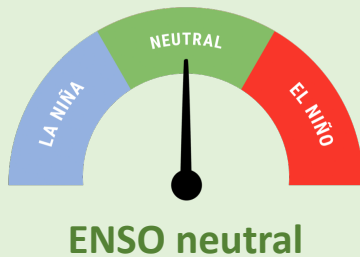


Island Climate Update



ENSO Watch
January 2025

Recent



ENSO neutral conditions are currently in place, but La Niña may develop during January-March.

The Southern Oscillation Index (SOI) was on the La Niña side of neutral (+0.7) from October-December.

Tropical Pacific Ocean sea surface temperatures (SSTs) have trended toward La Niña during December.

50% chance for **ENSO neutral** conditions to continue during **January-March 2025**

Chance for **La Niña** conditions developing during **January-March 2025**

50%



Forecast

ENSO situation summary

There is a 50% chance that La Niña will develop during January-March 2025, although La Niña-like weather patterns are likely even if atmospheric and oceanic indicators do not meet traditional La Niña thresholds. Strong tropical Pacific trade winds have pushed the ocean in a La Niña-like direction during December.

As of 16 December, the 30-day NINO3.4 Index (in the central equatorial Pacific) was -0.27°C , in the neutral range. The 30-day NINO1+2 Index (in the eastern Pacific) was $+0.28^{\circ}\text{C}$, also within the neutral range. The 30-day relative Niño 3.4 Index (RONI) was -0.75°C , reflective of the central equatorial Pacific being significantly cooler than the average of the global tropics.

The Southern Oscillation Index (SOI) was on the La Niña side of the neutral range during October-December (+0.7), while the December value was +1.0 (on the La Niña threshold), a significant increase since last month.

The subsurface equatorial Pacific is 1°C to 3°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 Pacific basin, which is also reflective of the potential development of La Niña.

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

During January-March, model guidance favours an enhancement in convective forcing over the western Pacific and Maritime Continent, consistent with La Niña-like patterns. This may lead to enhanced rainfall for some island groups such as Palau, Guam, Northern Marianas, Federated States of Micronesia, Marshall Islands, and the Solomon Islands east to Niue (see pages 6-7 for more information).

Tropical cyclone season continues through April 2025. While no activity is forecast in the short-term, tropical cyclone chances may increase from mid-January as a pulse of the Madden-Julian Oscillation (MJO) is expected to move through the western Pacific Ocean.

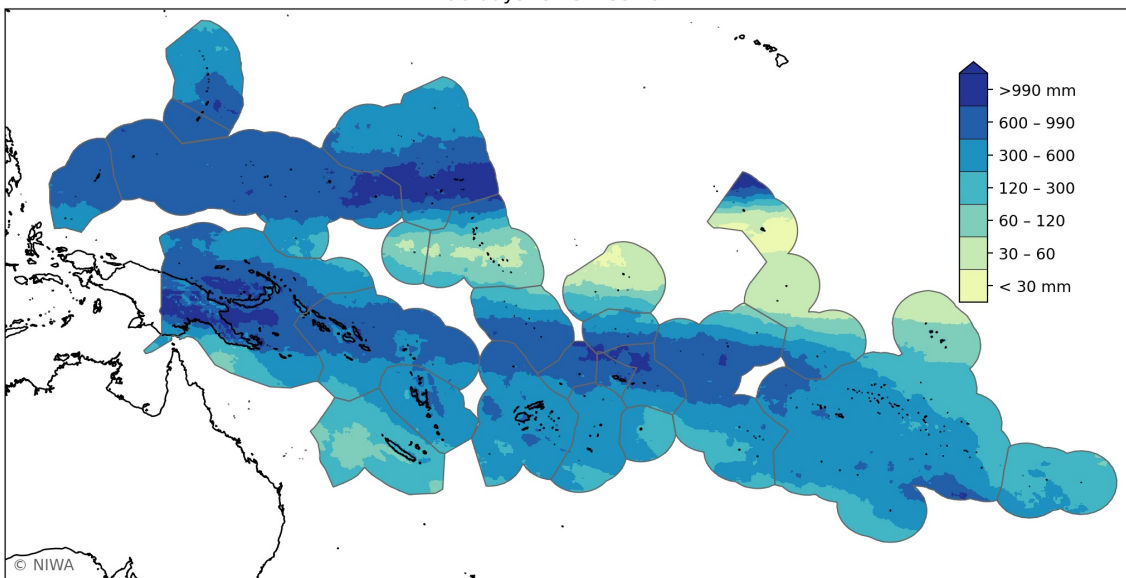
Regional situation summary (15 December 2024)

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

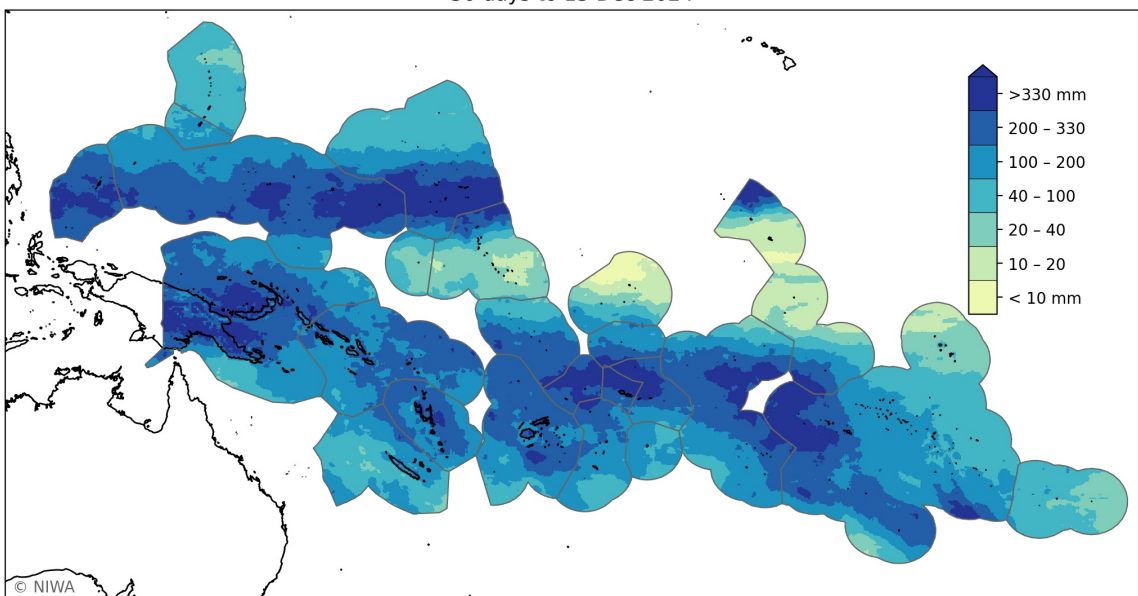
During the 90 days ending 15 December (top plot), over 990 mm of rain fell across the eastern Federated States of Micronesia (FSM), southern Marshall Islands, far northern Line Islands, parts of Papua New Guinea (PNG) and northern American Samoa. Less than 60 mm of rain was observed in Kiribati (parts of the Gilbert, Phoenix, and northern and central Line Islands).

During the 30 days ending 15 December (bottom plot), over 330 mm of rain fell across parts of Palau, FSM, southern Marshall Islands, far northern Line Islands, parts of PNG, Wallis & Futuna, Samoa, American Samoa, and parts of the northern Cook Islands and Society Islands. Less than 40 mm of rain fell in Nauru and Kiribati (Gilbert, Phoenix, and northern and central Line Islands).

Cumulative rainfall (mm), source: MSWEP 2.8.0
90 days to 15 Dec 2024



Cumulative rainfall (mm), source: MSWEP 2.8.0
30 days to 15 Dec 2024

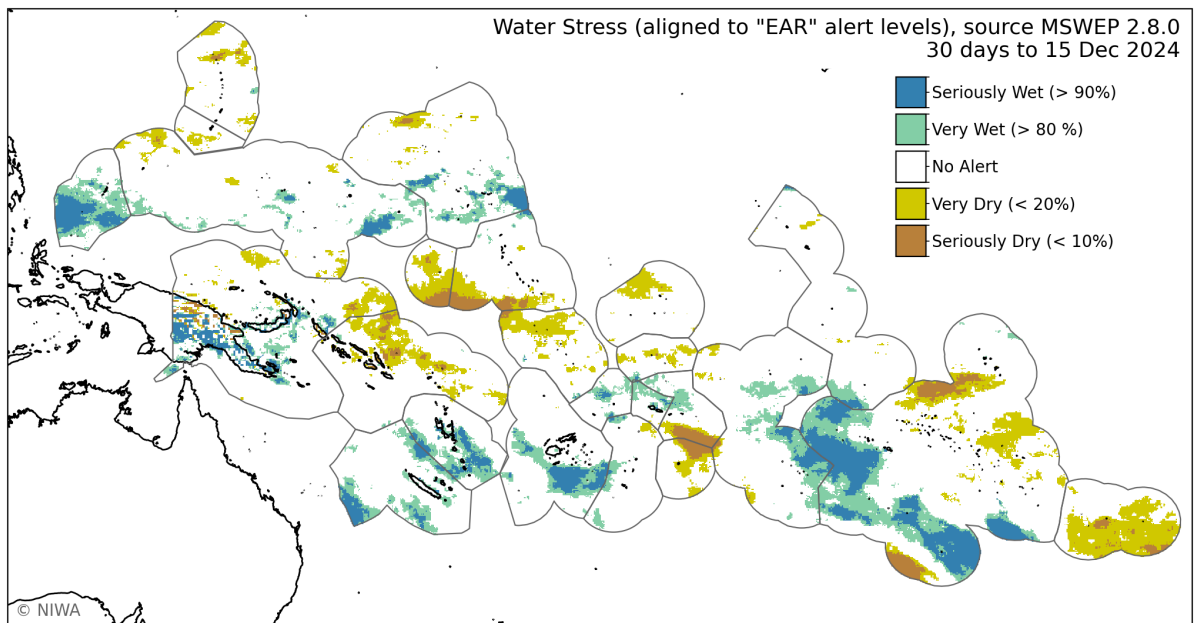
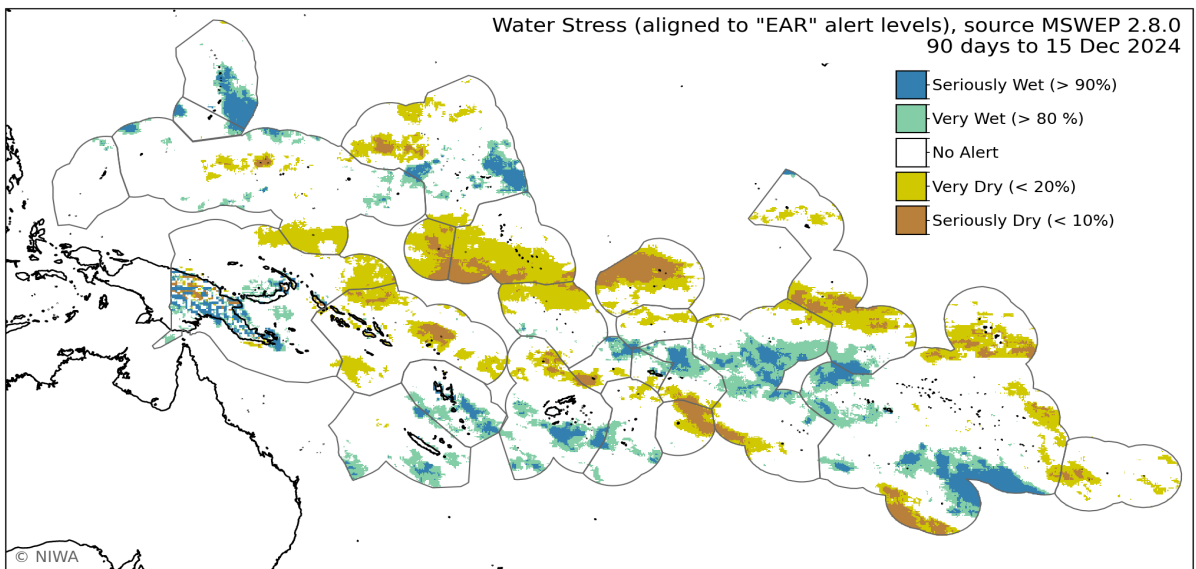


EAR regional situation summary (15 December 2024)

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 15 December (top plot), seriously dry or very dry conditions affected parts of FSM, the northern Marshall Islands, Nauru, Kiribati (southern Gilbert, Phoenix, and central Line Islands), northern Tuvalu, Tokelau, parts of the Solomon Islands, northern Fiji, Wallis & Futuna, northern Tonga, Niue, parts of the southern Cook Islands, Marquesas, and Pitcairn Islands.

During the 30 days ending 15 December (bottom plot), seriously dry or very dry conditions affected parts of the northern Marshall Islands, Nauru, Kiribati (southern Gilbert Islands), northern Tuvalu, Tokelau, parts of the Solomon Islands, Niue, isolated parts of the Tuamotu Archipelago, and Pitcairn Islands.

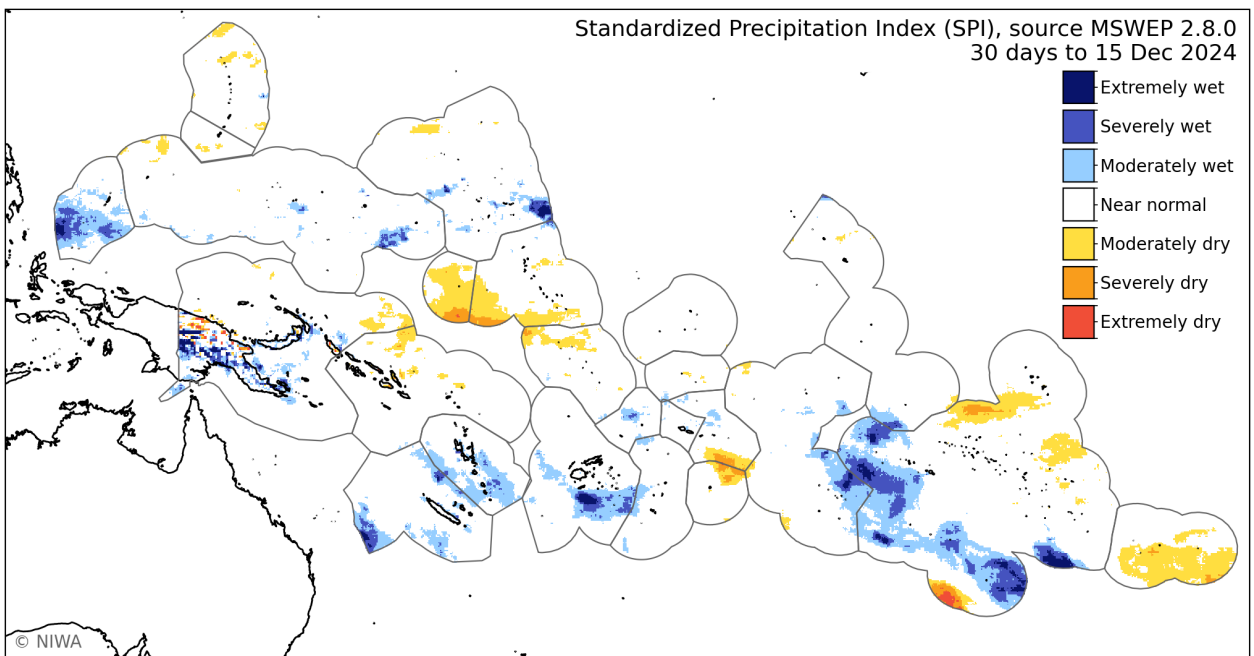
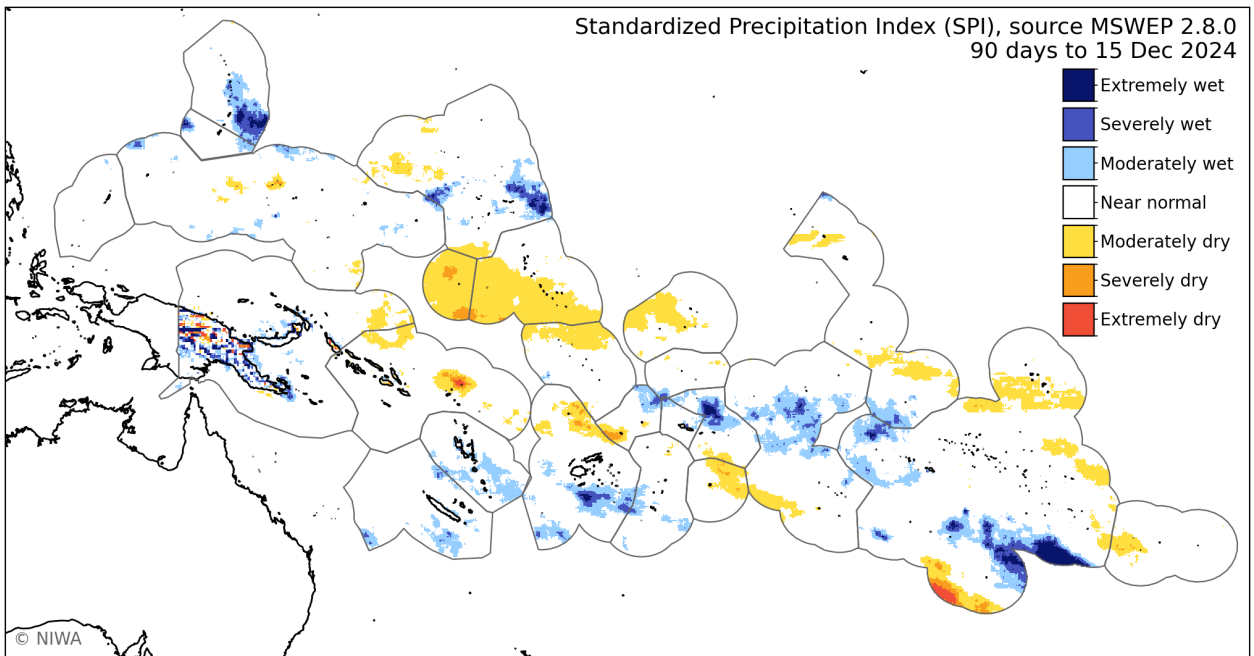


SPI Regional situation summary (15 December 2024)

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 15 December (top plot), extremely dry or severely dry conditions occurred in isolated parts of FSM, parts of the Solomon Islands, and Wallis & Futuna.

During the 30 days ending 15 December (bottom plot), extremely dry or severely dry conditions occurred in parts of the Solomon Islands.

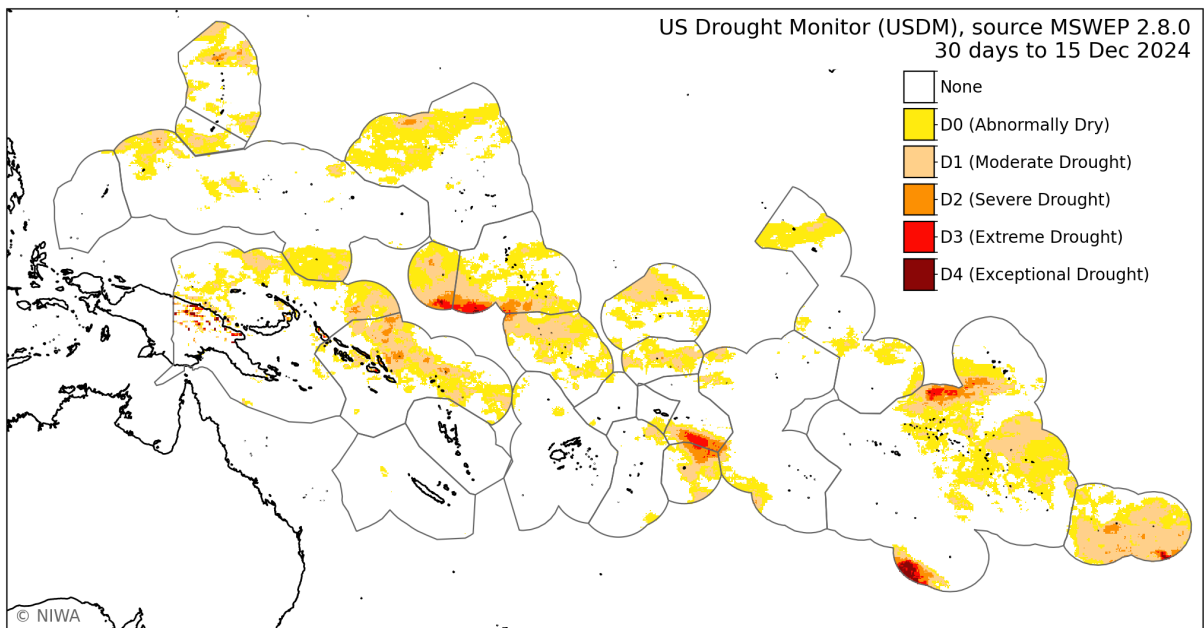
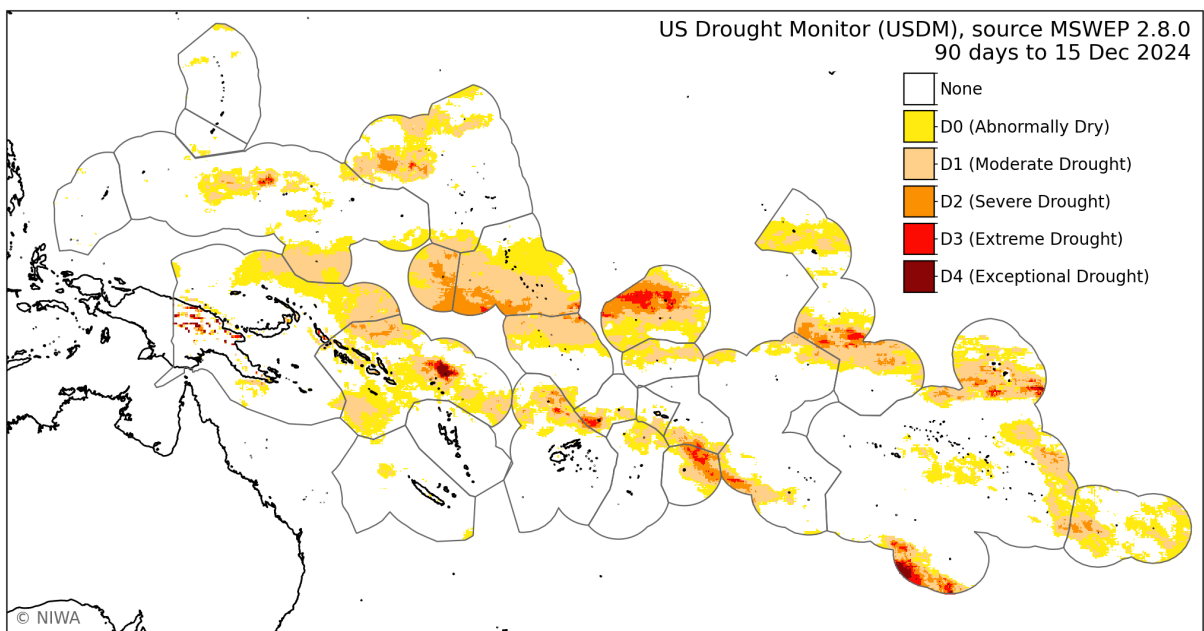


USDM Regional situation summary (15 December 2024)

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

During the 90 days ending 15 December (top plot), extreme or exceptional drought occurred in isolated parts of FSM, Kiribati (Phoenix and central Line Islands), parts of the Solomon Islands, and Wallis & Futuna.

During the 30 days ending 15 December (bottom plot), extreme or exceptional drought occurred in parts of the Solomon Islands.



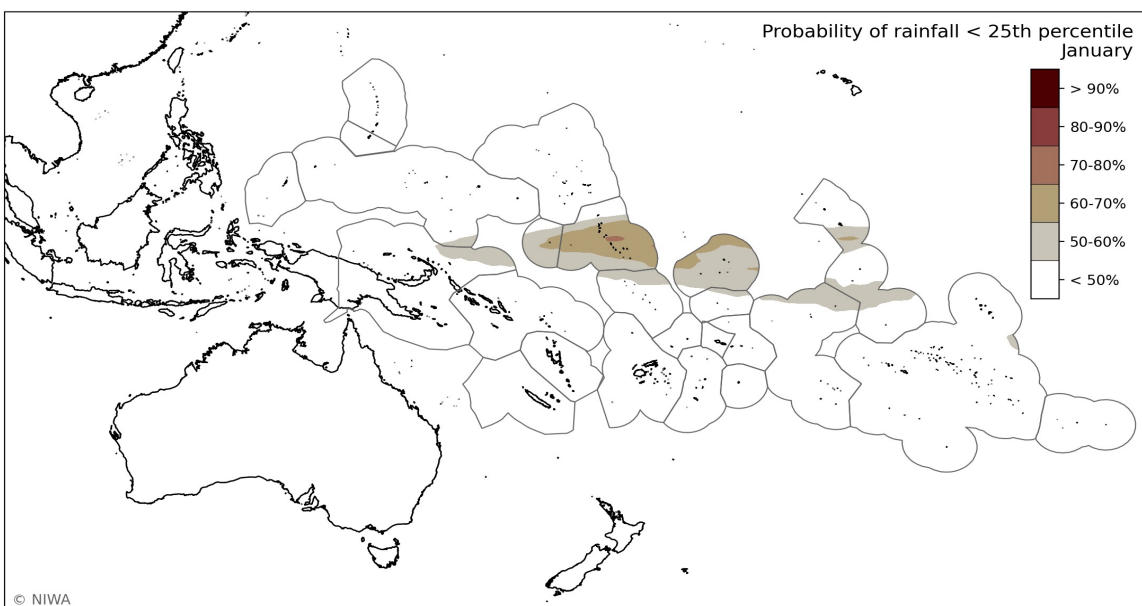
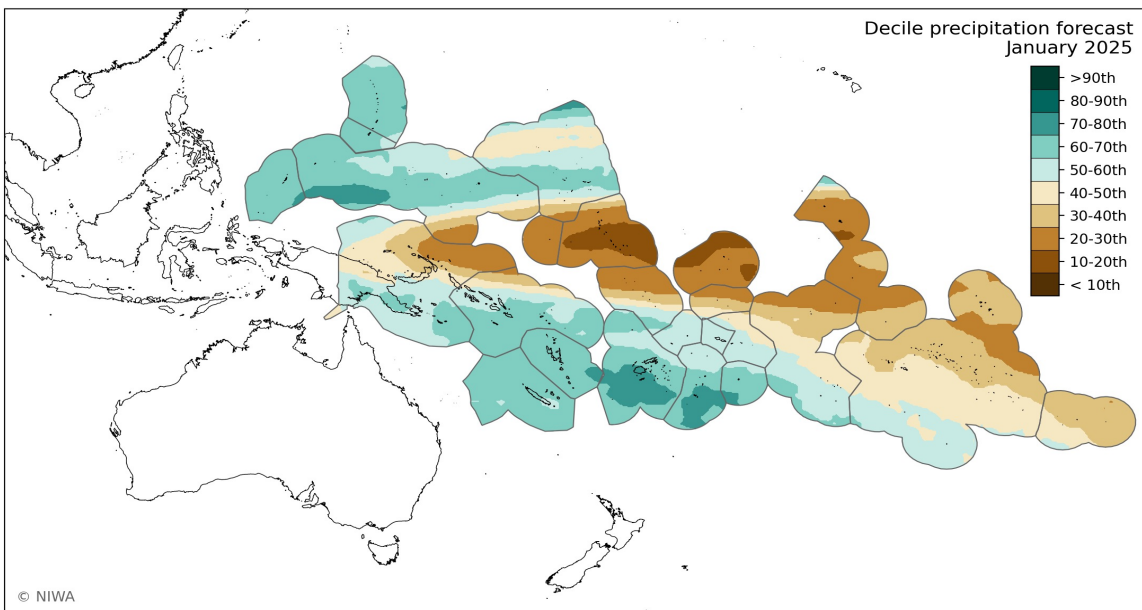
January 2025 forecast & probabilities of rainfall < 25th percentile

During January, significantly below normal rainfall is favoured in southern FSM and the Marshall Islands, northern PNG, 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, Guam, Northern Marianas, parts of FSM and the Marshall Islands, southern PNG, parts of the Solomon Islands, New Caledonia, Vanuatu, Fiji, much of Tonga, and Niue.

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

For January, the highest chances for very dry conditions are located across Nauru, Kiribati (Gilbert Islands, Phoenix Islands, and parts of the Line Islands), far northern Tuvalu, and isolated parts of the northern Cook Islands.



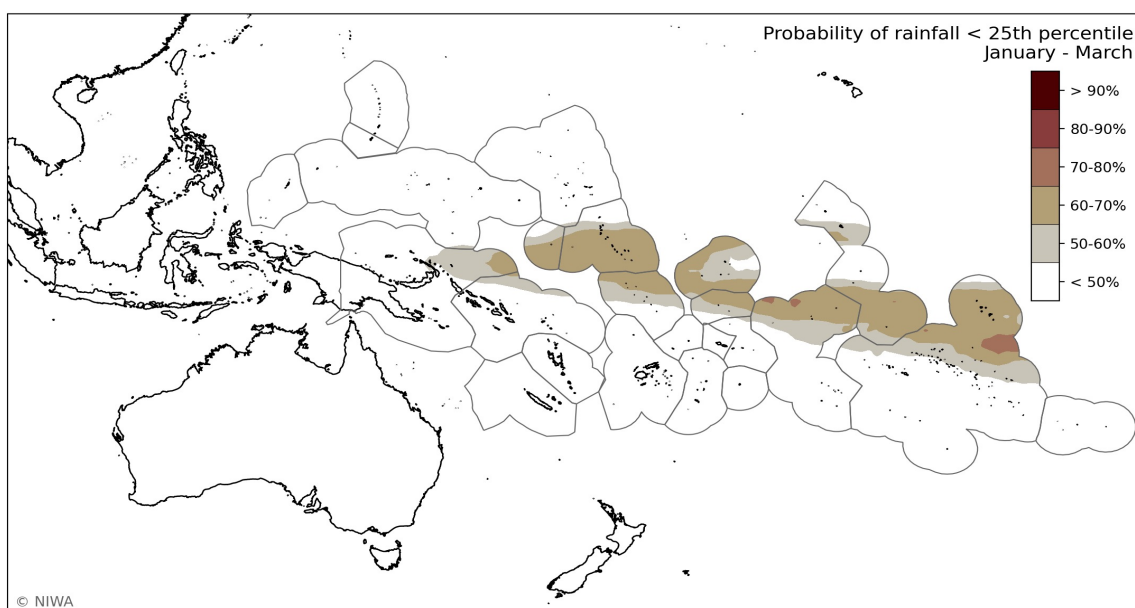
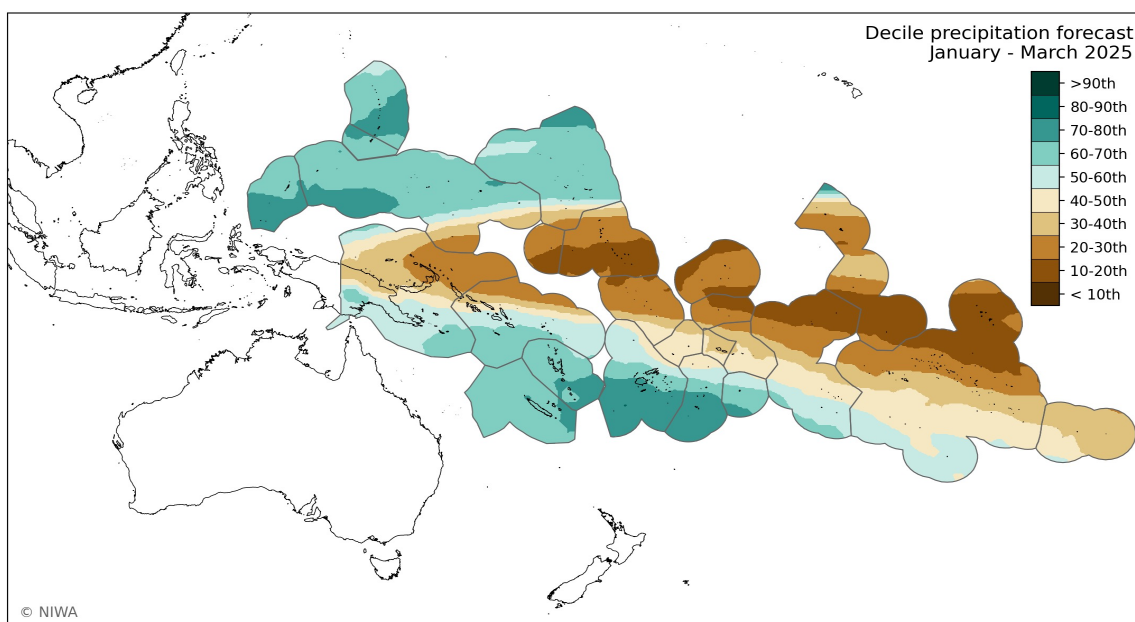
January-March forecast & probabilities of rainfall < 25th percentile

During January-March, significantly below normal rainfall is favoured in southern FSM and Marshall Islands, northern PNG, far northern Solomon Islands, Nauru, Kiribati, Tuvalu, Tokelau, Samoa, northern American Samoa, northern Cook Islands, Society Islands, Tuamotu Archipelago, Marquesas, and Pitcairn Islands.

Significantly above normal rainfall is favoured in Palau, Guam, Northern Marianas, much of FSM and Marshall Islands, southern Solomon Islands, New Caledonia, Vanuatu, most of Fiji and Tonga, and Niue.

All other island groups are expected to see rainfall amounts closer to normal during January-March.

For January-March, the highest chances for very dry conditions are located across far northern PNG, Nauru, Kiribati (Gilbert, Phoenix, and parts of the Line Islands), northern Tuvalu, Tokelau, northern Cook Islands, northern Tuamotu Archipelago, and Marquesas.



Island Climate Update



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	<p>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.</p> <p>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%.</p> <p>The bottom plots bring together conditions over the past 3 months and forecast conditions over the next month:</p> <ul style="list-style-type: none"> • 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. <p>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).</p>
<p>Online Resources</p>	<p>Additional regional and country-level resources are available online:</p> <ul style="list-style-type: none"> • 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].



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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