Fiji Meteorological Service

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Climate Outlook for Hydro-electricity Generation from July to September 2024

Current Conditions

Fiji's Climate

Generally, suppressed rainfall was recorded at rainfall stations across the country, from 1st to 24th June, with southeast trade winds dominant during most of the days.

Overall, out of the 18 rainfall stations that reported in, in time for the compilation of this bulletin, 1 recorded *below average* and 17 recorded *well below average* rainfall.

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

The total monthly rainfall for Monasavu (until 24th June) was 77mm, which was 32% of the *normal*. During April to 24th June, Monasavu recorded 1012mm of rainfall, which was 98% of the *normal*, while in the past 6 months (January to 24th June), 3216mm of rainfall was registered (119% of the *normal*) (Figure 1).

El Niño Southern Oscillation (ENSO) Status

The El Niño–Southern Oscillation (ENSO) is currently neutral. Sea surface temperatures (SSTs) were *above average* in the central and western Pacific Ocean. In contrast, SSTs were *near average to below average* in the eastern Pacific Ocean.

The Southern Oscillation Index (SOI) for May 2024 was +3.6, with the 5-month running mean of –1.4. The latest 30-day value to 22nd June 2024 was –6.4.

Trade winds were slightly weaker around the Date Line but close to average for most of the equatorial Pacific. Cloudiness near the equatorial Date Line is currently around average.

Overall, the oceanic and atmospheric indicators are indicative of neutral ENSO conditions.

El Niño-Southern Oscillation and Monasavu Climate Predictions

El-Niño Southern Oscillation Prediction

Climate models on average show that the current ENSO-neutral state will continue through August to October 2024, and then transition to La Niña during September to November 2024.

Minimum & Maximum Air Temperature Predictions - July & July to September 2024:

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

Rainfall Predictions:

Fortnightly: 29th June - 12th July & 6th - 19th July

Rainfall across Viti Levu is likely to be *below average* from 29th June - 12th July, while rainfall is likely to be *above average* from 6th - 19th July.

July 2024

There is 75% chance of receiving at least 49mm of rainfall at Nadarivatu station, 75% chance of at least 59mm of rainfall at Nadarivatu Dam and Monasavu, and 75% chance of receiving at least 70mm of rainfall at Wailoa. There is moderate confidence in this forecast (Table 1).

July to September 2024

For the July to September 2024 period, there is 75% chance of receiving at least 224mm of rainfall at Nadarivatu station, 75% chance of at least 259mm of rainfall at Nadarivatu Dam and Monasavu, and 75% chance of receiving at least 282mm of rainfall at Wailoa. There is low skill on the generated outlook (Table 1).

Summary

As we are now in the peak Dry Season, most parts of the Western Division are likely to experience suppressed rainfall, while slightly wet conditions are the likely for the parts of the interior and Central Division, in July. However, for July to September period, there is no strong biasness for drier or wetter than usual conditions.

Figure 1 Monthly Rainfall Distribution at Monasavu until 24th June 2024

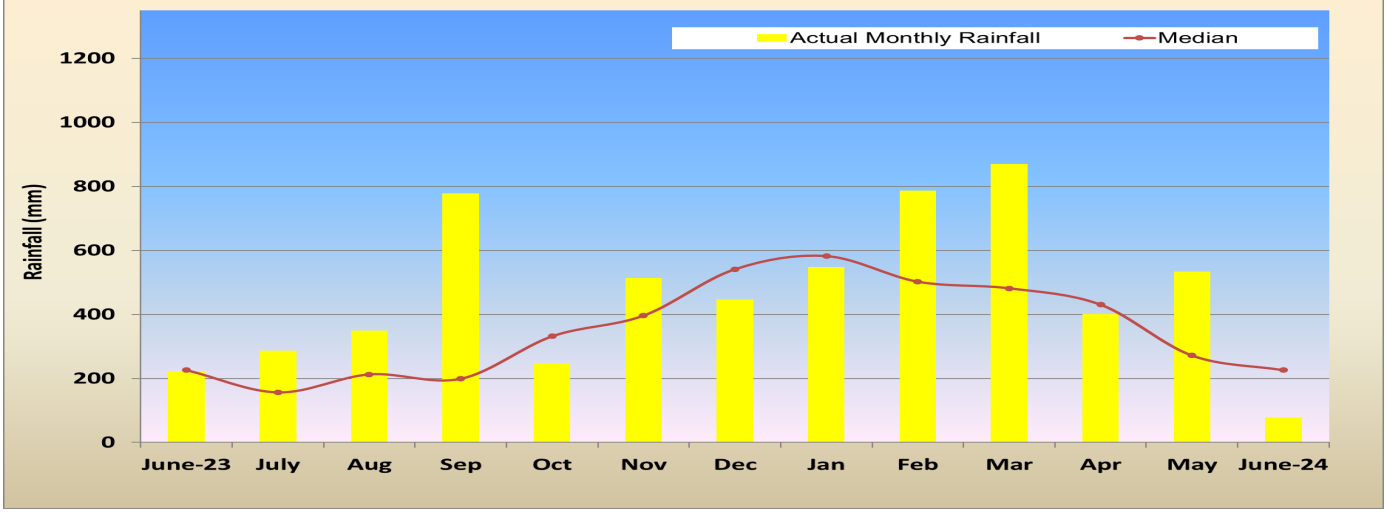


Table 1: Rainfall Outlook: July & July to September 2024

July Outlook				
	25% chance of at least (mm)	**50% chance of at least (mm)**	**75% chance of at least (mm)**	**Forecast Confidence**
Nadarivatu station	136	103	49	Moderate
Nadarivatu Dam	145	113	59	Moderate
Monasavu Dam	145	113	59	Moderate
Wailoa	150	124	70	Moderate
July to September Outlook				
	25% chance of at least (mm)	**50% chance of at least (mm)**	**75% chance of at least (mm)**	**Forecast Confidence**
Nadarivatu station	452	332	224	Low
Nadarivatu Dam	539	366	259	Low
Monasavu Dam	539	366	259	Low
Wailoa	557	394	282	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: 29th June - 12th July & 6th - 19th July

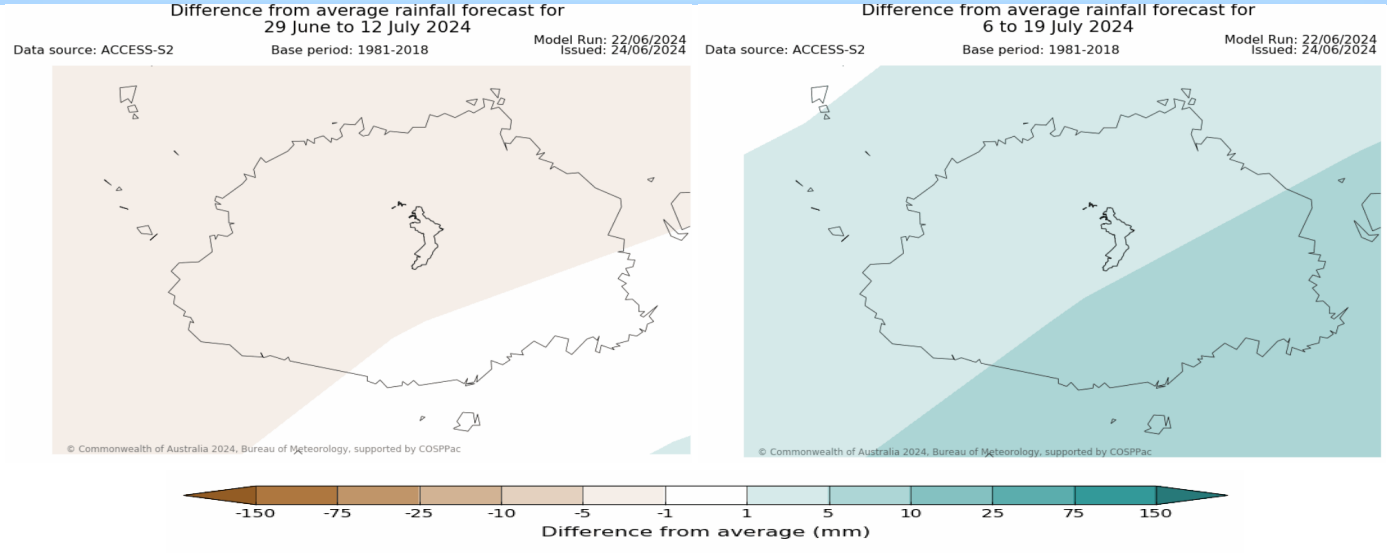


Figure 2: Rainfall Outlook: July & July to September 2024

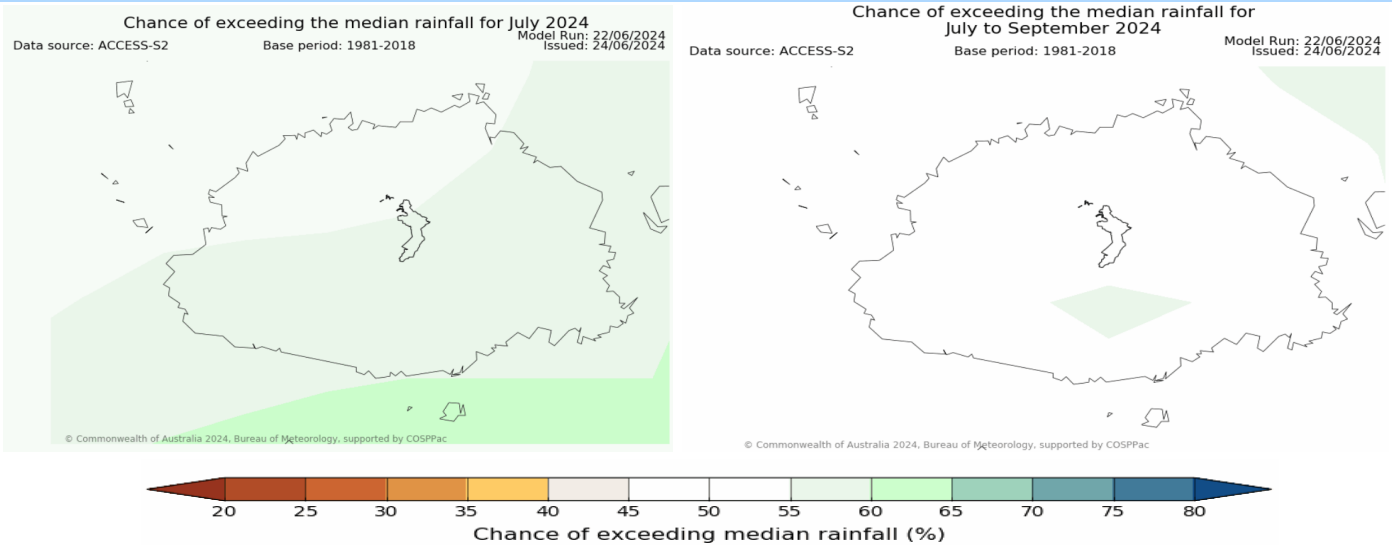
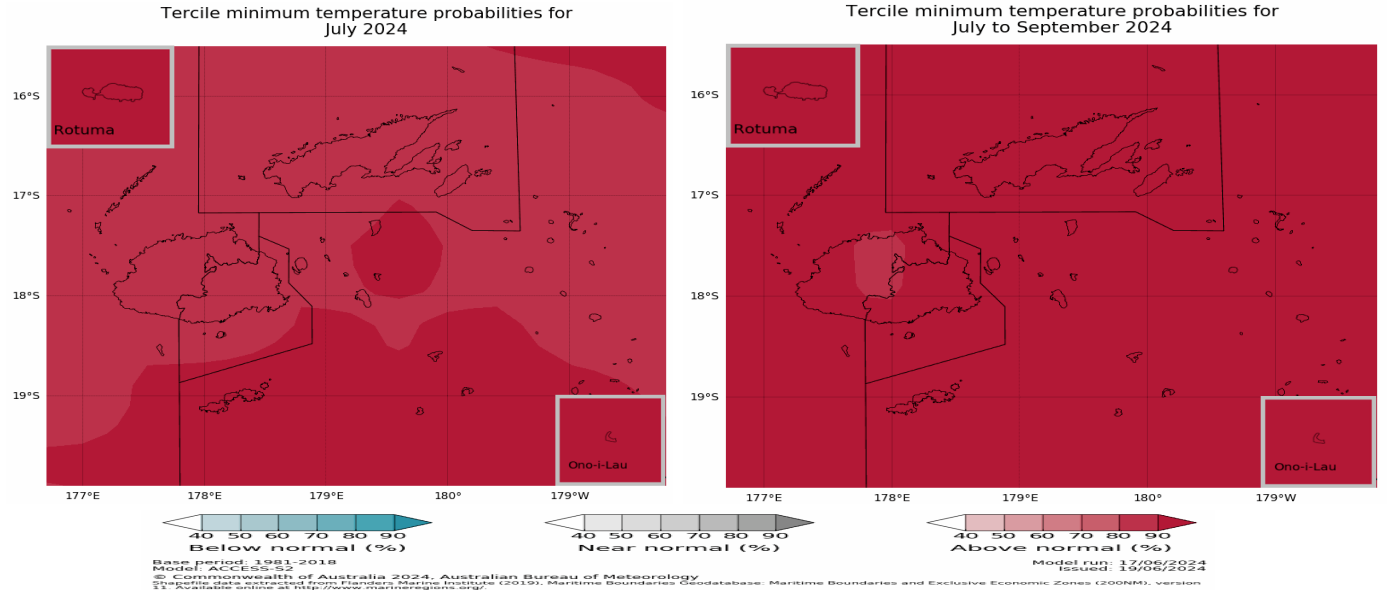
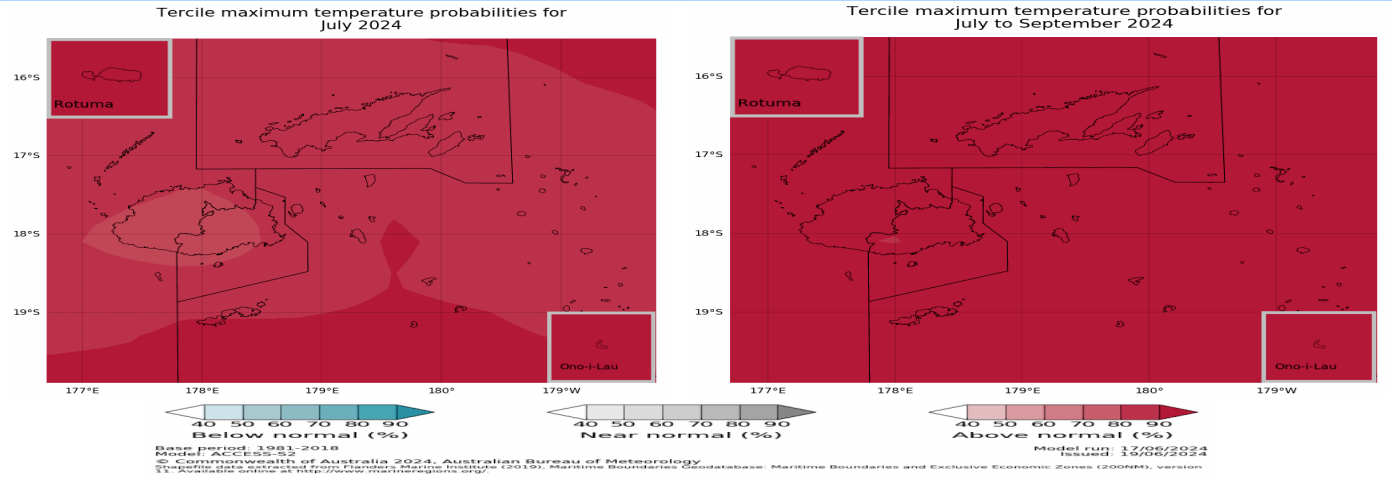


Figure 3: Minimum Air Temperature Predictions: July & July to September 2024



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

Figure 3: Maximum Air Temperature Predictions: July & July to September 2024



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