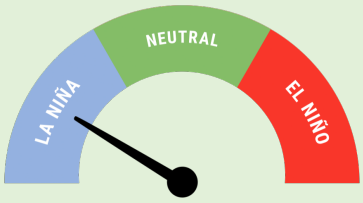
Island Climate Update

NIWA
Taihoro Nukurangi

ENSO Watch
April 2025

Recent



La Niña

La Niña remains in place, but it is likely to ease to ENSO-neutral conditions in the coming weeks.

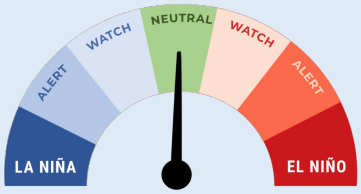
The Southern Oscillation Index (SOI) was in the La Niña range (+0.5) from January-March.

Tropical Pacific Ocean sea surface temperatures (SSTs) are moving toward the ENSO-neutral range.

Forecast

75% chance for **ENSO-neutral** conditions to develop during **April-June 2025**

Chance for **La Niña** conditions continuing during **April-June 2025** **25%**



ENSO-Neutral

ENSO situation summary

The ocean and atmosphere remain in a weak La Niña state, primarily focused on the central Pacific (i.e., La Niña "Modoki"). However, there is a 75% chance that ENSO-neutral conditions will emerge during April-June and only a 25% chance that La Niña will continue.

As of 17 March, the 30-day NINO3.4 Index (in the central equatorial Pacific) was -0.02˚C, in the neutral range. The 30-day relative Niño 3.4 Index (RONI) was -0.52˚C, reflective of the central equatorial Pacific being significantly cooler than the average of the global tropics. However, the RONI is also moving rapidly toward the ENSO-neutral range.

The Southern Oscillation Index (SOI) was in the La Niña range during January-March (+0.5), while the March value was +0.9 (in the La Niña range).

The subsurface equatorial Pacific is 1˚C to 2˚C cooler than average just below the surface in the central part of the basin, but above average temperatures are emerging in the eastern Pacific, indicating the decay of La Niña. However, above average upper oceanic heat content continues in western parts of the Pacific basin.

The South Pacific Convergence Zone (SPCZ) was located slightly south of its climatological normal position during March.

During April-June, model guidance favours an enhancement in convective forcing over the western Pacific and Melanesia, collocated with the warmest sea-surface temperatures and position of the SPCZ. This may lead to enhanced rainfall for some island groups such as Guam, the Northern Marianas, and southern Papua New Guinea east to Vanuatu. However, drier than normal conditions are likely to persist for some island groups along the equator (see pages 6-7 for more information).

Tropical cyclone season officially continues through April, although tropical cyclones can form outside of the official season.

Island Climate Update

Rainfall Watch

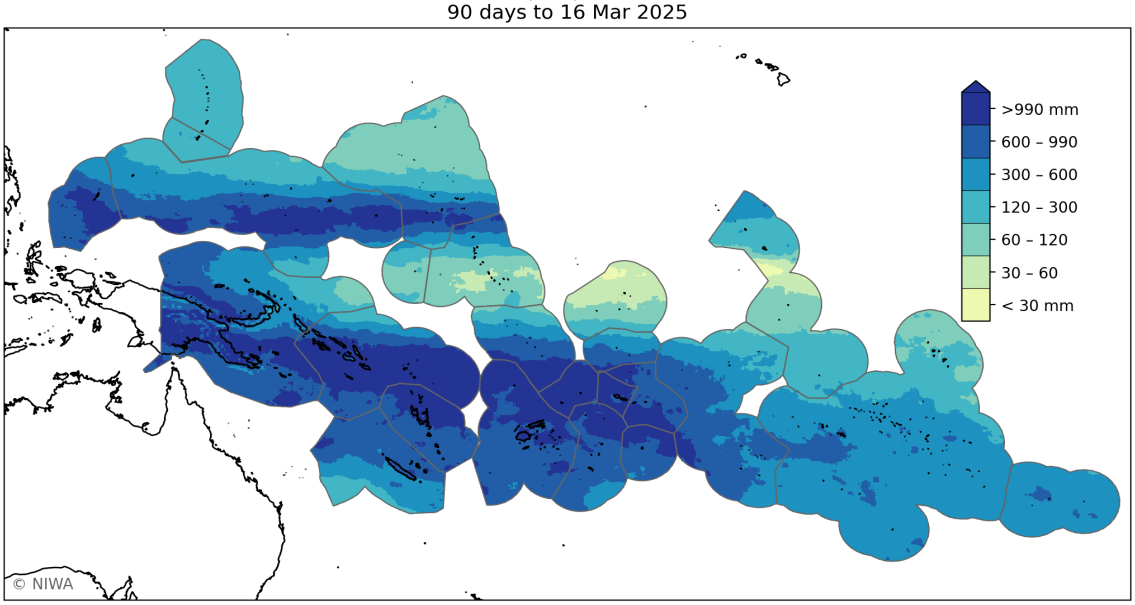
Regional situation summary (16 March 2025)

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

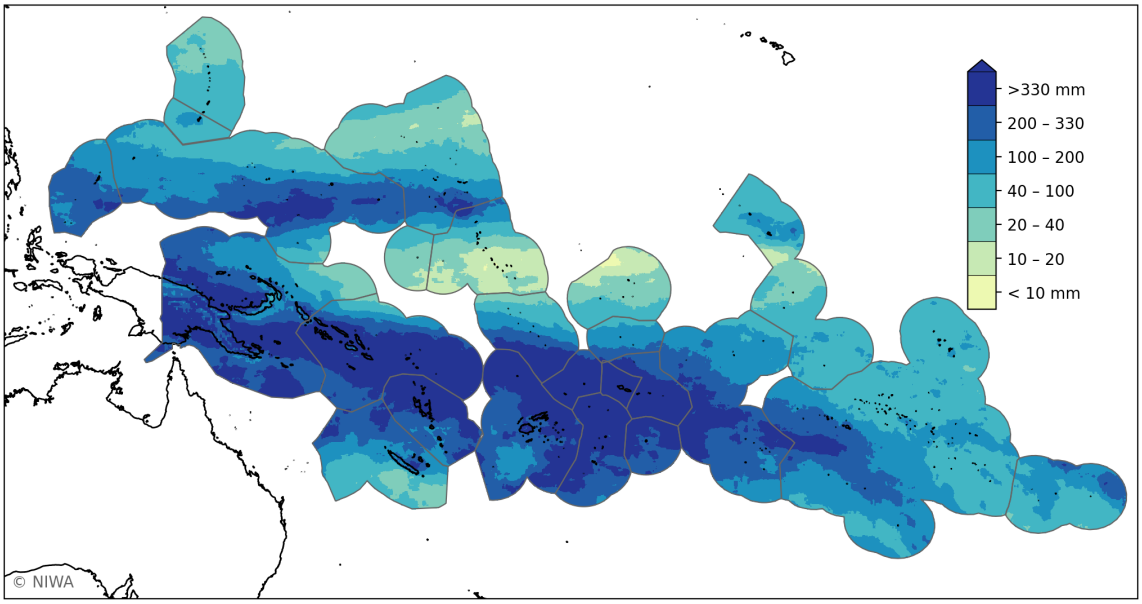
During the 90 days ending 16 March (top plot), over 990 mm of rain fell across Palau, parts of the Federated States of Micronesia (FSM), southern Marshall Islands, much of Papua New Guinea (PNG), Solomon Islands, northern Vanuatu, Fiji, southern Tuvalu, Wallis and Futuna, Samoa, parts of American Samoa, and northern Tonga. Less than 60 mm of rain was observed in Kiribati (parts of the Gilbert and Phoenix Islands and central Line Islands).

During the 30 days ending 16 March (bottom plot), over 330 mm of rain fell across parts of FSM, southern Marshall Islands, much of PNG, Solomon Islands, northern Vanuatu, parts of Fiji, southern Tuvalu, Wallis and Futuna, Samoa, American Samoa, and Tonga. Less than 40 mm of rain fell in the northern Marshall Islands, Nauru, and Kiribati (Gilbert, Phoenix, and central Line Islands).

Cumulative rainfall (mm), source: MSWEP 2.8.0
90 days to 16 Mar 2025



Cumulative rainfall (mm), source: MSWEP 2.8.0
30 days to 16 Mar 2025



Island Climate Update

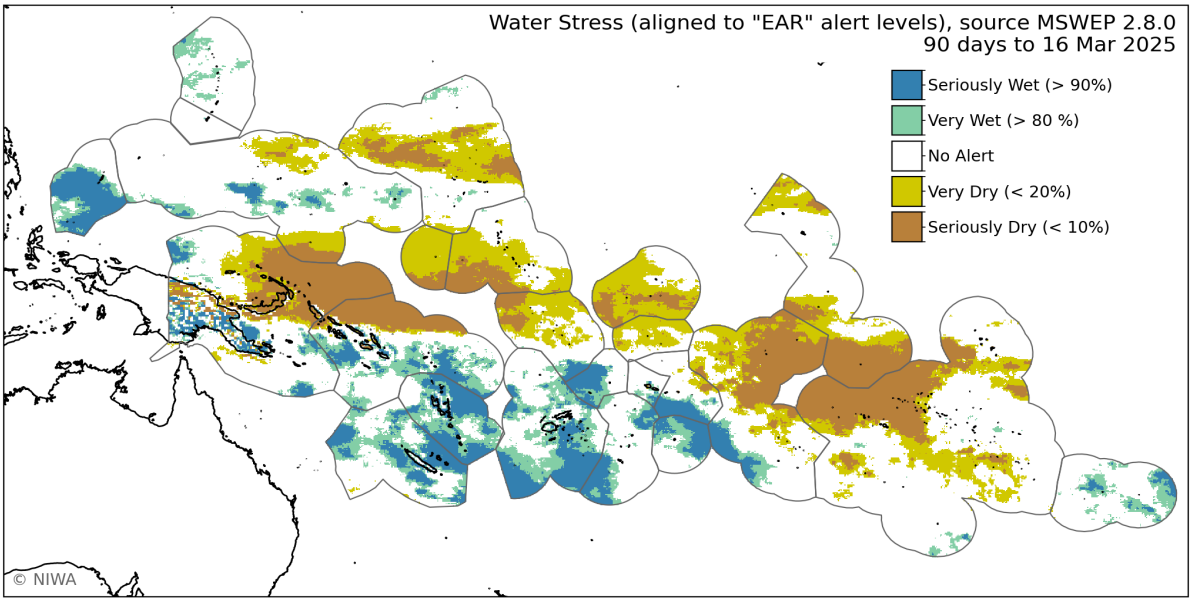
Water Stress Watch

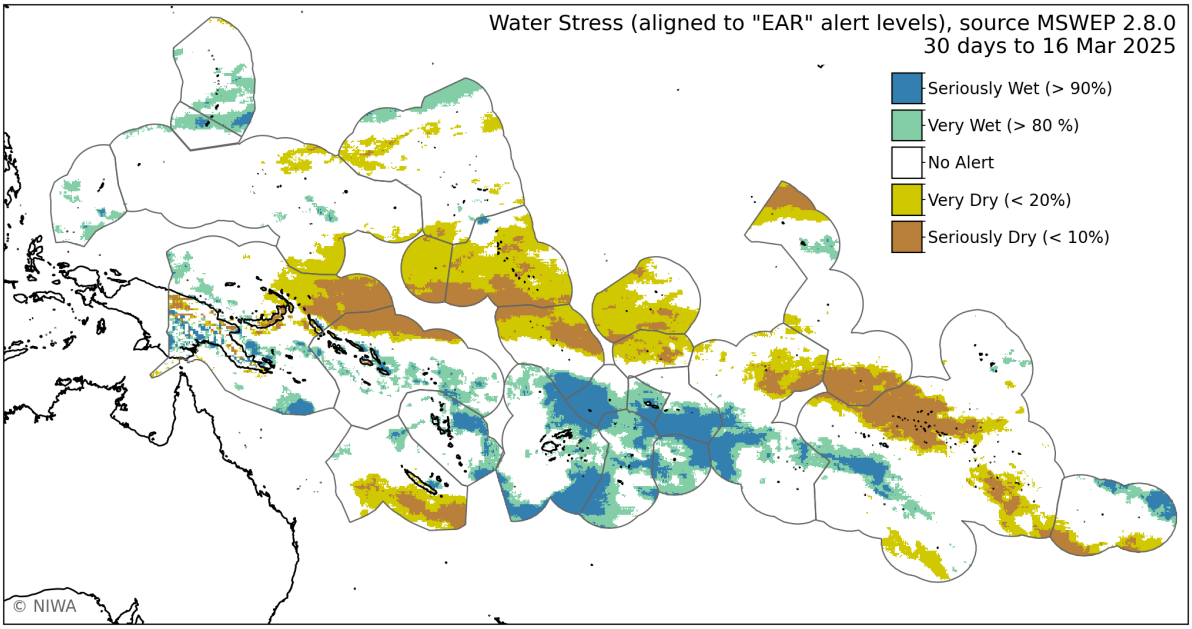
EAR regional situation summary (16 March 2025)

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 March (top plot), seriously dry or very dry conditions affected parts of FSM and the Marshall Islands, northern PNG, northern Solomon Islands, Nauru, Kiribati (Gilbert and Phoenix Islands), Tuvalu, Tokelau, northern Cook Islands and parts of the southern Cook Islands, parts of the Austral and Society Islands, and parts of the Tuamotu Archipelago.

During the 30 days ending 16 March (bottom plot), seriously dry or very dry conditions affected parts of the northern Marshall Islands, northern PNG, northern Solomon Islands, Nauru, Kiribati (Gilbert and Phoenix Islands), northern Tuvalu, Tokelau, parts of the northern Cook Islands, and Tuamotu Archipelago.





Island Climate Update

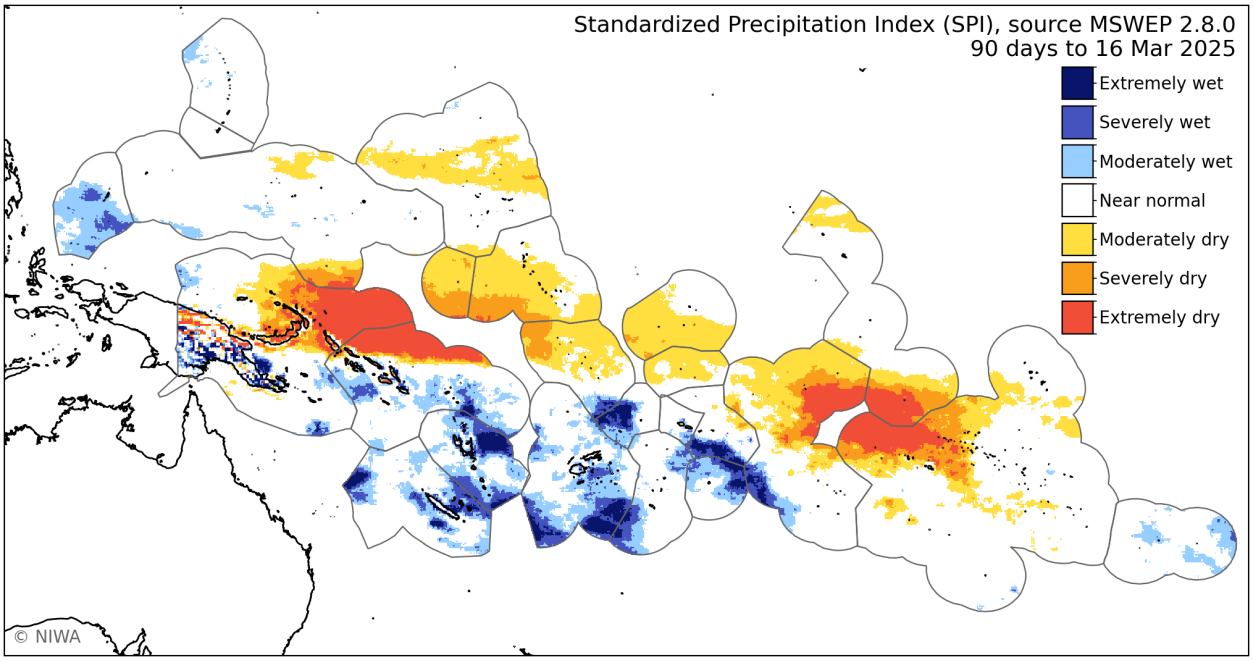
Water Stress Watch

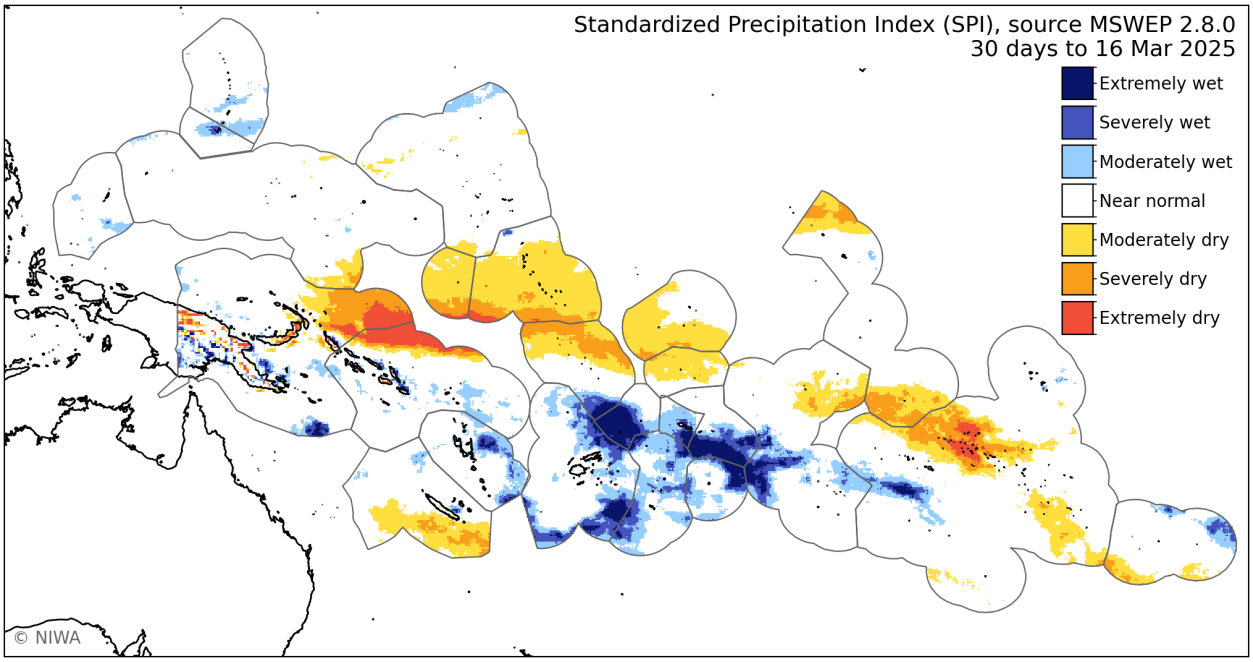
SPI Regional situation summary (16 March 2025)

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 March (top plot), extremely dry or severely dry conditions occurred in northern PNG, northern Solomon Islands, parts of the northern Cook Islands, western Society Islands, and western Tuamotu Archipelago.

During the 30 days ending 16 March (bottom plot), extremely dry or severely dry conditions occurred in northern PNG, northern Tuvalu, and western Tuamotu Archipelago.





Island Climate Update

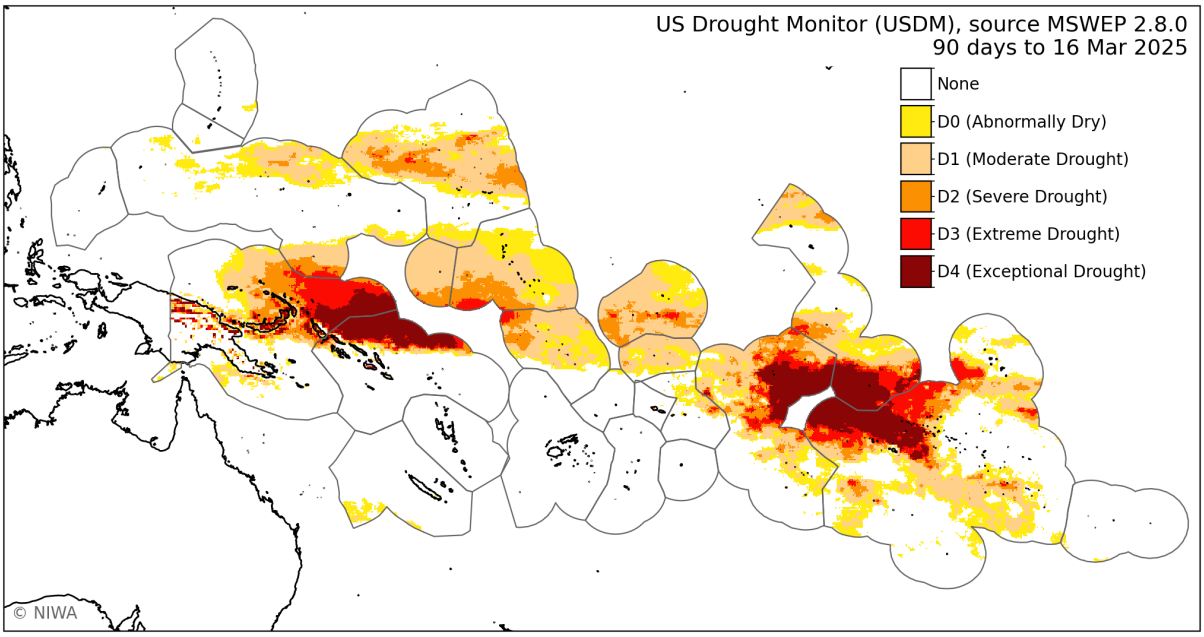
Water Stress Watch

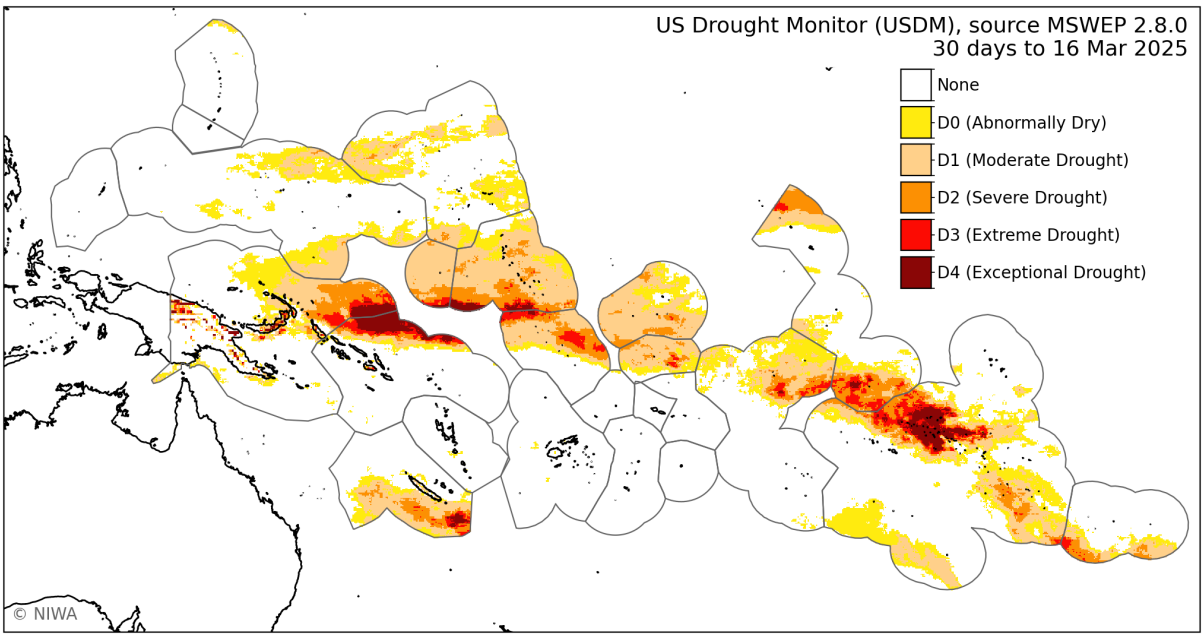
USDM Regional situation summary (16 March 2025)

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 March (top plot), extreme or exceptional drought occurred in parts of the Marshall Islands, northern PNG, northern Solomon Islands, Kiribati (Phoenix Islands), northern Cook Islands, Society Islands, and western Tuamotu Archipelago.

During the 30 days ending 16 March (bottom plot), extreme or exceptional drought occurred in northern PNG, northern Solomon Islands, northern Tuvalu, parts of Tokelau, northern Cook Islands, and western Tuamotu Archipelago.





Island Climate Update

Water Stress Outlook

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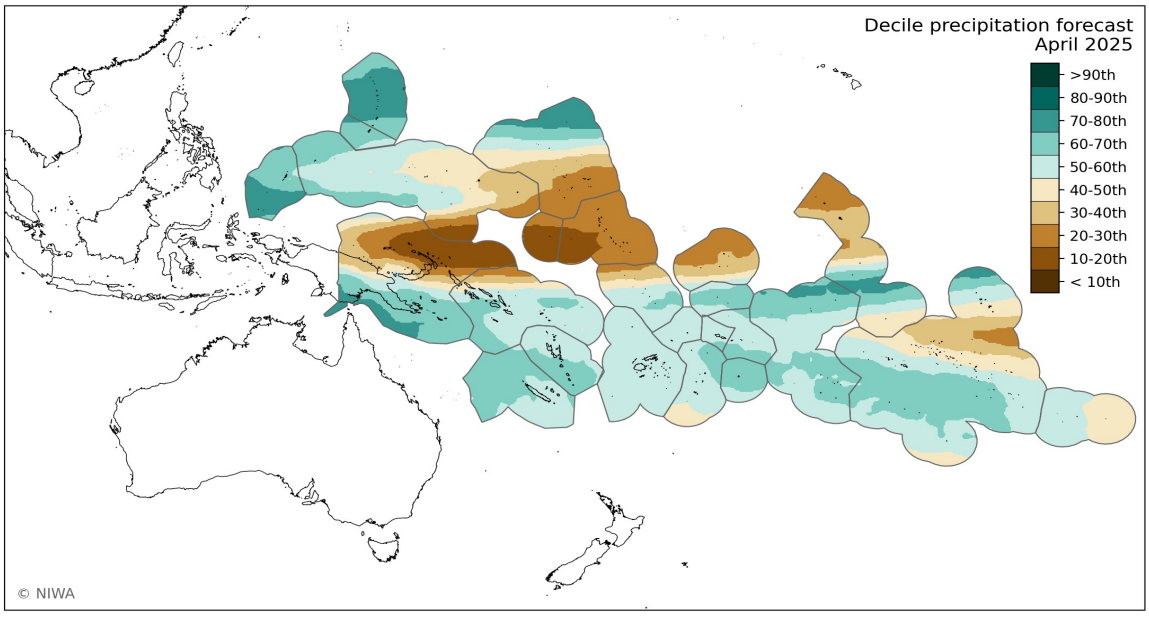
April 2025 forecast & probabilities of rainfall < 25th percentile

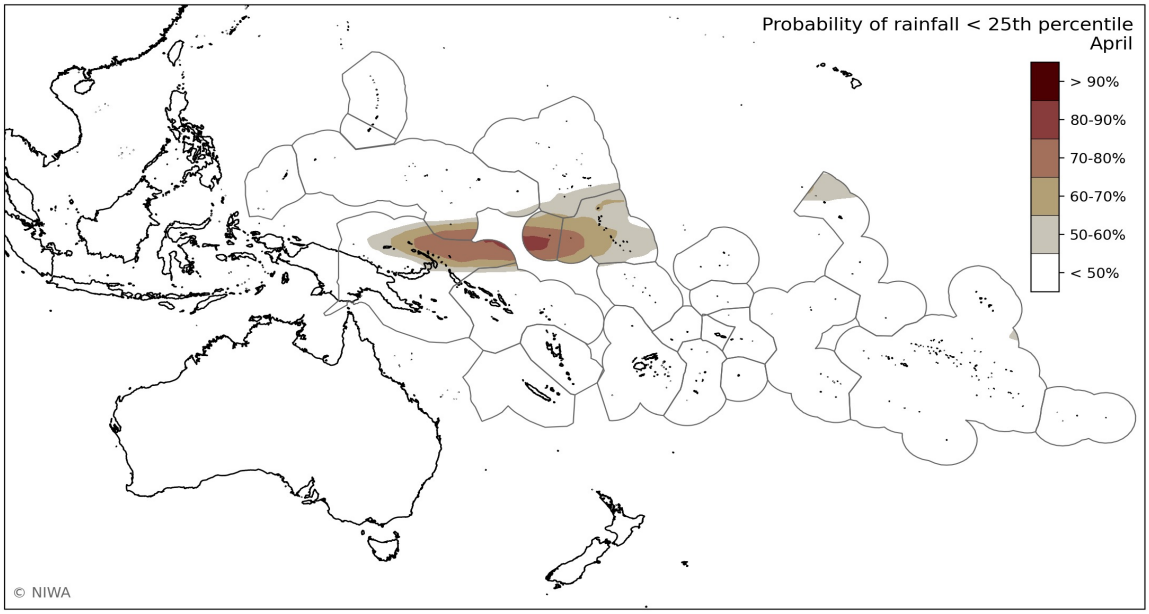
During April, significantly below normal rainfall is favoured in southern and eastern FSM, southern Marshall Islands, northern PNG, far northern Solomon Islands, Nauru, Kiribati (Gilbert, Phoenix, and northern Line Islands), northern Tuvalu, and parts of the Tuamotu Archipelago.

Significantly above normal rainfall is favoured in Palau, Guam, Northern Marianas, northern Marshall Islands, southern PNG, southern Vanuatu, Tokelau, Niue, parts of the northern and southern Cook Islands, and Austral Islands.

All other island groups are expected to see near normal rainfall amounts during April.

For April, the highest chances for very dry conditions are located across far northern PNG, Nauru, and Kiribati (Gilbert Islands).





Island Climate Update

Water Stress Outlook

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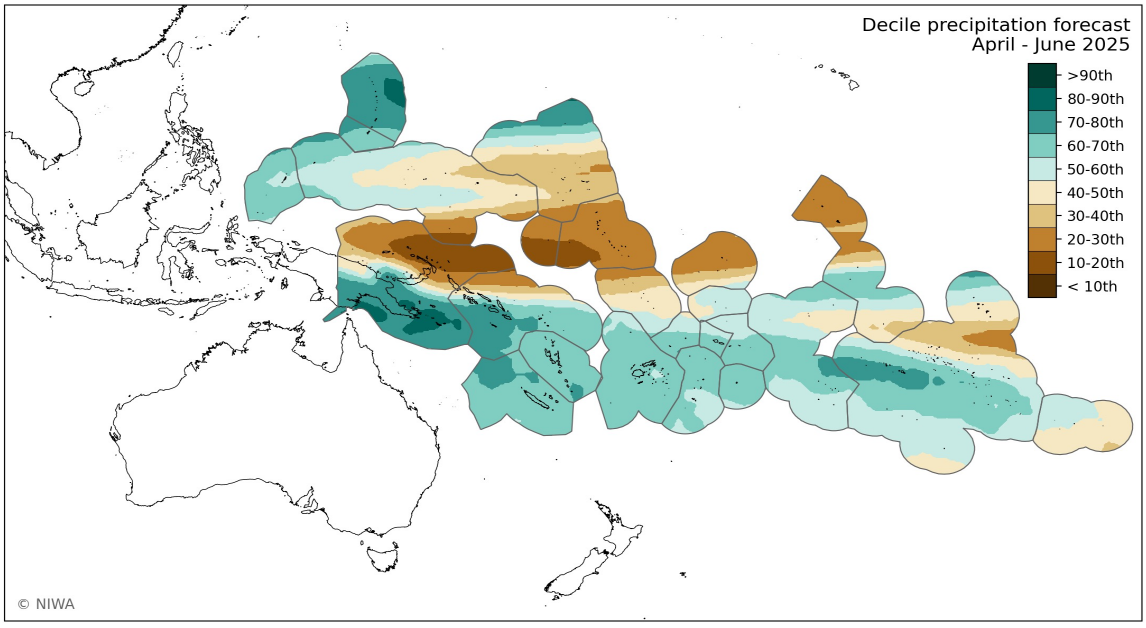
April-June 2025 forecast & probabilities of rainfall < 25th percentile

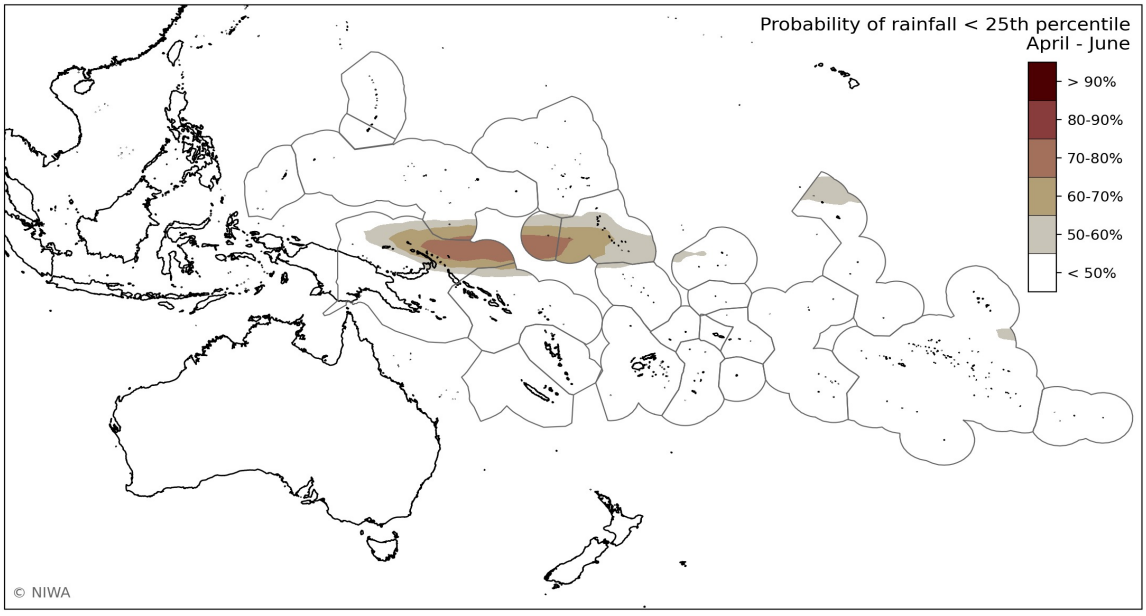
During April-June, significantly below normal rainfall is favoured in southern and eastern FSM, much of the Marshall Islands, northern PNG, far northern Solomon Islands, Nauru, Kiribati, northern Tuvalu, and a small part of the Tuamotu Archipelago.

Significantly above normal rainfall is favoured in Guam, Northern Marianas, northern Marshall Islands, southern PNG, southern Solomon Islands, New Caledonia, Vanuatu, Fiji, Wallis and Futuna, Samoa, American Samoa, Tonga, Niue, parts of the southern Cook Islands, Society Islands, and parts of the Tuamotu Archipelago.

All other island groups are expected to see near normal rainfall amounts during April-June.

For April-June, the highest chances for very dry conditions are located across far northern PNG, Nauru, and Kiribati (Gilbert 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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