Fiji Meteorological Service

ISO 9001:2015 certified Climate Services

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

Current Conditions

Fiji's Climate

The weather across the country from 1st to 29th July was dominated by a few troughs of low-pressure systems, resulting in afternoon showers, while fine weather also prevailed on certain occasions.

There were 18 rainfall stations that reported in, in time for the compilation of this bulletin, with 3 stations reporting *well below average, 5 below average, 6 average,* and 4 recorded *above average* rainfall.

For Monasavu, when comparing the total monthly rainfall against the 30-year average, *average* rainfall was received at Monasavu, until 29th July 2024.

Monasavu's total monthly rainfall (until 29th July) was 191mm, which was 98% of *normal*. During May to 29th July, Monasavu recorded 818mm of rainfall, which was 110% of the *normal*, while in the past 6 months (February to 29th July), 2875mm of rainfall was recorded (129% 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) in the central Pacific are also neutral, with anomalies cooling since December 2023.

The Southern Oscillation Index (SOI) for June 2024 was –3.1, with the 5-month running mean of –3.1. The latest 30-day value to 27th July 2024 was –5.9.

Trade winds have been slightly stronger than average in the central and western equatorial Pacific, with near -average winds in the eastern Pacific. Cloudiness near the equatorial Date Line is currently above average. Overall, ENSO indicators are indicative of ENSO neutral conditions.

El Niño-Southern Oscillation and Monasavu Climate Predictions

El-Niño Southern Oscillation Prediction

Recently surveyed global climate models on average favor ENSO-neutral conditions to continue until at least August to October 2024, with a transition to La Niña state likely during the September to November 2024 period.

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

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

Rainfall Predictions:
Fortnightly: 3rd - 16th August & 10th - 23rd August

Rainfall across Viti Levu is likely to be above median from 3rd to 16th August and as well as from 10th to 23rd August.

August 2024

There is 75% chance of receiving at least 59mm of rainfall at Nadarivatu station, 75% chance of at least 66mm of rainfall at Nadarivatu Dam and Monasavu, and 75% chance of receiving at least 75mm of rainfall at Wailoa. There is low confidence in this forecast (Table 1).

August to October 2024

For the August to October 2024 period, there is 75% chance of receiving at least 406mm of rainfall at Nadarivatu station, 75% chance of at least 436mm of rainfall at Nadarivatu Dam and Monasavu, and 75% chance of receiving at least 452mm of rainfall at Wailoa. There is currently low confidence on the generated outlook (Table 1).

Summary

As we continue in the Dry Season, most parts of the Western Division are likely to experience suppressed rainfall, while slightly wet conditions are likely for the parts of the interior and Central Division, in August.

For the August to October period, most parts of Viti Levu is likely to experience wetter than usual conditions, with a transition to a La Niña state likely during September to November.

Figure 1

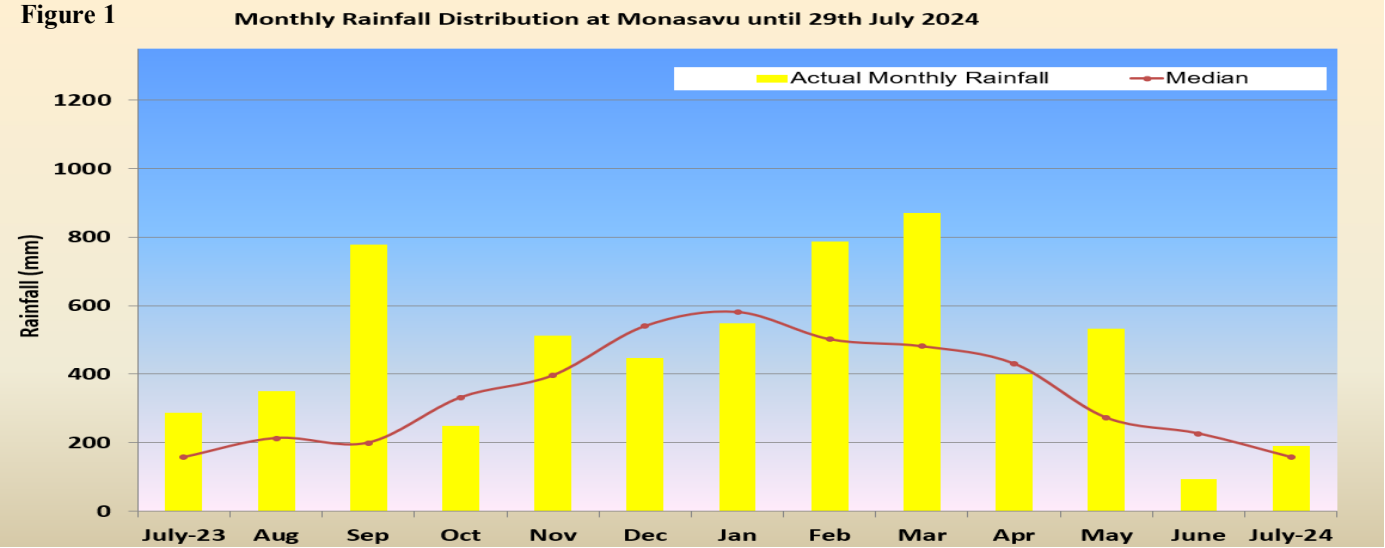


Table 1: Rainfall Outlook: August & August to October 2024

August Outlook				
	25% chance of at least (mm)	**50% chance of at least (mm)**	**75% chance of at least (mm)**	**Forecast Confidence**
Nadarivatu station	169	106	59	Low
Nadarivatu Dam	179	112	66	Low
Monasavu Dam	179	112	66	Low
Wailoa	196	112	75	Low
August to October Outlook				
	25% chance of at least (mm)	**50% chance of at least (mm)**	**75% chance of at least (mm)**	**Forecast Confidence**
Nadarivatu station	655	553	406	Low
Nadarivatu Dam	687	573	436	Low
Monasavu Dam	687	573	436	Low
Wailoa	707	573	452	Low

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 August & 10th - 23rd August

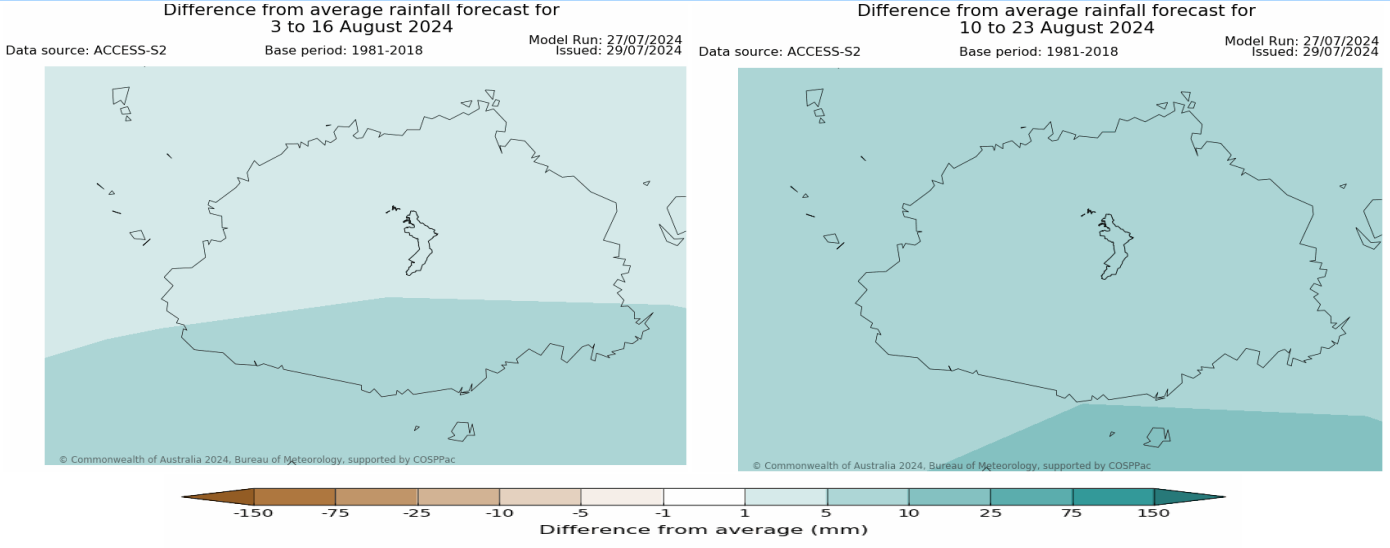


Figure 2: Rainfall Outlook: August & August to October 2024

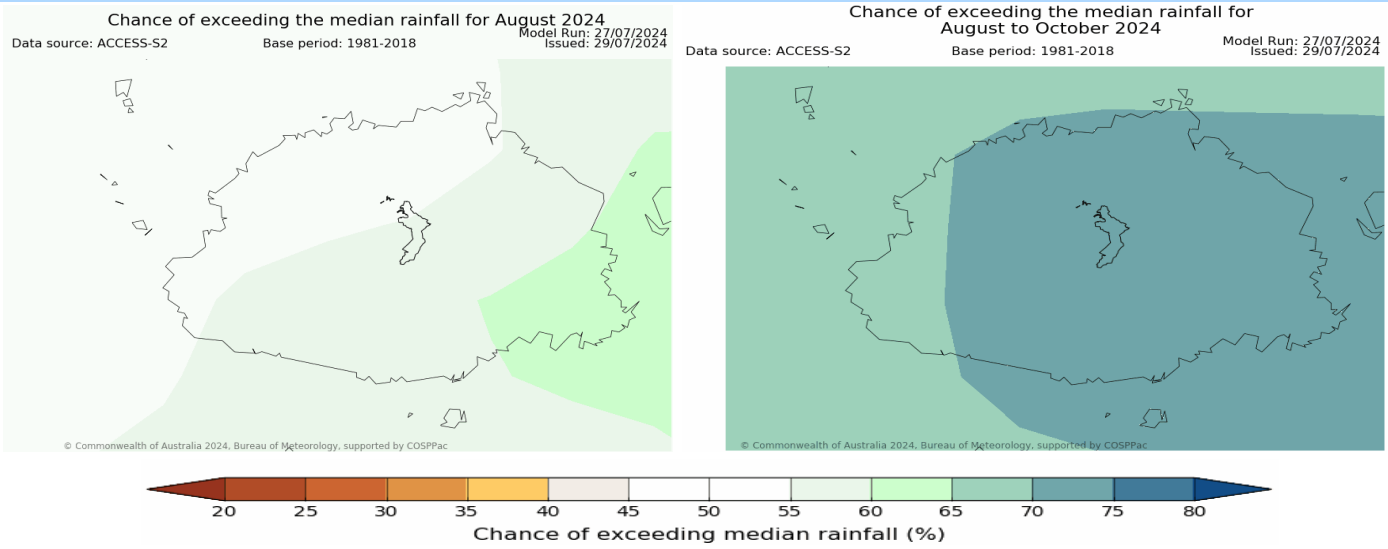
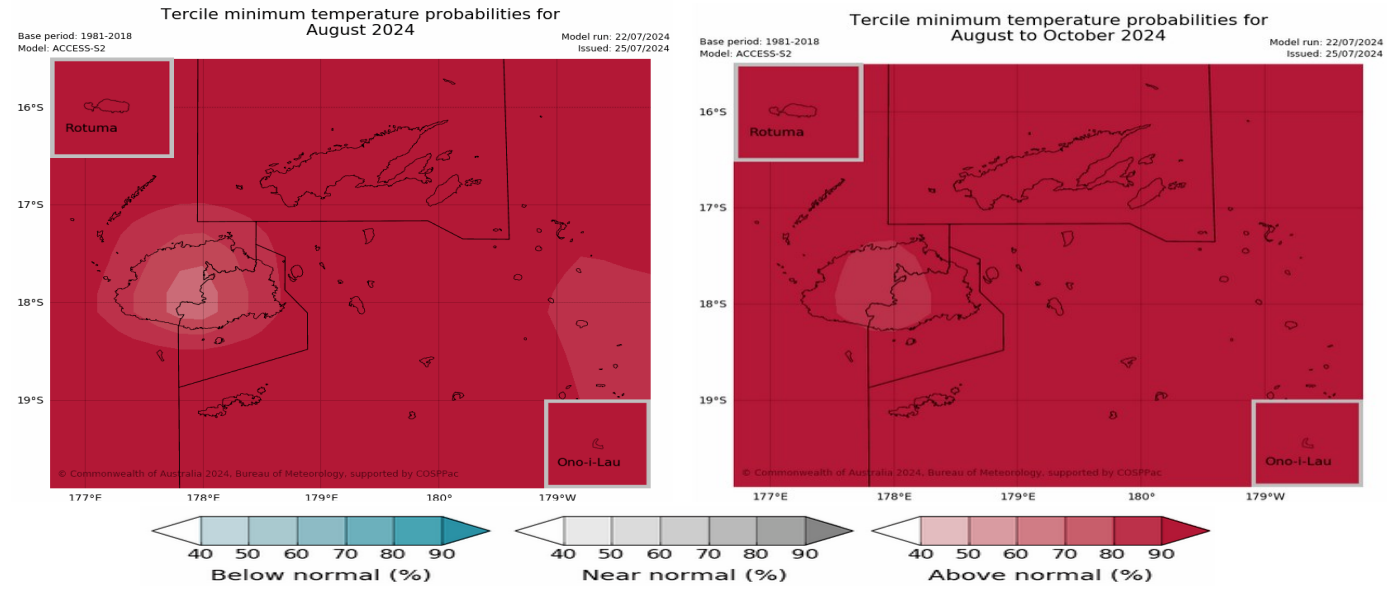
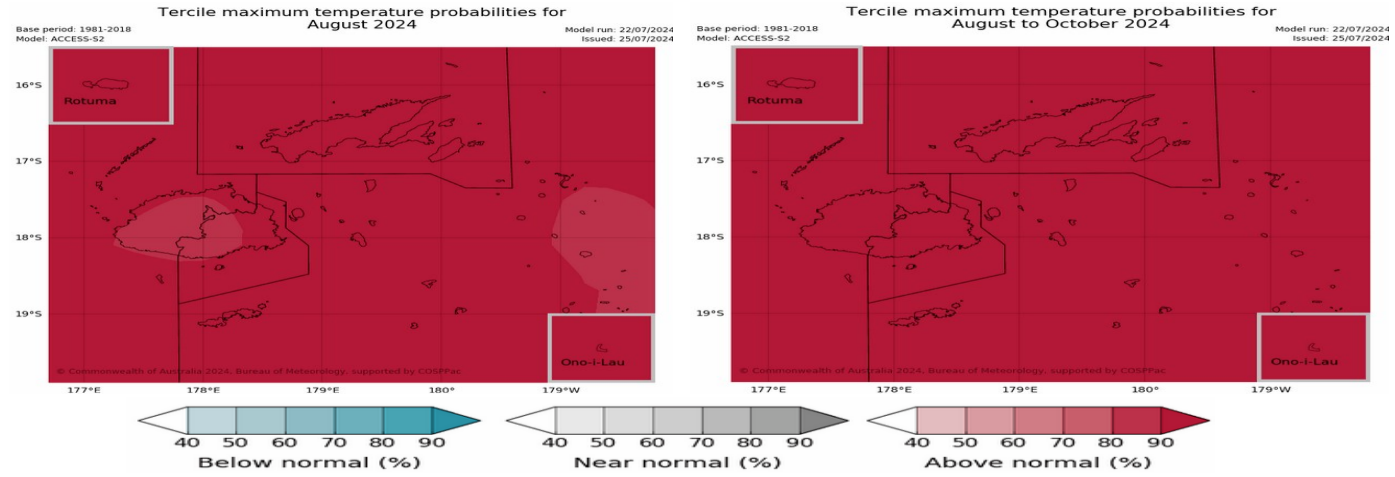


Figure 3: Minimum Air Temperature Predictions: August & August to October 2024



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

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



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

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