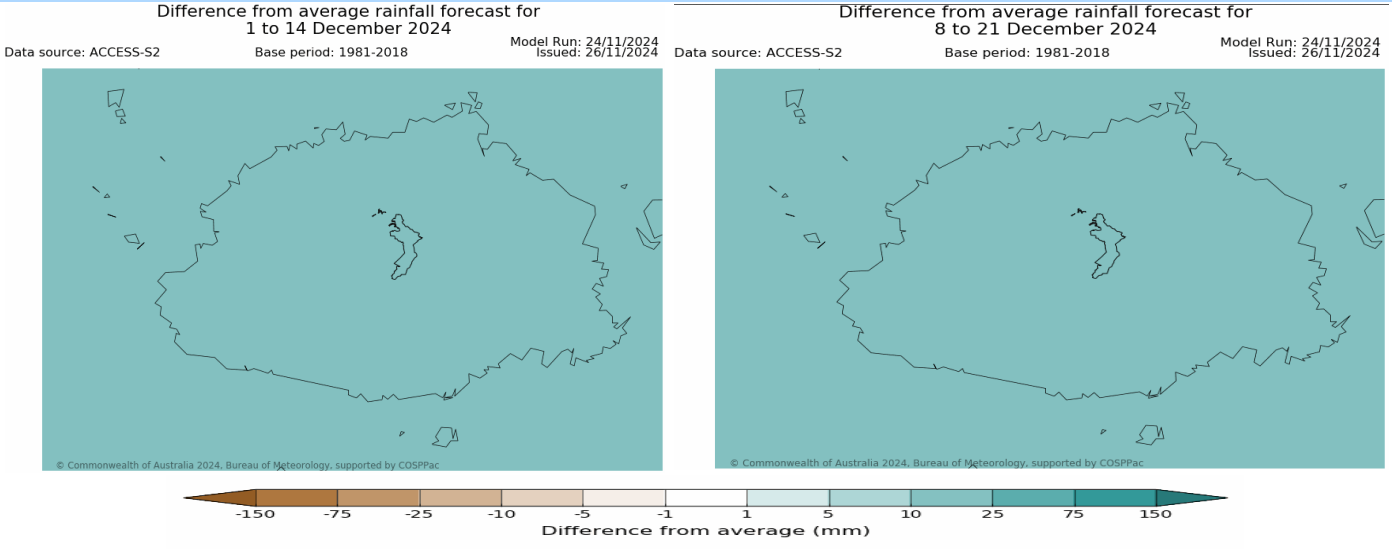


Figure 2: Rainfall Outlook: December & December 2024 to February 2025

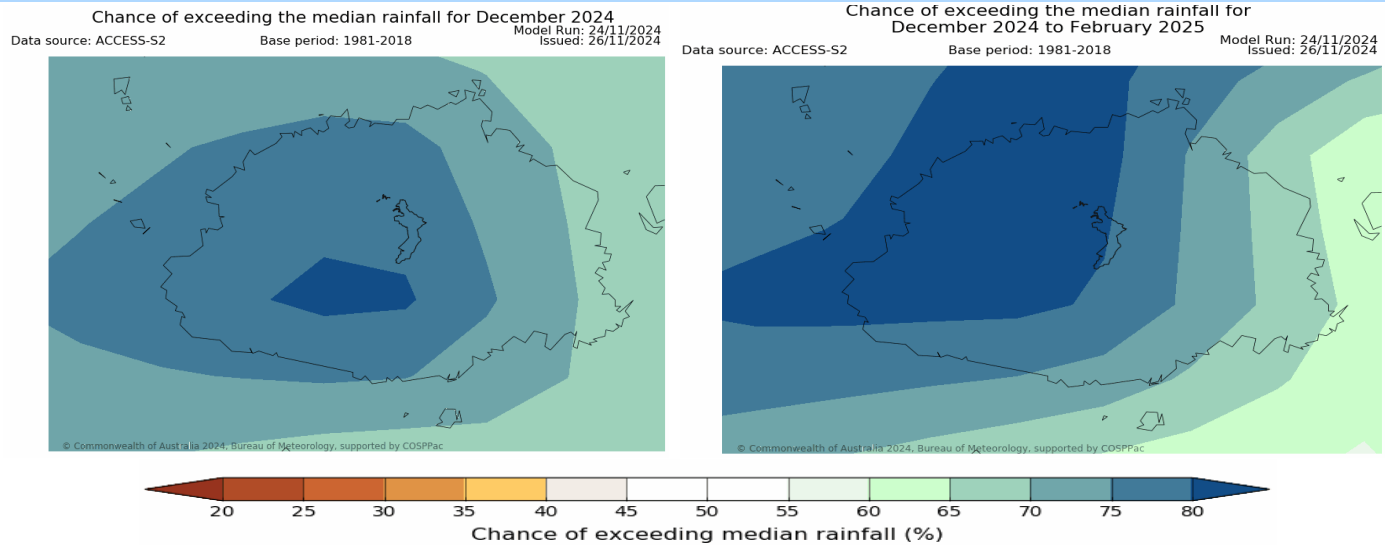
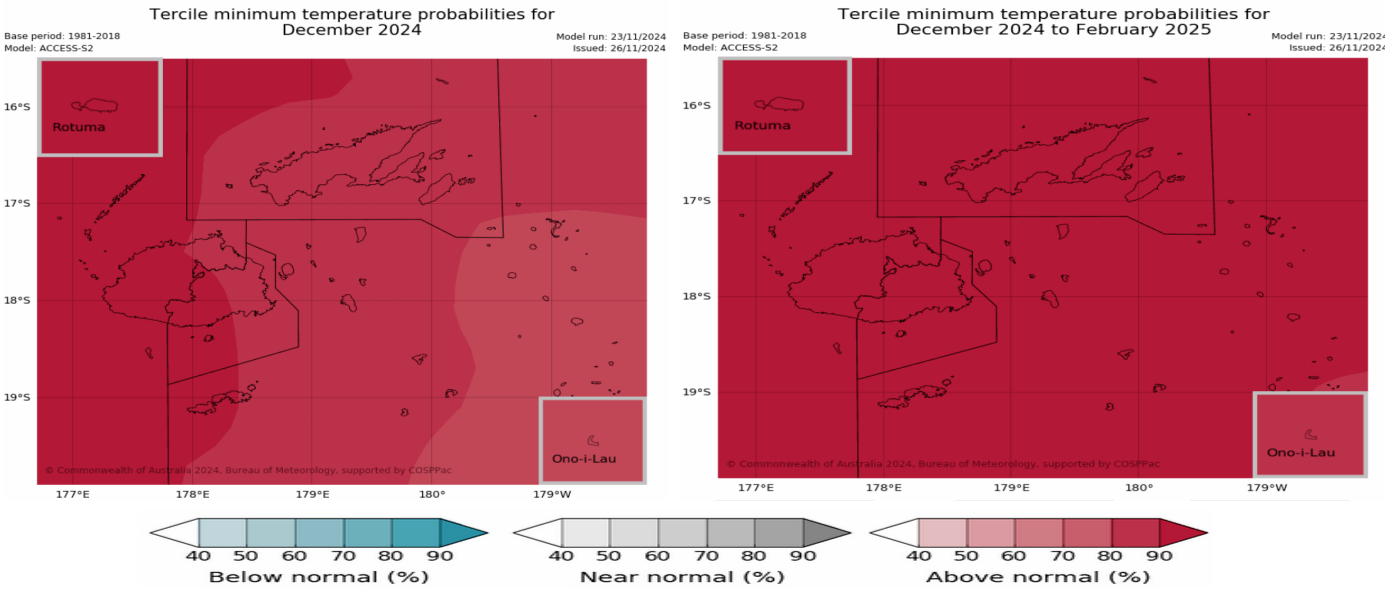
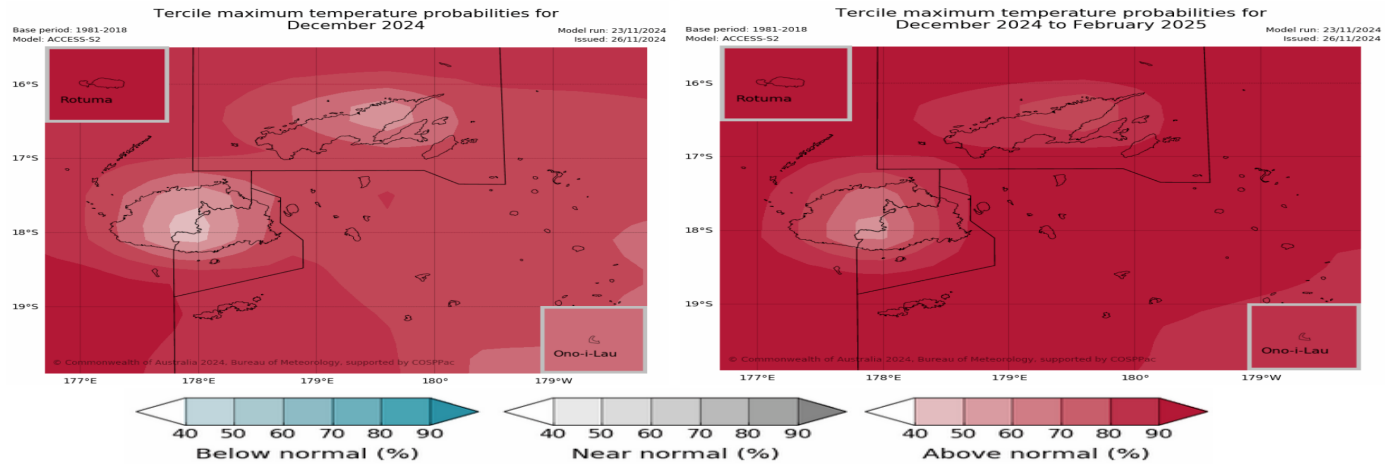


Figure 3: Minimum Air Temperature Predictions: December & December 2024 to February 2025



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

Figure 3: Maximum Air Temperature Predictions: December & December 2024 to February 2025



Maximum air temperatures are likely to be *above normal* across Viti Levu and Vanua Levu, during December and December 2024 to February 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)*

For further information, contact: The Director of Meteorology, Fiji Meteorological Service, Private Mail Bag NAP0351, Nadi Airport, Fiji. Phone: (679) 6724888, Fax: (679) 6720430, E-mail: fms@met.gov.fj or climate@met.gov.fj. URL: http://www.met.gov.fj