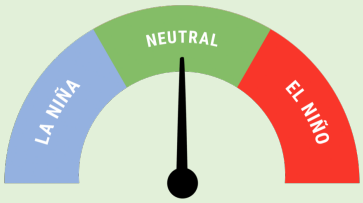
Island Climate Update

NIWA
Taihoro Nukurangi

ENSO Watch
August 2024

Recent



ENSO neutral

ENSO neutral conditions are expected to continue through at least August, but La Niña may develop during September-November.

The Southern Oscillation Index (SOI) was +0.1 from May-July, in the neutral range.

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

Forecast

50% chance for **ENSO neutral** conditions to continue during **August-September 2024**

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

La Niña Watch

ENSO situation summary

ENSO neutral conditions are expected to continue over the next couple of months, but La Niña is slightly favoured over ENSO neutral during October-December.

Trade winds have been enhanced in the tropical Pacific and thunderstorm activity has favoured the western Pacific, both signs of a La Niña-like atmosphere. Despite this, sea surface temperatures (SSTs) in the central equatorial Pacific Ocean were around +0.3˚C above average over the last month. However, a new measure of central Pacific SSTs, called the relative oceanic Niño Index, has ranged from -0.3˚C to -0.5˚C over the last month and is more aligned with the La Niña-like atmospheric conditions.

As of 21 July, the 30-day Niño 1+2 Index anomaly was -0.35˚C, within the neutral range. The 30-day NINO3.4 Index anomaly (in the central equatorial Pacific) was +0.32˚C. The relative 30-day oceanic Niño Index was -0.29˚C.

The Southern Oscillation Index (SOI) was in the neutral range during May-July (+0.1), but the July value was -0.7 (in the El Niño range).

The subsurface equatorial Pacific continues to be 4˚C to 6˚C cooler than average just below the surface in the east of the basin.

Meanwhile, above average oceanic temperatures persisted in the central and western parts of the basin, with the West Pacific Warm Pool showing a distinct warming trend. This signature is reflective of an oceanic transition, possibly towards La Niña in a few months.

The South Pacific Convergence Zone was very close to its climatological normal position during July.

During August-October, 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 like Papua New Guinea and the Solomon Islands (based on the decile precipitation forecast for August and August-October; see pages 6-7 for more information).

Island Climate Update

Rainfall Watch

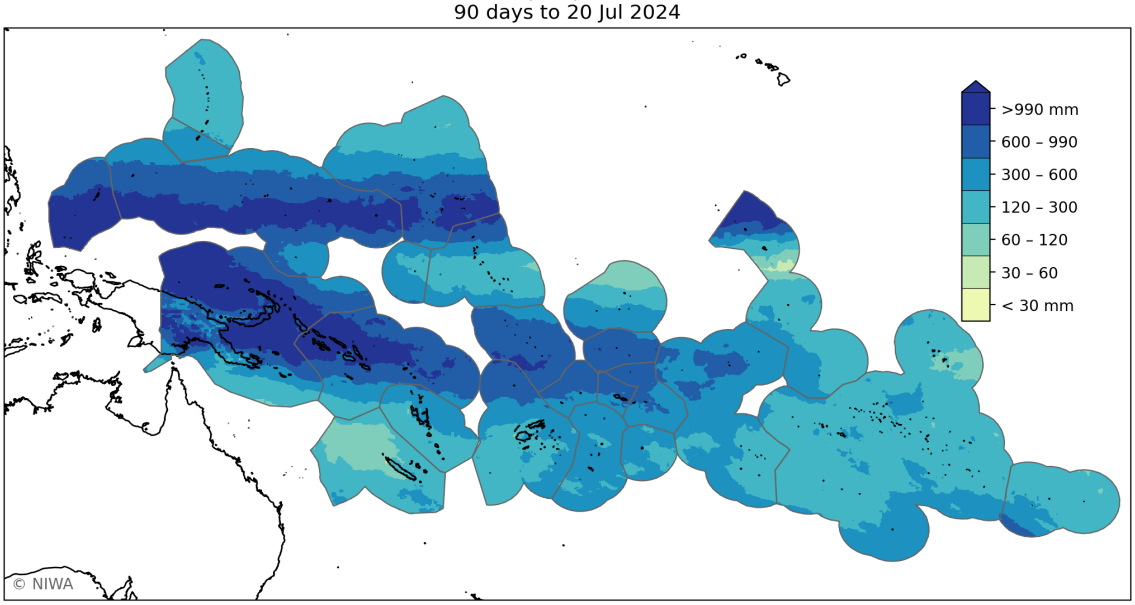
Regional situation summary (20 July 2024)

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

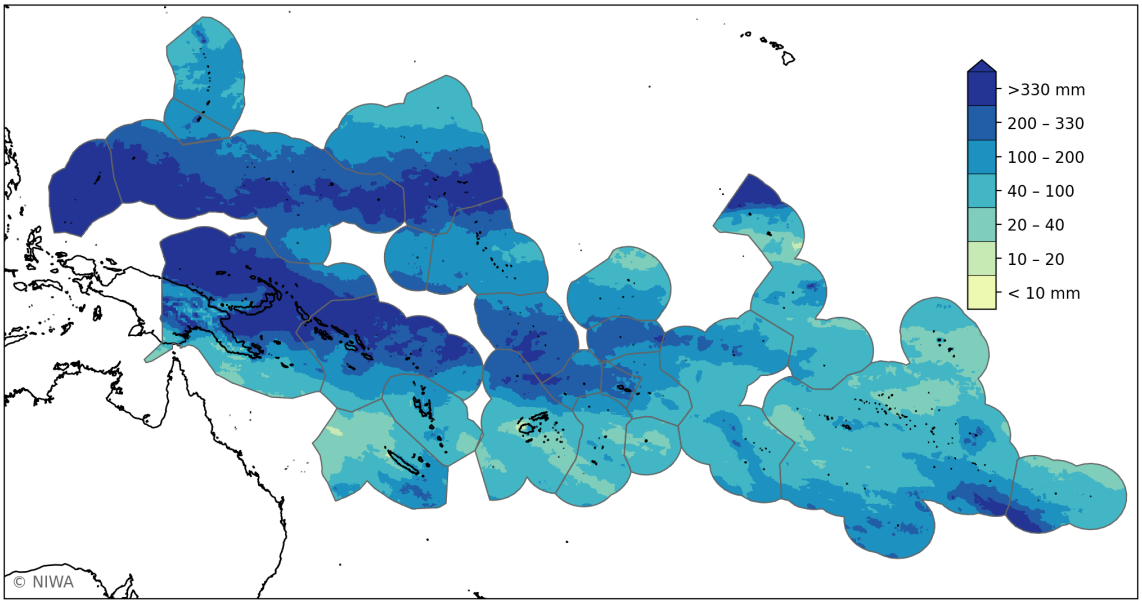
During the 90 days ending 20 July (top plot), over 990 mm of rain fell across Palau, the southern Federated States of Micronesia (FSM), southern Marshall Islands, parts of Papua New Guinea (PNG), the Solomon Islands, and Kiribati (northern Line Islands). Less than 60 mm of rain was not observed in any island groups during the same 90-day period.

During the 30 days ending 20 July (bottom plot), over 330 mm of rain fell across Palau, parts of FSM, southern Marshall Islands, PNG, Solomon Islands, parts of Tuvalu, and the northern Line Islands. Less than 40 mm of rain fell in parts of southern PNG, New Caledonia, Vanuatu, Fiji, Tonga, Niue, Kiribati (central Line Islands), southern Cook Islands, Austral Islands, Society Islands, parts of the Tuamotu Archipelago, and Marquesas.

Cumulative rainfall (mm), source: MSWEP 2.8.0
90 days to 20 Jul 2024



Cumulative rainfall (mm), source: MSWEP 2.8.0
30 days to 20 Jul 2024



Island Climate Update

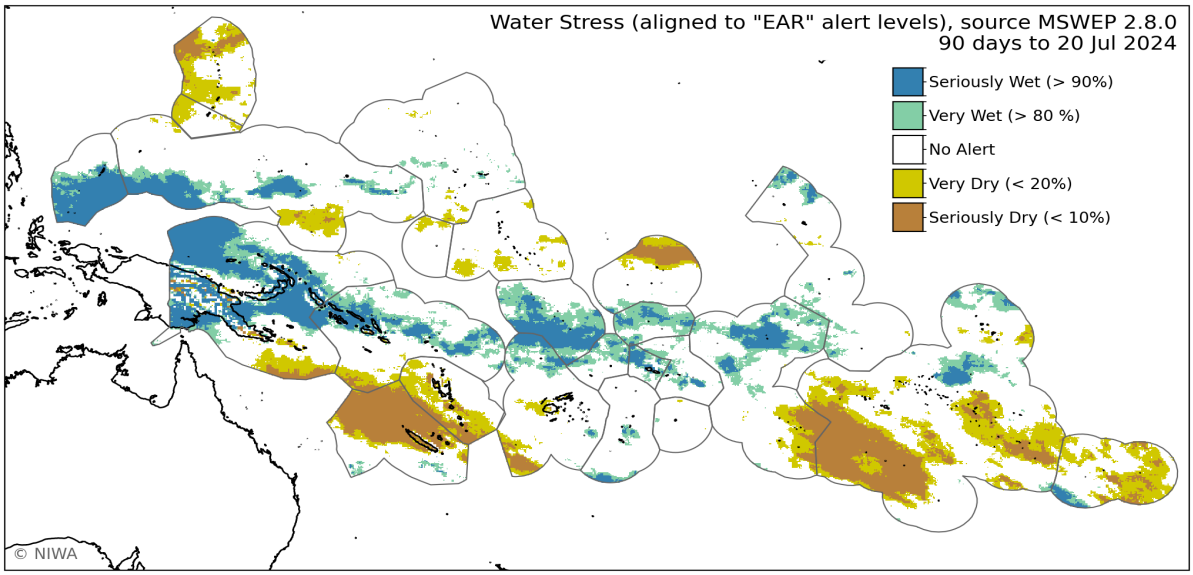
Water Stress Watch

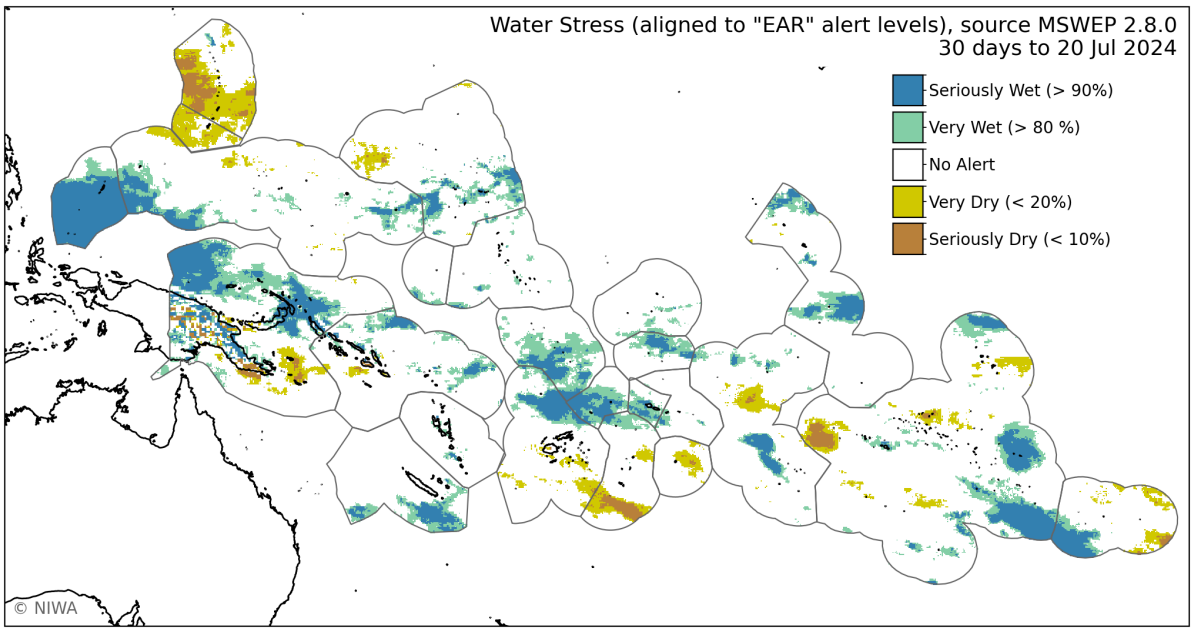
EAR regional situation summary (20 July 2024)

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 20 July (top plot), seriously dry or very dry conditions affected parts of the Northern Marianas, Guam, southern FSM, parts of PNG, New Caledonia, Vanuatu, Fiji, Phoenix Islands, southern Cook Islands, Austral Islands, Society Islands, eastern Tuamotu Archipelago, Marquesas, and Pitcairn Islands.

During the 30 days ending 20 July (bottom plot), seriously dry or very dry conditions affected parts of the Northern Marianas, Guam, parts of PNG and the Solomon Islands, Fiji, Austral Islands, Society Islands, northern Tuamotu Archipelago, and parts of the Marquesas.





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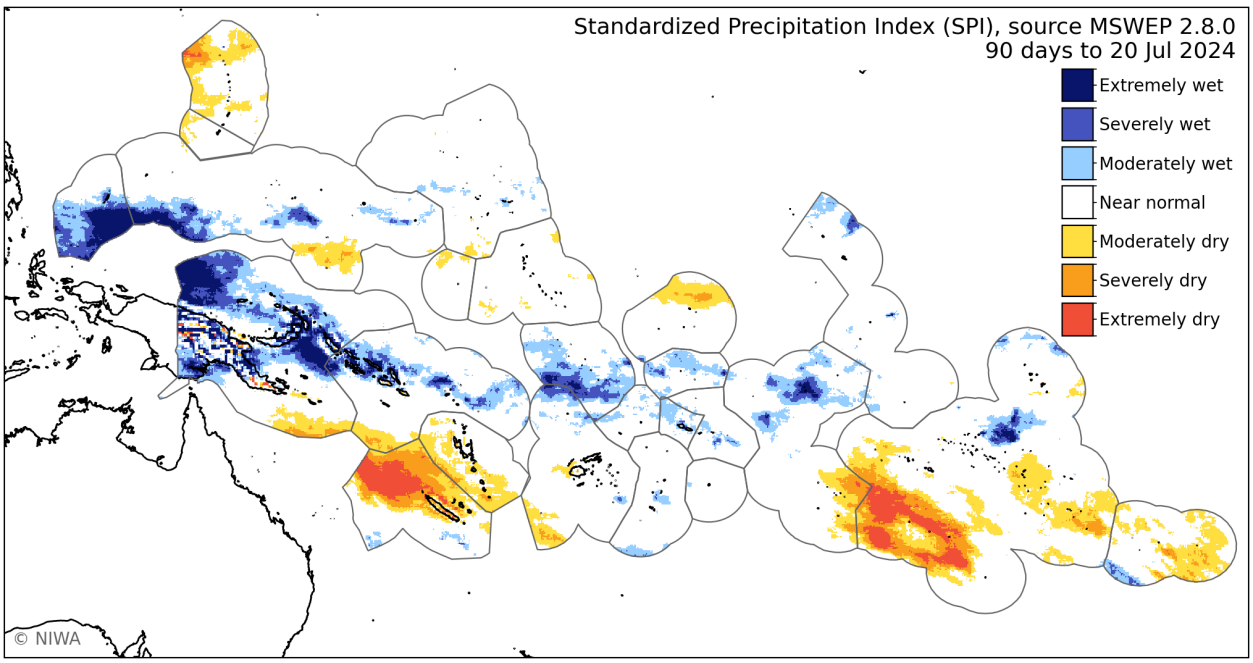
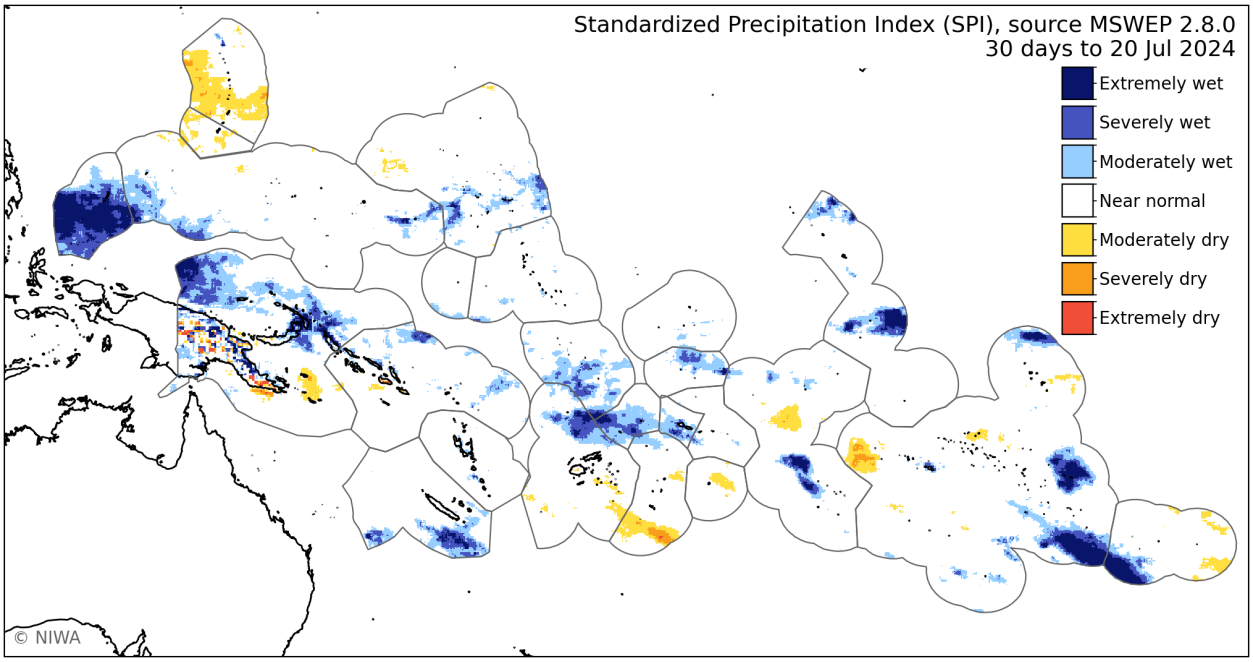
SPI Regional situation summary (20 July 2024)

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 20 July (top plot), extremely dry or severely dry conditions occurred in small parts of southern FSM and PNG, New Caledonia, Vanuatu, Austral Islands, eastern Tuamotu Archipelago, and Pitcairn Islands.

During the 30 days ending 20 July (bottom plot), extremely dry or severely dry conditions occurred in parts of PNG.





Island Climate Update

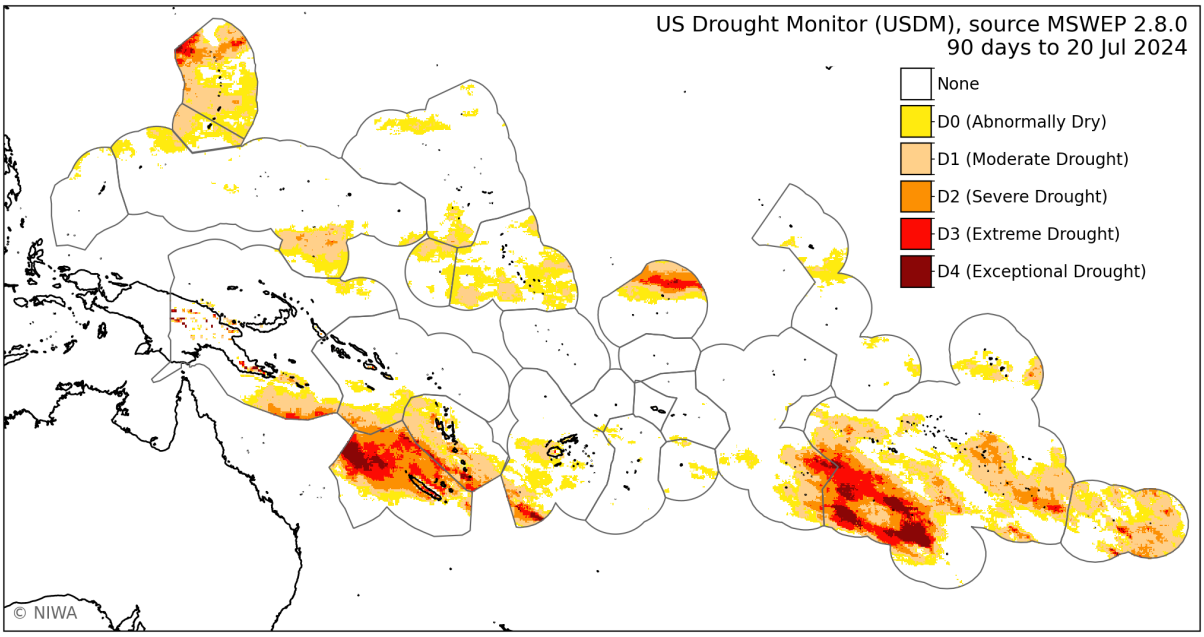
Water Stress Watch

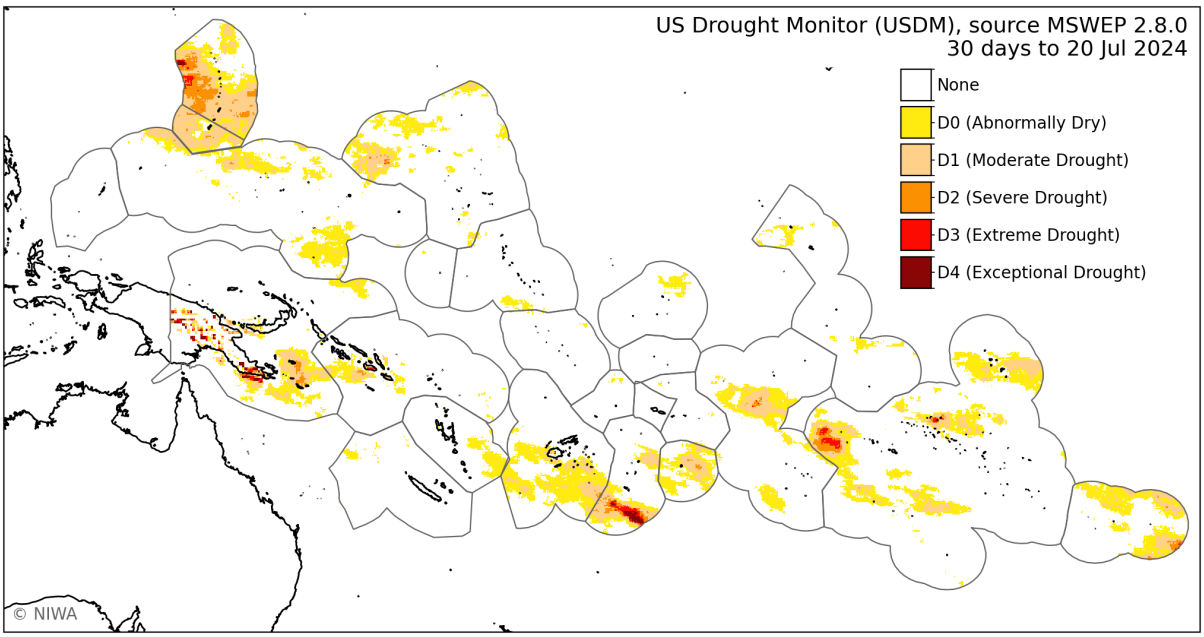
USDM Regional situation summary (20 July 2024)

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 20 July (top plot), extreme or exceptional drought occurred in parts of the Northern Marianas, PNG, Solomon Islands, New Caledonia, Vanuatu, Fiji, Phoenix Islands, Austral Islands, eastern Tuamotu Archipelago, and Pitcairn Islands.

During the 30 days ending 20 July (bottom plot), extreme or exceptional drought occurred in parts of PNG and the Solomon Islands, Fiji, western Society Islands, and northern Tuamotu Archipelago.





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Water Stress Outlook

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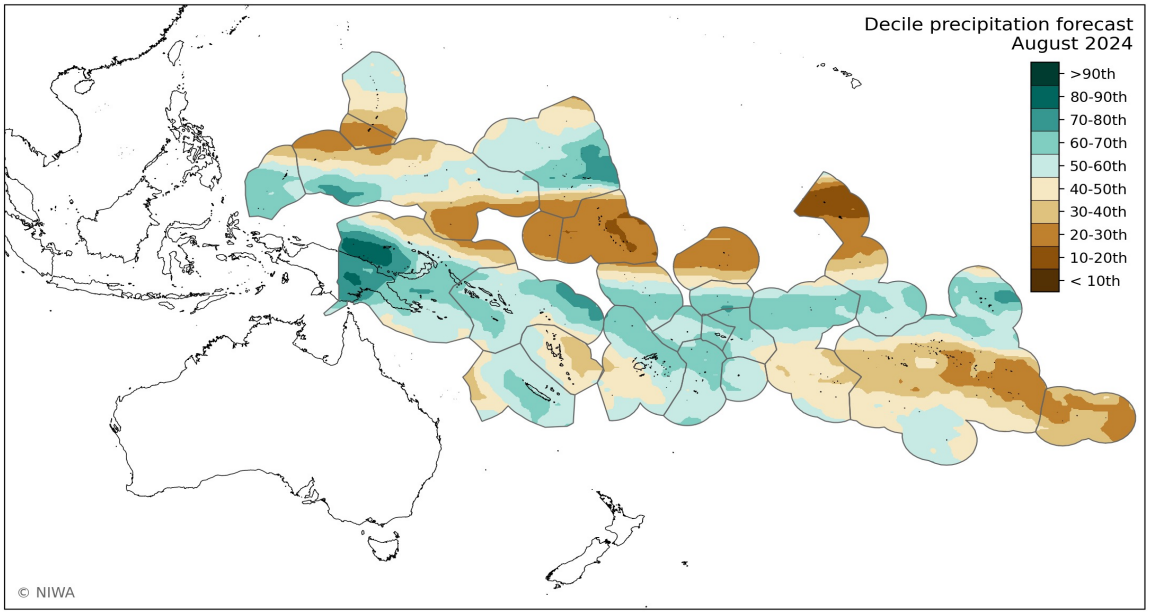
August 2024 forecast & probabilities of rainfall < 25th percentile

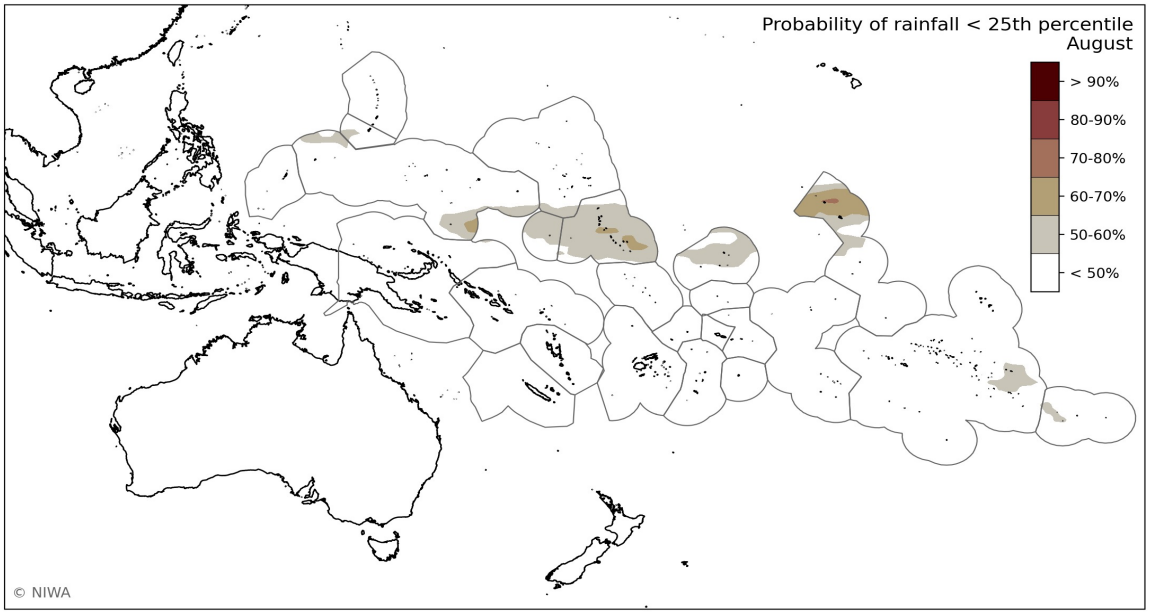
During August, significantly below normal rainfall is favoured in Guam, parts of the Northern Marianas, parts of FSM and the Marshall Islands, Nauru, Kiribati (Gilbert Islands, Phoenix Islands, and northern and central Line Islands), southern Cook Islands, Society Islands, Tuamotu archipelago, and Pitcairn Islands.

Significantly above normal rainfall is favoured in Palau, parts of FSM and the Marshall Islands, PNG, Solomon Islands, New Caledonia, southern Tuvalu, Tokelau, parts of Fiji, Tonga, Samoa, American Samoa, northern Cook Islands, and Marquesas.

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

For August, the highest chances for very dry conditions are located across southern FSM, Nauru, Kiribati (Gilbert Islands, Phoenix Islands, and northern Line Islands), eastern Tuamotu archipelago, and western Pitcairn Islands.





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Water Stress Outlook

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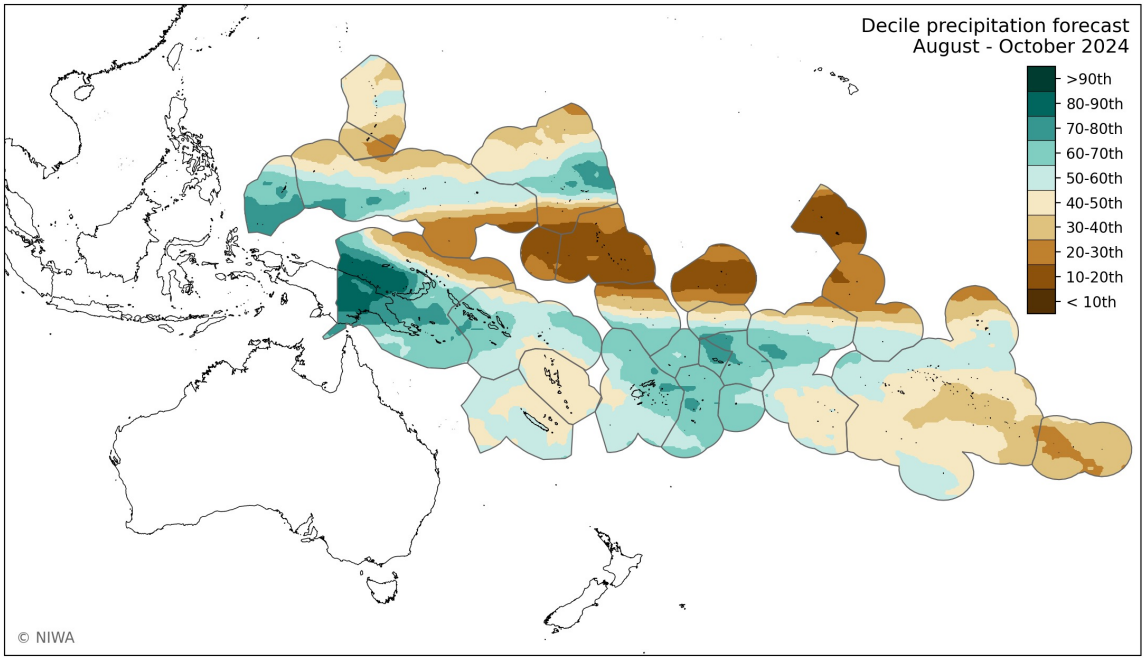
Aug-Oct 2024 forecast & probabilities of rainfall < 25th percentile

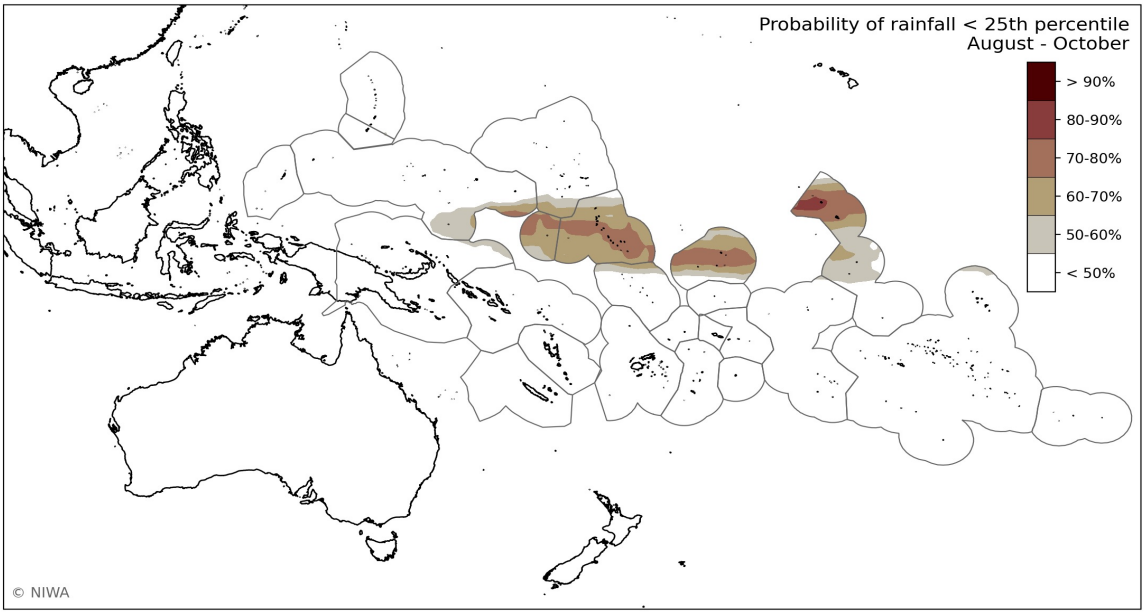
During August-October, significantly below normal rainfall is favoured in Guam, Northern Marianas, parts of FSM and the Marshall Islands, Nauru, Kiribati, Tuamotu Archipelago, Marquesas, and Pitcairn Islands.

Significantly above normal rainfall is favoured in Palau, parts of FSM and the Marshall Islands, PNG, Solomon Islands, southern Tuvalu, Fiji, Wallis & Futuna, Samoa, American Samoa, Tonga, Niue, and northern Cook Islands.

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

For August-October, the highest chances for very dry conditions are located across southern FSM, Nauru, and Kiribati.





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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.

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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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