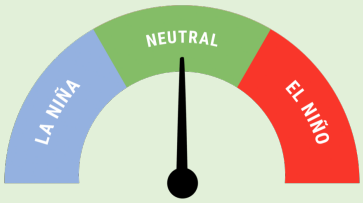
Island Climate Update

NIWA
Taihoro Nukurangi

ENSO Watch
October 2024

Recent



ENSO neutral

ENSO neutral conditions are currently in place, but La Niña may develop in November or December.

The Southern Oscillation Index (SOI) was in the neutral range from July-September.

Tropical Pacific Ocean sea surface temperatures (SSTs) remain reflective of a possible transition to La Niña in the coming months.

Forecast

40% chance for **ENSO neutral** conditions to continue during **October-December 2024**

Chance for **La Niña** conditions developing during **October-December 2024** **60%**

La Niña Watch

ENSO situation summary

There is a 60% chance that La Niña will develop by the end of December. Tropical Pacific trade winds will continue to nudge the ocean in a La Niña-like direction.

An alternative measure of central Pacific SSTs, called the relative oceanic Niño Index, has had an average anomaly of -0.7˚C over the last month and is more aligned with La Niña-like oceanic conditions.

As of 17 September, the traditional 30-day Niño 1+2 Index anomaly was -0.16˚C, within the neutral range. The 30-day NINO3.4 Index anomaly (in the central equatorial Pacific) was -0.17˚C, also in the neutral range.

The Southern Oscillation Index (SOI) was in the neutral range during July-September (0.0), while the September value was -0.2 (in the neutral range).

The subsurface equatorial Pacific continues to be 3˚C to 5˚C cooler than average just below the surface in the east of the basin.

Above average upper oceanic heat content continues in western parts of the basin. The West Pacific Warm Pool is becoming more unusually warm, which is also reflective of the potential development of La Niña.

The South Pacific Convergence Zone was generally close to its climatological normal position during September.

During October-December, model guidance favours an enhancement in convective forcing over the western Pacific and Maritime Continent, consistent with a developing La Niña. This may lead to enhanced rainfall for some countries such as Palau, Federated States of Micronesia, Papua New Guinea, and the Solomon Islands (based on the decile precipitation forecast for October and October-December; see pages 6-7 for more information).

Tropical cyclone season starts in November. While no out-of-season activity is forecast at this time, it is a reminder to remain vigilant and prepared as tropical cyclone season approaches.

Island Climate Update

Rainfall Watch

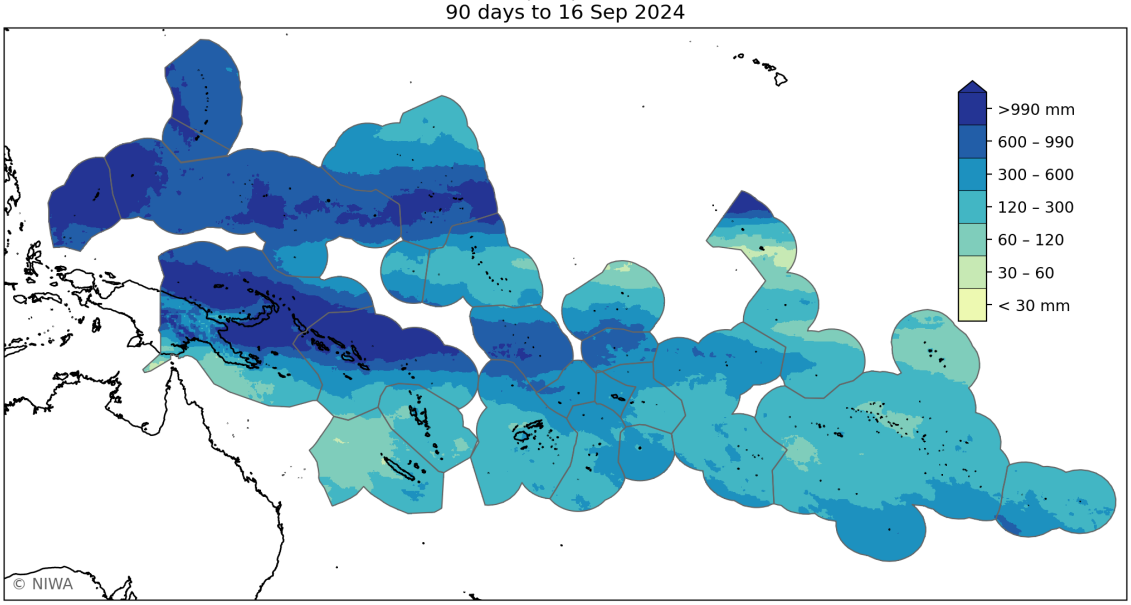
Regional situation summary (16 September 2024)

Rainfall summaries for the last month and three months are shown below.

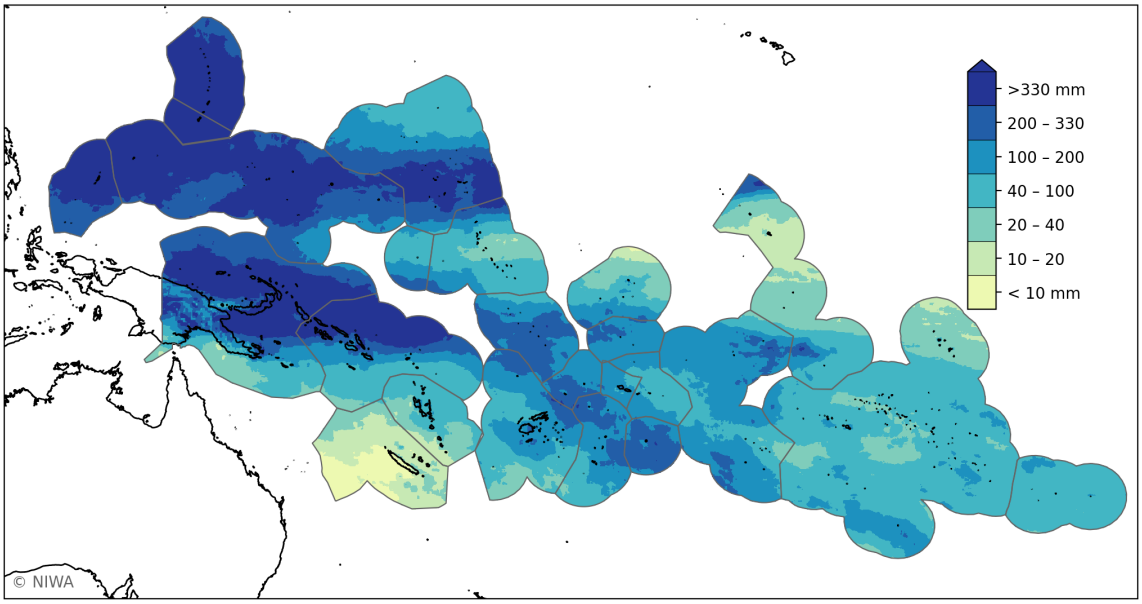
During the 90 days ending 16 September (top plot), over 990 mm of rain fell across Palau, Guam, parts of the Federated States of Micronesia (FSM), southern Marshall Islands, parts of Papua New Guinea (PNG), the Solomon Islands, and isolated parts of Tuvalu. Less than 60 mm of rain was observed in a portion of New Caledonia, northern Vanuatu, isolated parts of Fiji, Kiribati (northern Line Islands), Tuamotu Archipelago, and Marquesas.

During the 30 days ending 16 September (bottom plot), over 330 mm of rain fell across Palau, Guam, Northern Marianas, much of of FSM, southern Marshall Islands, and parts of PNG and Solomon Islands. Less than 40 mm of rain fell in parts of Kiribati (Gilbert and northern Line Islands), southern PNG, New Caledonia, Vanuatu, Tuamotu Archipelago, and Marquesas.

Cumulative rainfall (mm), source: MSWEP 2.8.0
90 days to 16 Sep 2024



Cumulative rainfall (mm), source: MSWEP 2.8.0
30 days to 16 Sep 2024

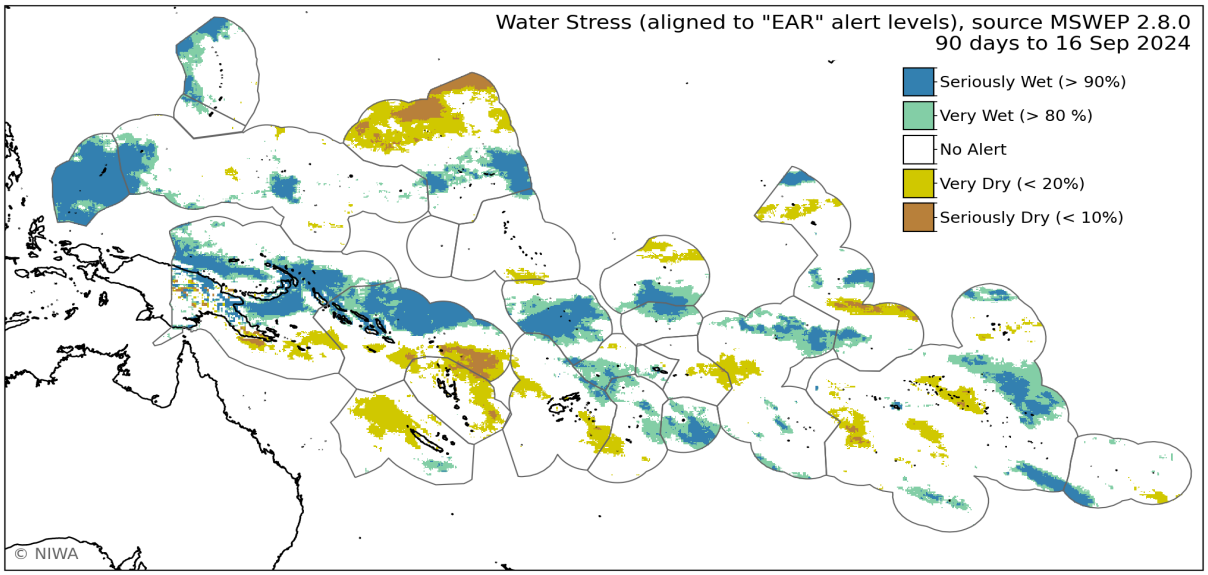


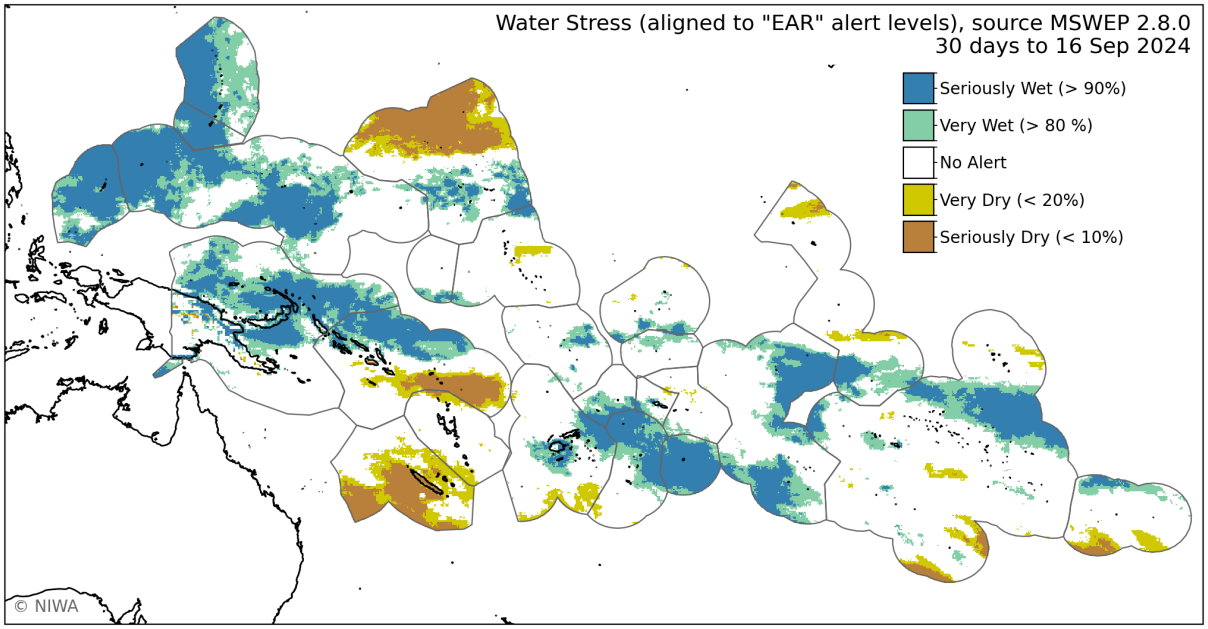
EAR regional situation summary (16 September 2024)

Cumulative rainfall thresholds aligned to the Early Action Rainfall (EAR) Watch over the last 90 and 30 days are shown in the plots below.

During the 90 days ending 16 September (top plot), seriously dry or very dry conditions affected the northern Marshall Islands, Kiribati (northern Line Islands), parts of PNG, southern Solomon Islands, New Caledonia, Vanuatu, Fiji, American Samoa, Austral Islands, Society Islands, Tuamotu Archipelago, and Marquesas.

During the 30 days ending 16 September (bottom plot), seriously dry or very dry conditions affected the northern Marshall Islands, parts of Kiribati (Gilbert and northern Line Islands), parts of PNG, southern Solomon Islands, New Caledonia, and Vanuatu.





Island Climate Update

Water Stress Watch

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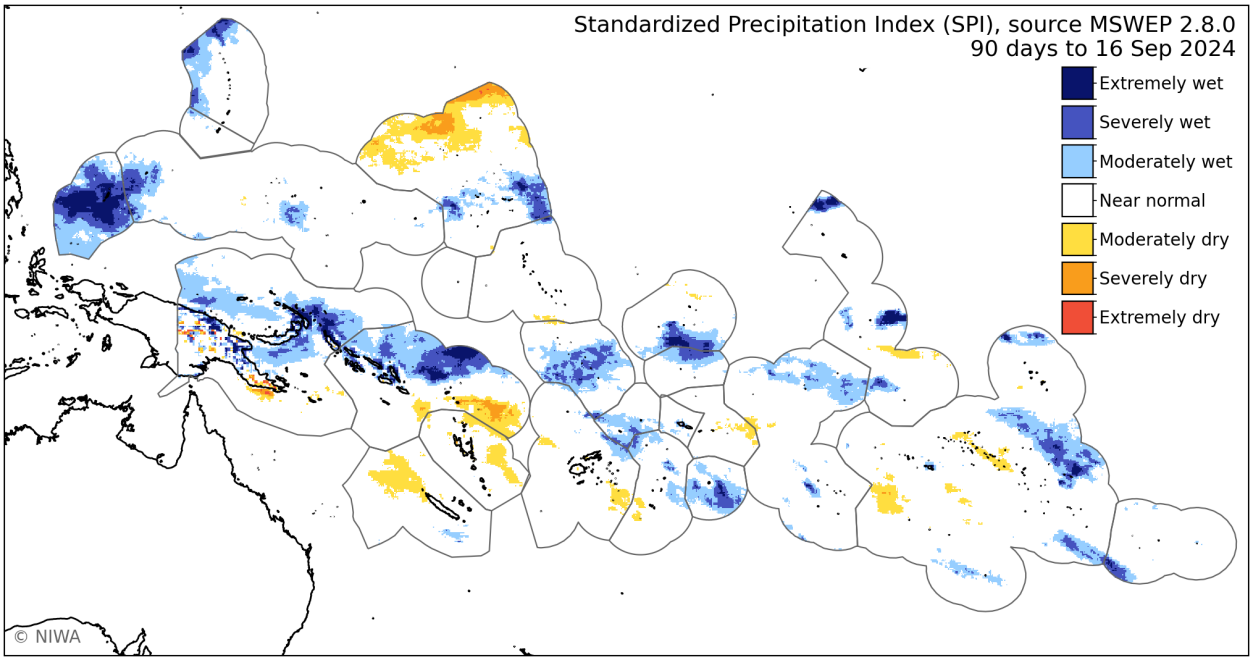
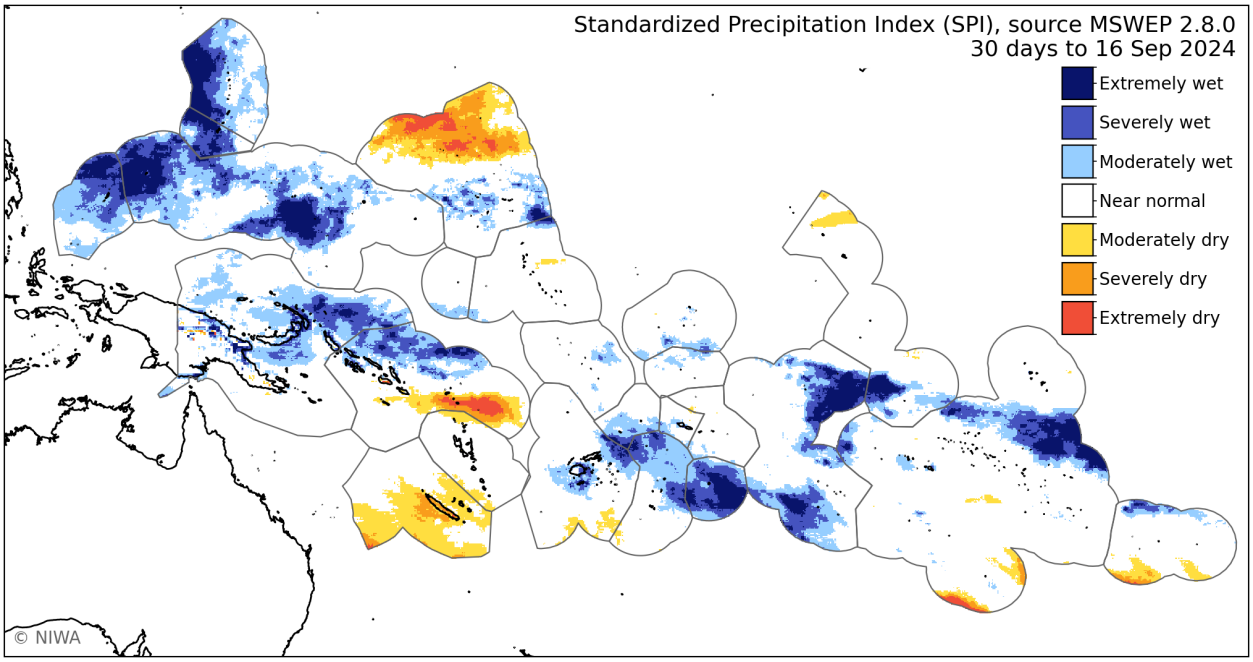
SPI Regional situation summary (16 September 2024)

The Standardized Precipitation Index (SPI) thresholds for cumulative rainfall over the last 90 and 30 days are shown in the plots below.

During the 90 days ending 16 September (top plot), extremely dry or severely dry conditions occurred in parts of the northern Marshall Islands, PNG, and southern Solomon Islands.

During the 30 days ending 16 September (bottom plot), extremely dry or severely dry conditions occurred in the northern Marshall Islands, parts of PNG, southern Solomon Islands, and New Caledonia.



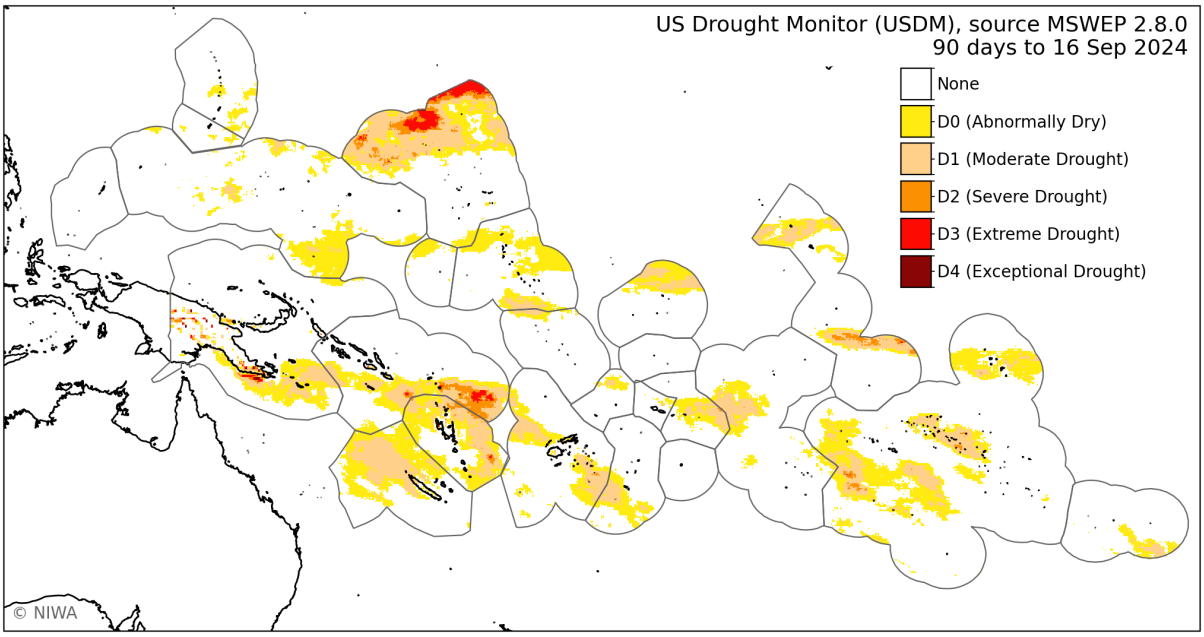


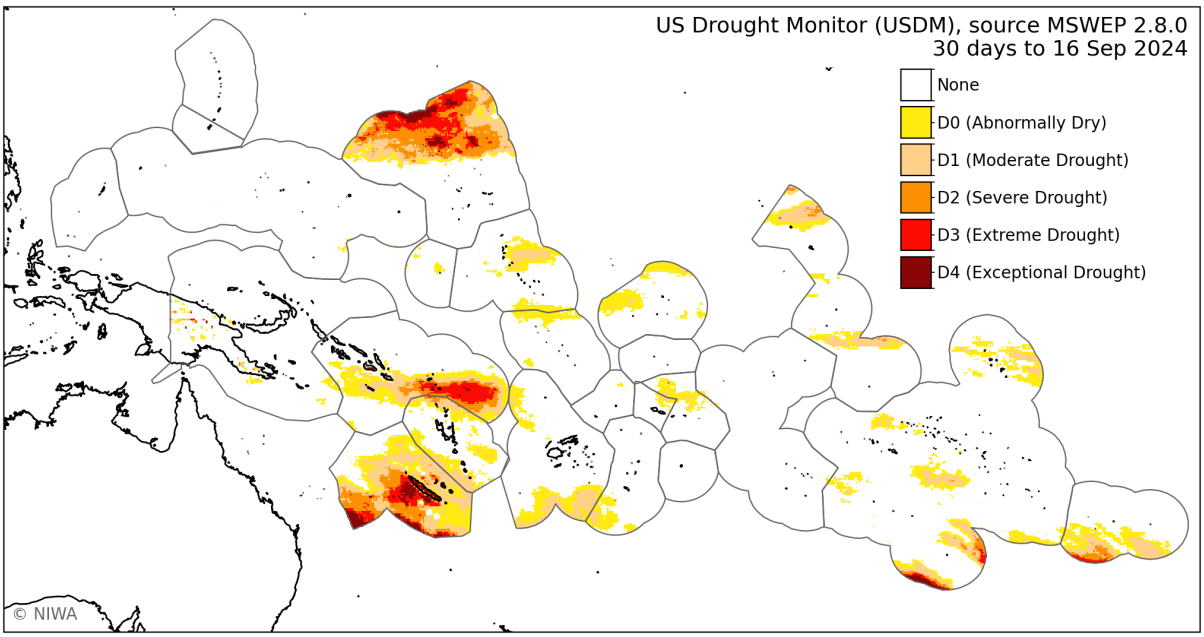
USDM Regional situation summary (16 September 2024)

The US Drought Monitor Index (USDM) levels for cumulative rainfall over the last 90 and 30 days are shown in the plots below.

During the 90 days ending 16 September (top plot), extreme or exceptional drought occurred in parts of the northern Marshall Islands, PNG, and southern Solomon Islands.

During the 30 days ending 16 September (bottom plot), extreme or exceptional drought occurred in the northern Marshall Islands, parts of PNG, southern Solomon Islands, and New Caledonia.





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Water Stress Outlook

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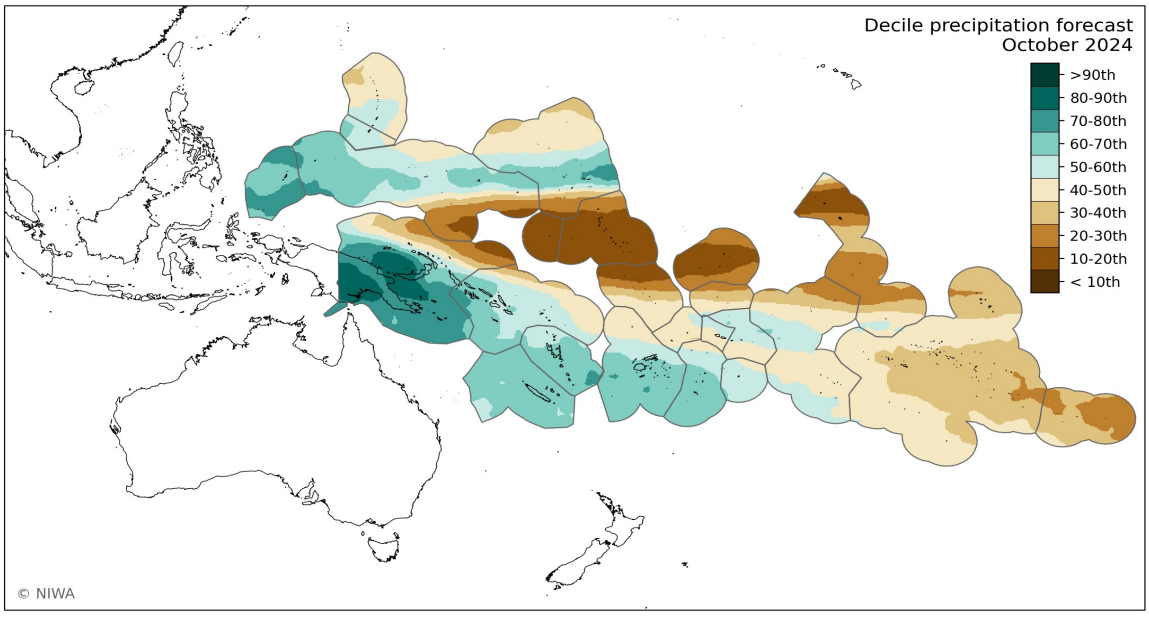
October 2024 forecast & probabilities of rainfall < 25th percentile

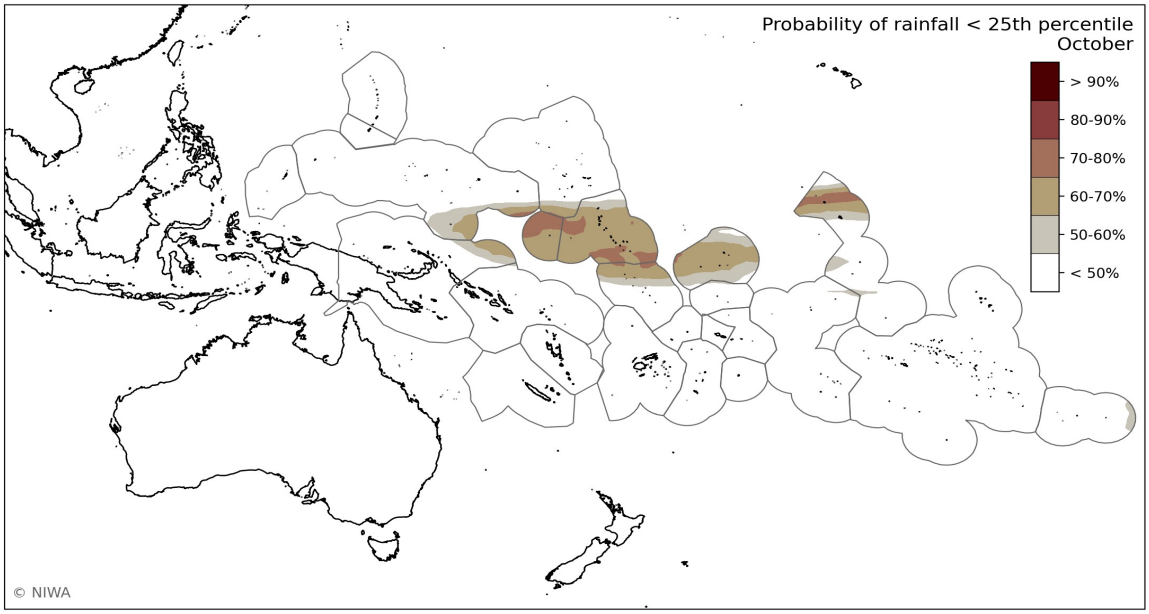
During October, significantly below normal rainfall is favoured in southern FSM and the Marshall Islands, Nauru, Kiribati (Gilbert Islands, Phoenix Islands, and Line Islands), Tuvalu, Tokelau, northern Cook Islands, Society Islands, Tuamotu archipelago, Marquesas, and Pitcairn Islands.

Significantly above normal rainfall is favoured in Palau, parts of FSM and the Marshall Islands, PNG, Solomon Islands, New Caledonia, Vanuatu, Fiji, and Tonga.

All other island groups are expected to see rainfall amounts closer to normal during October.

For October, the highest chances for very dry conditions are located across southern FSM, Nauru, Kiribati (Gilbert Islands, Phoenix Islands, and northern Line Islands), and northern Tuvalu.





Island Climate Update

Water Stress Outlook

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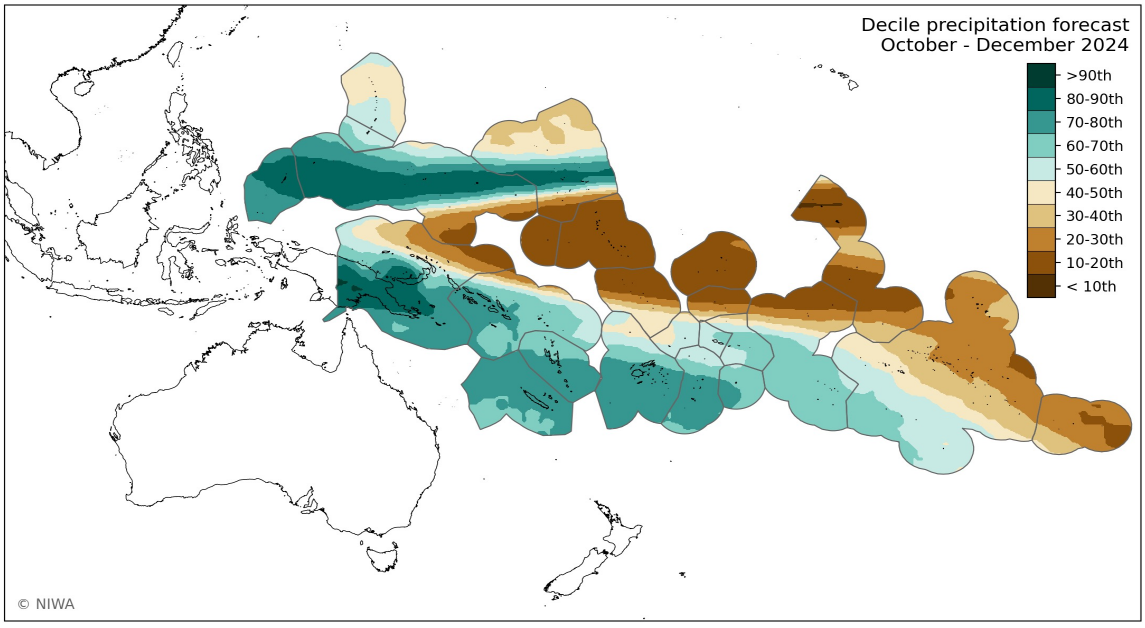
Oct-Dec 2024 forecast & probabilities of rainfall < 25th percentile

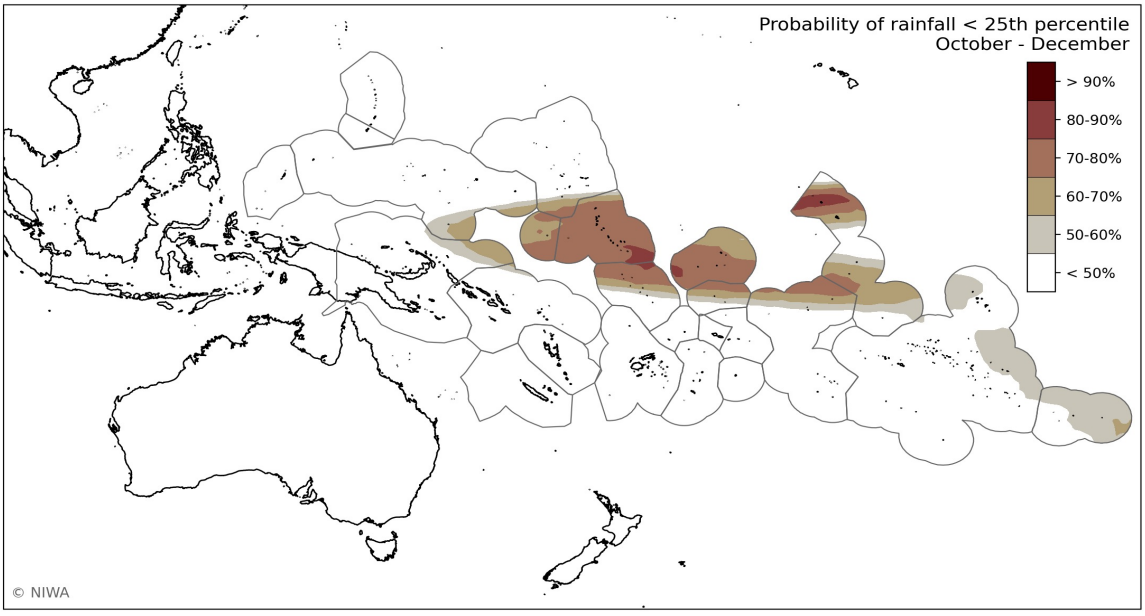
During October-December, significantly below normal rainfall is favoured in southern FSM and the Marshall Islands, far northern PNG, Nauru, Kiribati, Tuvalu, Tokelau, northern Cook Islands, Tuamotu Archipelago, Marquesas, and Pitcairn Islands.

Significantly above normal rainfall is favoured in Palau, parts of FSM and the Marshall Islands, PNG, Solomon Islands, New Caledonia, Vanuatu, Fiji, Tonga, Niue, Samoa, American Samoa, southern Cook Islands, and Austral Islands.

All other island groups are expected to see rainfall amounts closer to normal during October-December.

For October-December, the highest chances for very dry conditions are located across southern FSM and Marshall Islands, Nauru, Kiribati, northern Tuvalu, northern Tokelau, northern Cook Islands, parts of the Marquesas, eastern Tuamotu Archipelago, and Pitcairn Islands.





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About

Understanding the Island Climate Update bulletin

The ICU utilises rainfall data from the Multi-Source Weighted-Ensemble Precipitation (MSWEP) and a multi-model ensemble forecast utilising 550+ members derived from nine global climate models available from the Copernicus Data Store.

Bulletin page	Description
Rainfall watch	Rainfall plots are derived from MSWEP data. Regional rainfall accumulation is shown for the last 30 days (1 month) and 90 days (3 months).
Water stress watch	Plots are derived from MSWEP data. Different Pacific Island Meteorological Services use different approaches to defining drought and water stress. Current regional water stress classifications are shown for the Early Action Rainfall (Page 3), Standard Precipitation Index (Page 4), and US Drought Monitoring (Page 5) alert levels for the last 90 and 30 days of accumulated rainfall.
Water stress outlook	Outlook water stress classifications are based on both the satellite rainfall data and a multi-model ensemble forecast derived from nine global climate models for the next month and three months. The top plots on each page show the rainfall decile band for the next 1 and 3 months for which the cumulative probability derived from the multi-model ensemble forecasts reaches 50%. The bottom plots bring together conditions over the past 3 months and forecast conditions over the next month: • Current water stress conditions potentially easing: Past 3 month accumulation less than 25th percentile. 1 month / seasonal accumulation forecast greater than 25th percentile. • Areas moving in to water stress: Past 3 month accumulation between the 40th and 25th percentile. 1 month / seasonal accumulation forecast less than 25th percentile. • Current water stress conditions persisting: Past 3 month accumulation less than 25th percentile. 1 month / seasonal accumulation forecast less than 25th percentile. The final page shows the probability that forecast rainfall over the next 1 or 3 months is within the lowest 25% of cumulative rainfall over the same period (a measure of the confidence in a low rainfall forecast).
Online Resources	**Additional regional and country-level resources are available online**: • Daily updated plots for 30, 60, 90, 180 and 365 day: accumulative rainfall, number of dry days, number of days since last rainfall > 1 mm, EAR, SPI and USDM indices. • A range of probabilistic one to five monthly and seasonal forecast plots updated around the 11th of each month. • Click here for the imagery and here for the underlying data [observations, forecast].

WMO

NIWA is the Network co-lead for the WMO RA V Regional Climate Centre Node on Long Range Forecast and consortium member for nodes on Climate Monitoring, Operational Data Services, and Training.

Development and production of the ICU is supported by NIWA Strategic Science Investment Funding under contract PRAS2401.

The Island Climate Update bulletin and associated video and products are prepared as soon as possible at the start of each month. Delays in data availability occasionally arise. While every effort is made to verify the data, NIWA does not guarantee the accuracy and reliability of the analysis and forecast information presented and accepts no liability for any losses incurred through the use of this bulletin and its contents.

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