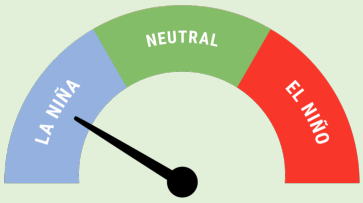
Island Climate Update

NIWA
Taihoro Nukurangi

ENSO Watch
February 2025

Recent



La Niña

La Niña conditions have developed over the last month.

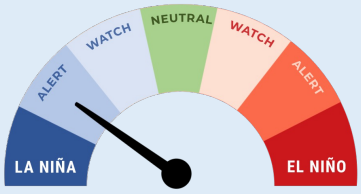
The Southern Oscillation Index (SOI) was on the La Niña side of neutral (+0.4) from November-January.

Tropical Pacific Ocean sea surface temperatures (SSTs) exceeded La Niña thresholds during January.

Forecast

50% chance for **ENSO neutral** conditions to develop during **February-April 2025**

Chance for **La Niña** conditions continuing during **February-April 2025** **50%**



La Niña Alert

ENSO situation summary

The ocean and atmosphere have transitioned to a weak La Niña that will likely be brief, primarily focused on the central Pacific (i.e., La Niña "Modoki"). There is a 50% chance that La Niña will continue during February-April 2025.

As of 19 January, the 30-day NINO3.4 Index (in the central equatorial Pacific) was -0.76˚C, slightly in the La Niña range. The 30-day relative Niño 3.4 Index (RONI) was -1.31˚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 November-January (+0.4), while the January value was -0.2 (in the neutral range).

The subsurface equatorial Pacific is 2˚C to 4˚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 a La Niña signature.

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

During February-April, 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 southern Papua New Guinea 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 early February as a pulse of the Madden-Julian Oscillation (MJO) is expected to move through the western Pacific Ocean.

Island Climate Update

Rainfall Watch

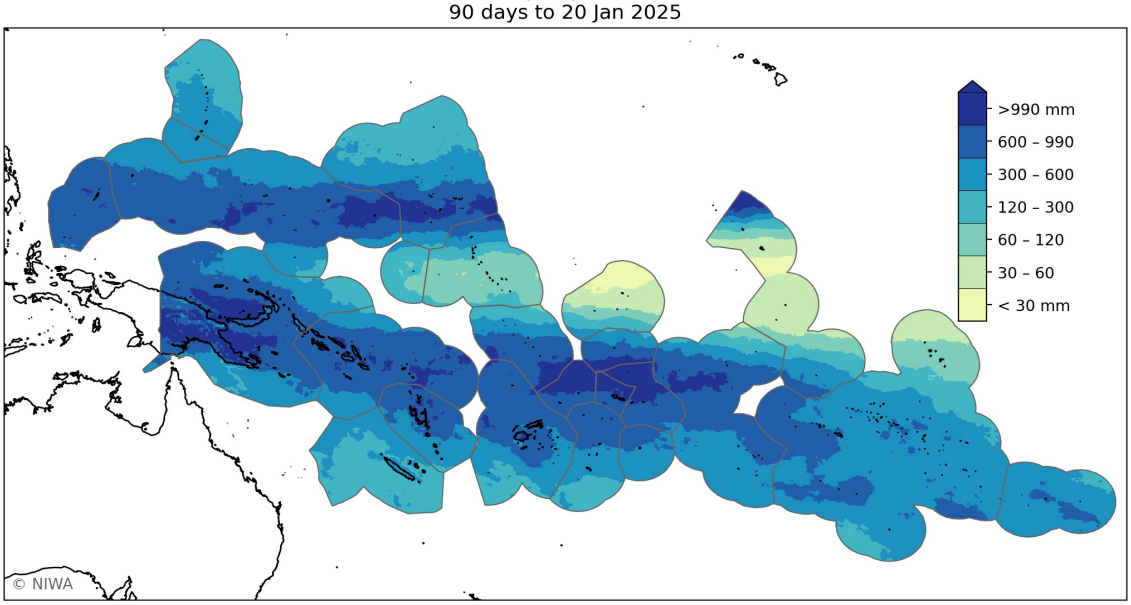
Regional situation summary (20 January 2025)

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

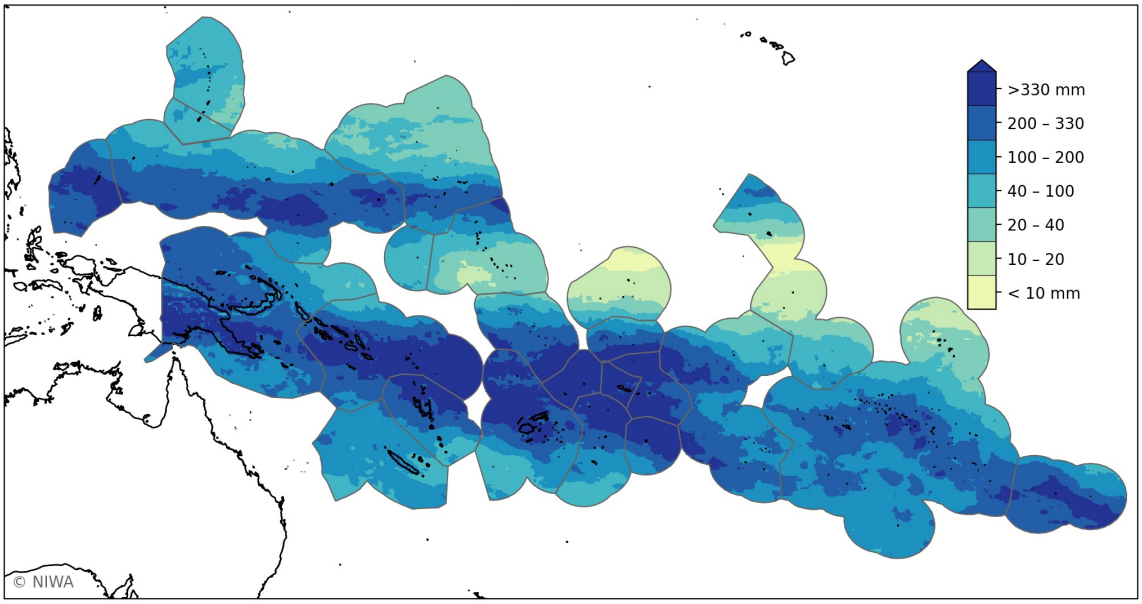
During the 90 days ending 20 January (top plot), over 990 mm of rain fell across parts of the Federated States of Micronesia (FSM), southern Marshall Islands, far northern Line Islands, parts of Papua New Guinea (PNG), Solomon Islands, northern Vanuatu, southern Tuvalu, Samoa, and American Samoa. Less than 60 mm of rain was observed in Kiribati (parts of the Phoenix Islands and northern and central Line Islands).

During the 30 days ending 20 January (bottom plot), over 330 mm of rain fell across parts of Palau, FSM, parts of PNG, Solomon Islands, northern Vanuatu, southern Tuvalu, southern Tokelau, Fiji, Wallis & Futuna, Samoa, American Samoa, northern Tonga, Niue, and parts of the northern Cook Islands, Society Islands, Tuamotu Archipelago, and Pitcairn Islands. Less than 40 mm of rain fell in the northern Marshall Islands, Kiribati (Gilbert, Phoenix, and central Line Islands), and Marquesas.

Cumulative rainfall (mm), source: MSWEP 2.8.0
90 days to 20 Jan 2025



Cumulative rainfall (mm), source: MSWEP 2.8.0
30 days to 20 Jan 2025



Island Climate Update

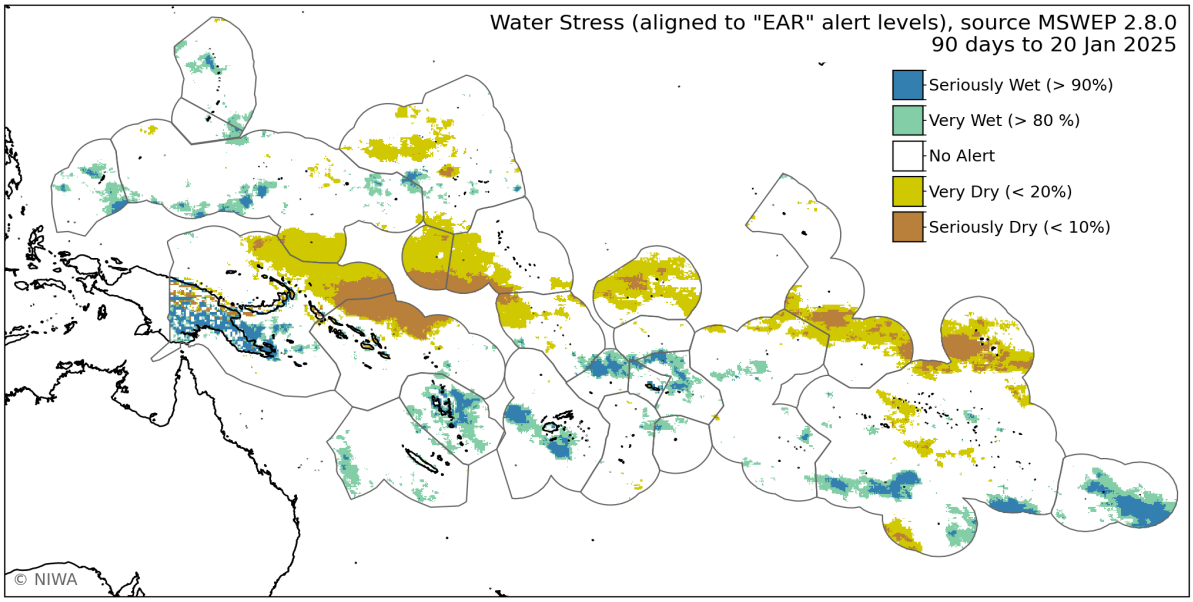
Water Stress Watch

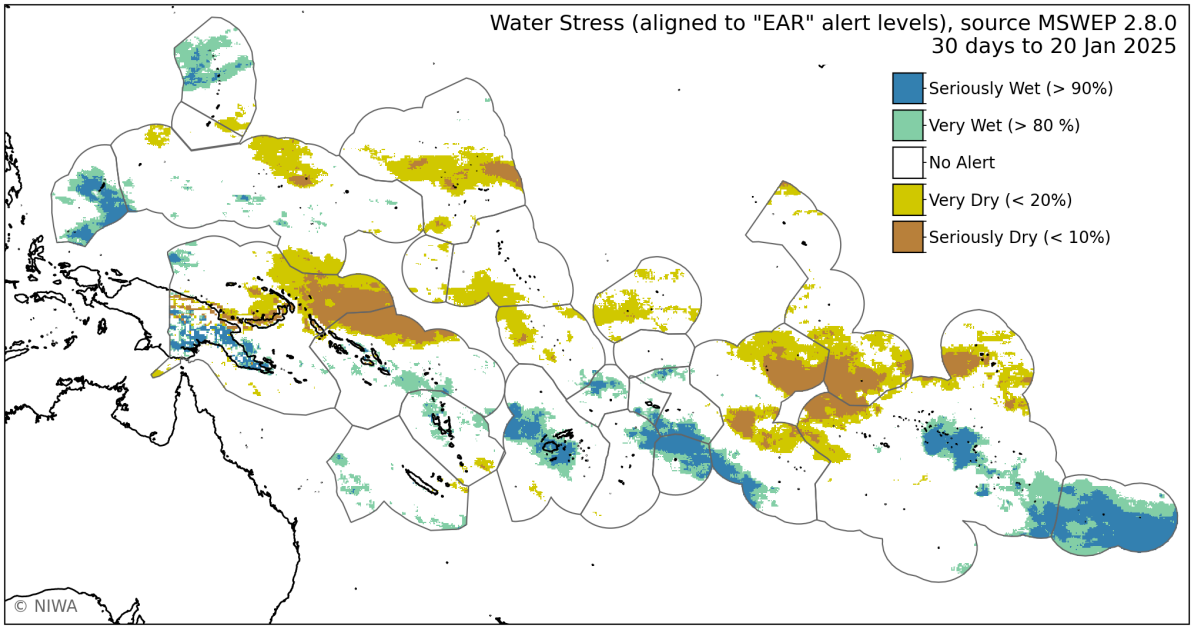
EAR regional situation summary (20 January 2025)

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 20 January (top plot), seriously dry or very dry conditions affected isolated parts of FSM and the Marshall Islands, parts of PNG and the Solomon Islands, Nauru, Kiribati (western Gilbert, Phoenix, and central Line Islands), northern Tuvalu, parts of the Tuamotu Archipelago, and Marquesas.

During the 30 days ending 20 January (bottom plot), seriously dry or very dry conditions affected parts of FSM, the Marshall Islands, PNG, Solomon Islands, southern Vanuatu, Kiribati (Phoenix Islands), northern Tuvalu, northern Cook Islands, western Society Islands, and Marquesas.





Island Climate Update

Water Stress Watch

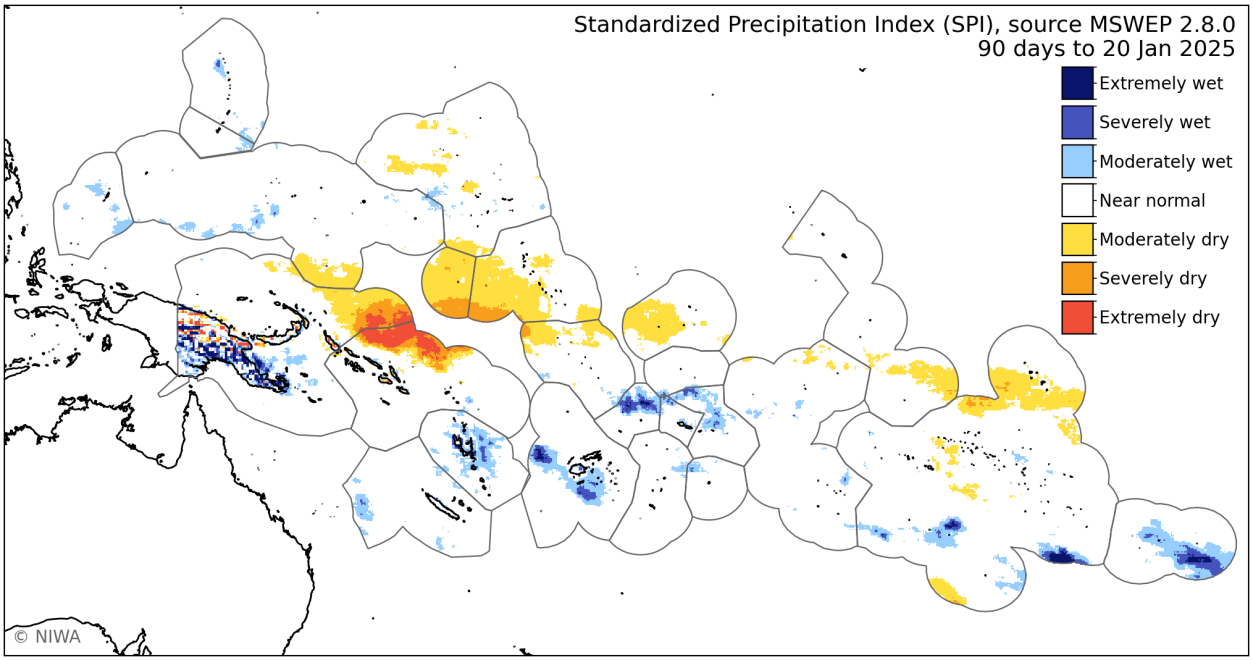
NIWA
Taihoro Nukurangi

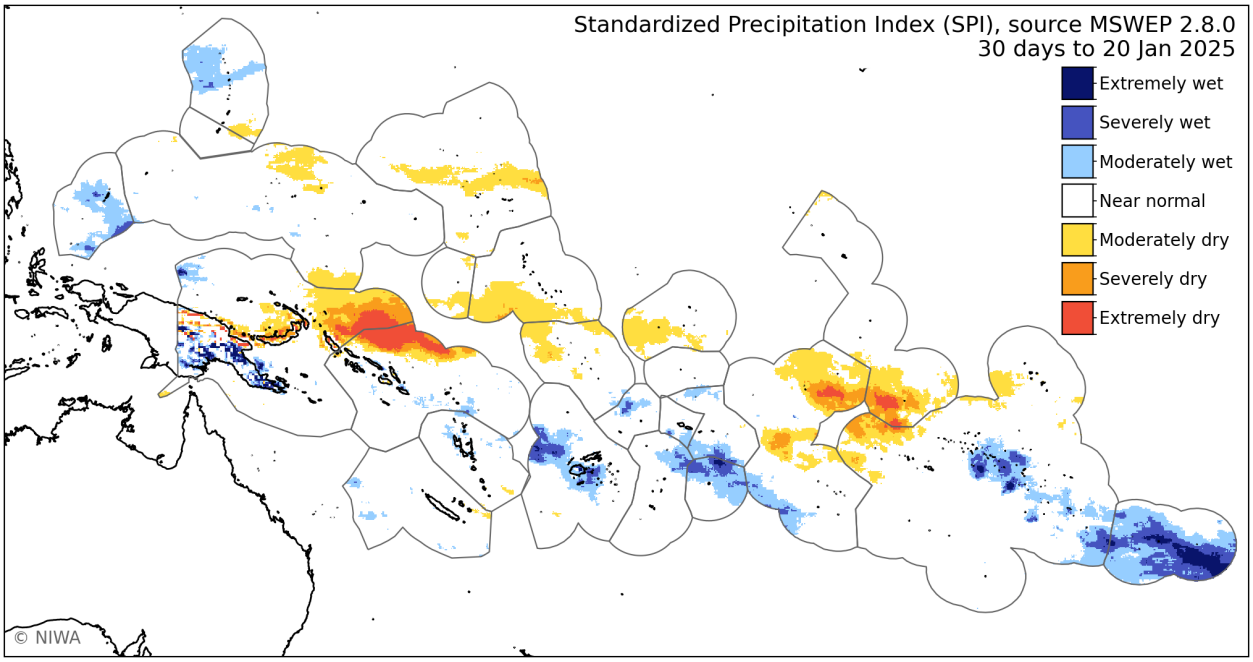
SPI Regional situation summary (20 January 2025)

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 20 January (top plot), extremely dry or severely dry conditions occurred in isolated parts of PNG and parts of the Solomon Islands.

During the 30 days ending 20 January (bottom plot), extremely dry or severely dry conditions occurred in parts of northern PNG and parts of the northern Cook Islands.





Island Climate Update

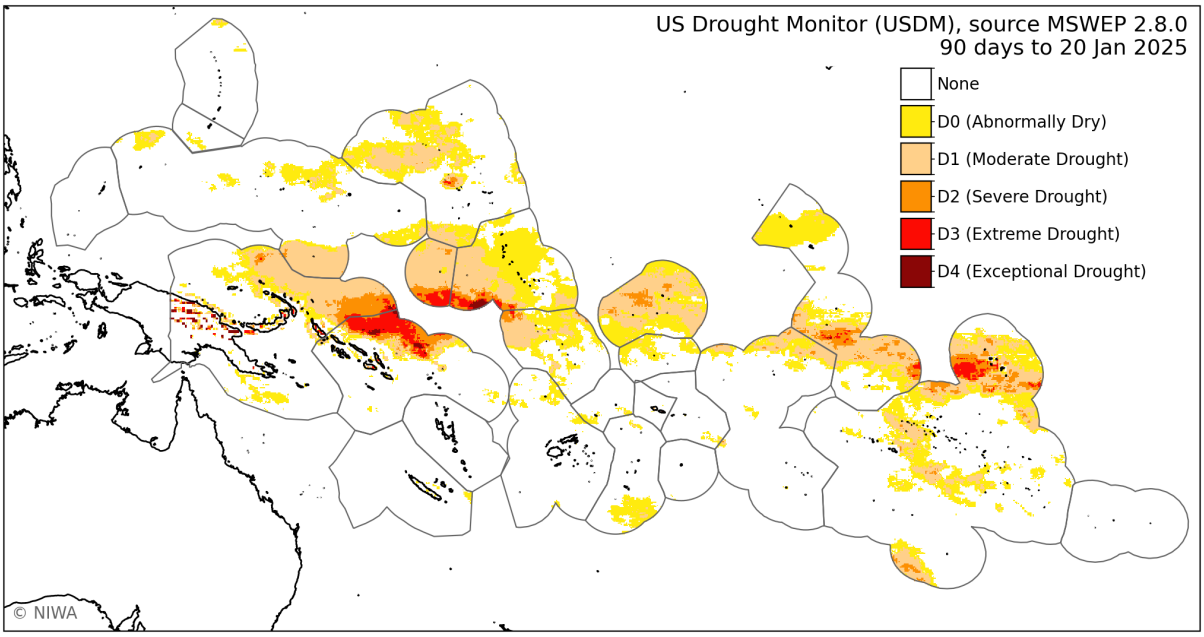
Water Stress Watch

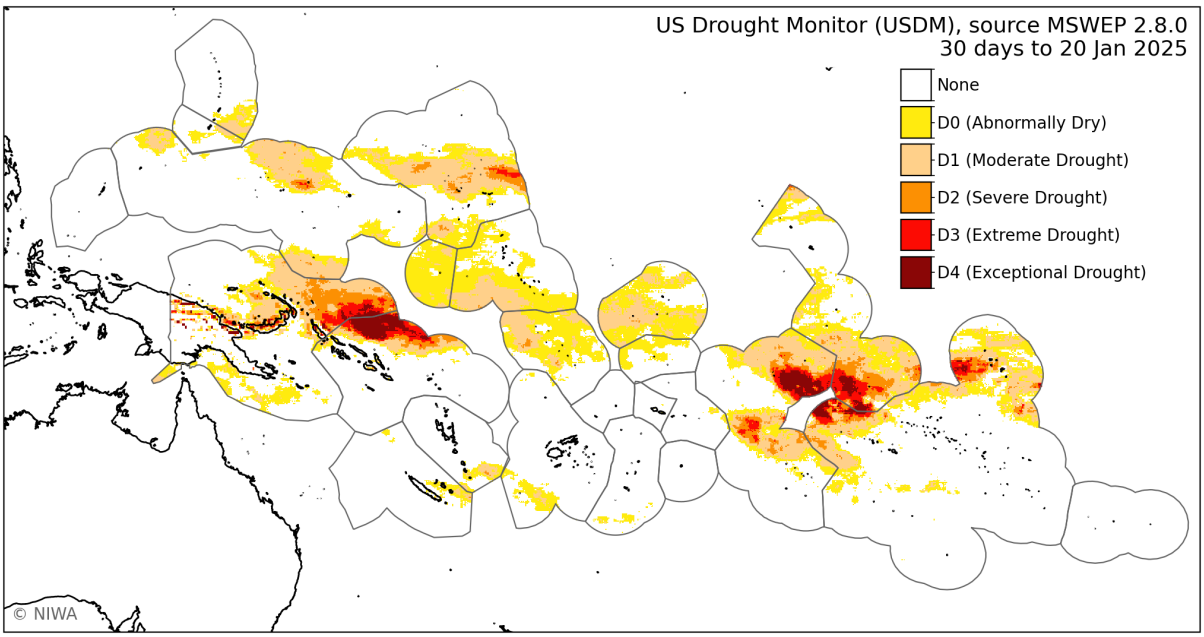
USDM Regional situation summary (20 January 2025)

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 20 January (top plot), extreme or exceptional drought occurred in isolated parts of the Marshall Islands and Solomon Islands, northern PNG, and Marquesas.

During the 30 days ending 20 January (bottom plot), extreme or exceptional drought occurred in isolated parts of FSM, the Marshall Islands, and Solomon Islands, northern PNG, and parts of the northern Cook Islands, western Society Islands, and parts of the Marquesas.





Island Climate Update

Water Stress Outlook

NIWA
Taihoro Nukurangi

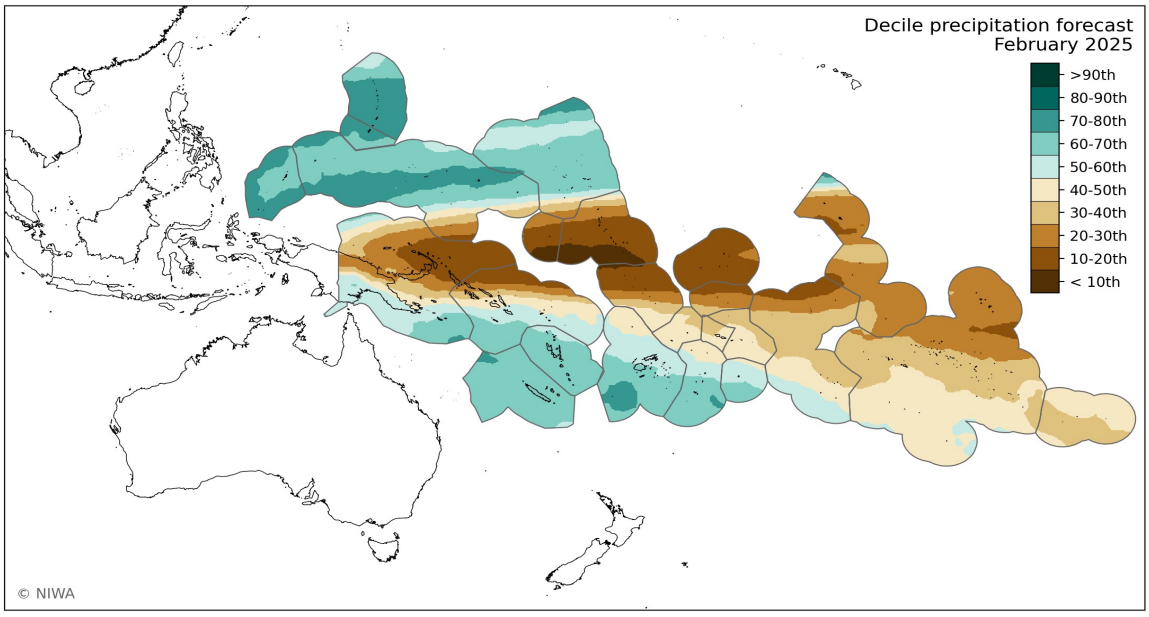
February 2025 forecast & probabilities of rainfall < 25th percentile

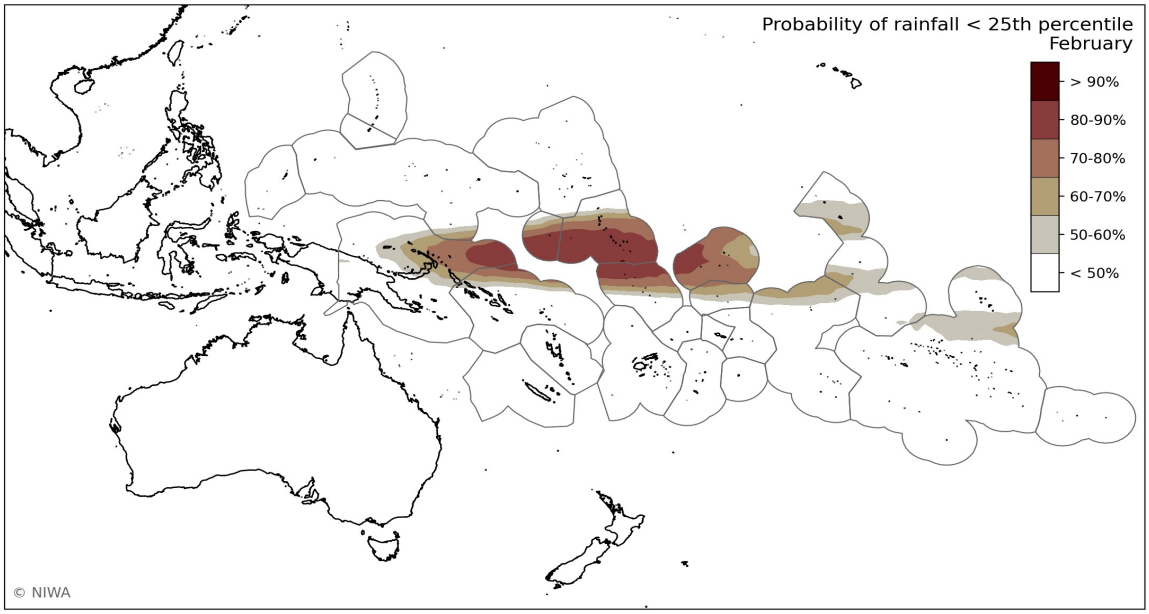
During February, significantly below normal rainfall is favoured in southern FSM, northern PNG, northern Solomon Islands, Nauru, Kiribati (Gilbert Islands, Phoenix Islands, and Line Islands), Tuvalu, Tokelau, Cook Islands, Society Islands, Tuamotu Archipelago, Marquesas, and Pitcairn Islands.

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

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

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





Island Climate Update

Water Stress Outlook

NIWA
Taihoro Nukurangi

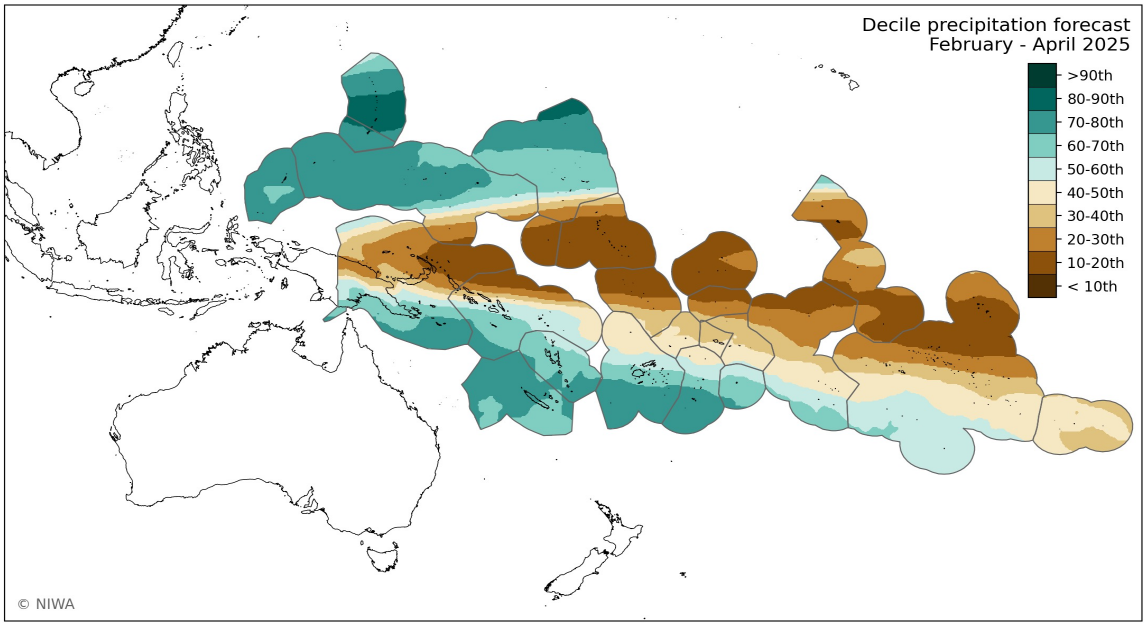
Feb-Apr 2025 forecast & probabilities of rainfall < 25th percentile

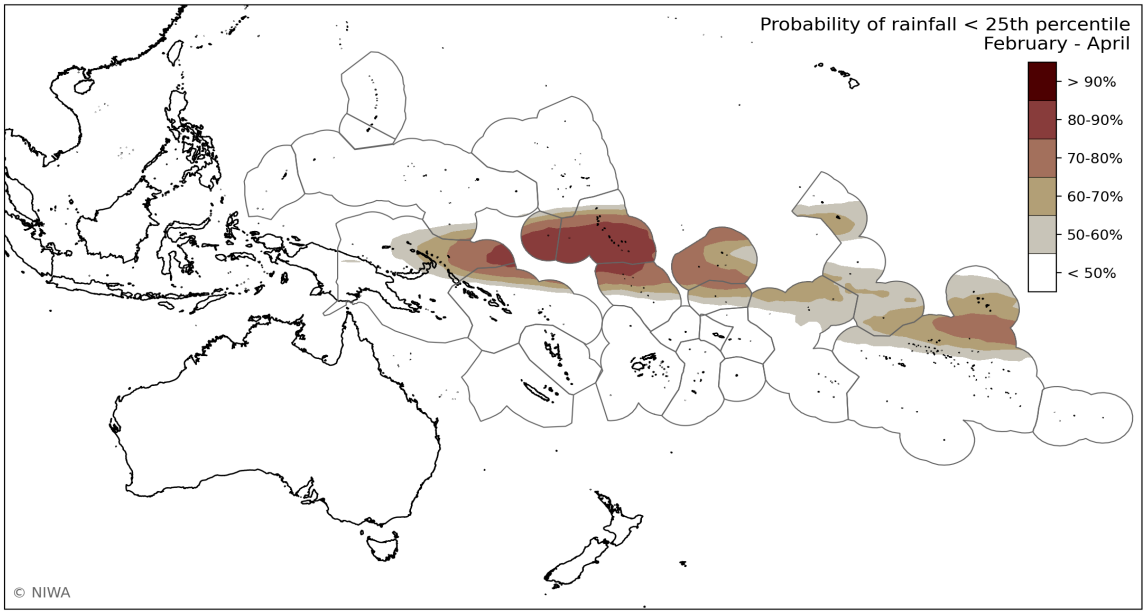
During February-April, significantly below normal rainfall is favoured in southern FSM and the Marshall Islands, northern PNG, far northern Solomon Islands, Nauru, Kiribati, Tuvalu, Tokelau, Samoa, northern American Samoa, northern Cook Islands, Society Islands, Tuamotu Archipelago, and Marquesas.

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

All other island groups are expected to see rainfall amounts closer to normal during February-April.

For February-April, 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

NIWA
Taihoro Nukurangi

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.

Contact

islandclimateupdate@comms.niwa.co.nz

https://niwa.co.nz/climate/island-climate-update

https://www.facebook.com/IslandClimateUpdate

https://twitter.com/ICU_NIWA