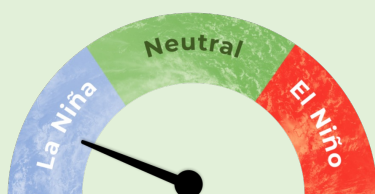


Island Climate Update



ENSO Watch
July 2022

Recent



La Niña

La Niña conditions continued in the equatorial Pacific during June.

Sea surface temperatures were in the “cool-neutral” range in the central equatorial Pacific during June, on -0.40°C .

The Southern Oscillation Index (SOI) was $+2.0$ for April-June, well above the La Niña threshold.

60% chance for **La Niña** conditions during July – September 2022.

Chance for **ENSO neutral** conditions during July – September 2022

35%



La Niña Event

Forecast

ENSO situation summary

The NINO3.4 Index anomaly (in the central equatorial Pacific) over the last month was -0.40°C , in the “cool-neutral range”. The three-monthly NINO3.4 Index remained near the La Niña threshold. The June monthly SOI was $+2.1$, which continues to strongly signal La Niña.

In the subsurface equatorial Pacific, warmer than average water ($+1^{\circ}\text{C}$ to $+3^{\circ}\text{C}$) was nearing the surface in the east at the end of June. Upper oceanic heat content increased in the central Pacific but remained below average in the east. Overall, this indicated a weakening of La Niña.

Trade winds across the equatorial Pacific were weaker than normal in the North Pacific and slightly stronger than normal in the South Pacific. This was associated with warming SSTs near and north of the equator.

A surge in trade winds establishing during the first half of July may halt or reverse the recent warming trend and could result in a cooling of the equatorial Pacific sub-surface and surface over the next three months.

La Niña conditions are most likely to continue during July-September (60% chance). During October-December, there is a 60% chance for La Niña and a 35% chance for ENSO neutral. During January-March, there is around a 40% chance for La Niña and a 50% chance for ENSO neutral.

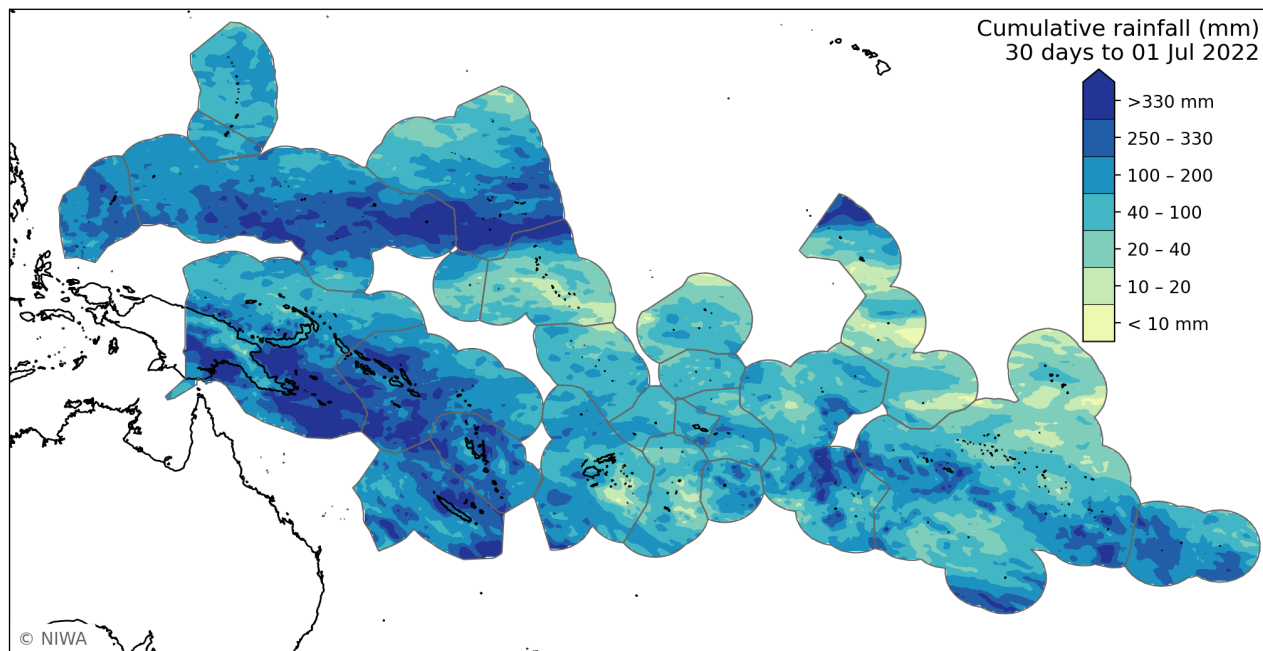
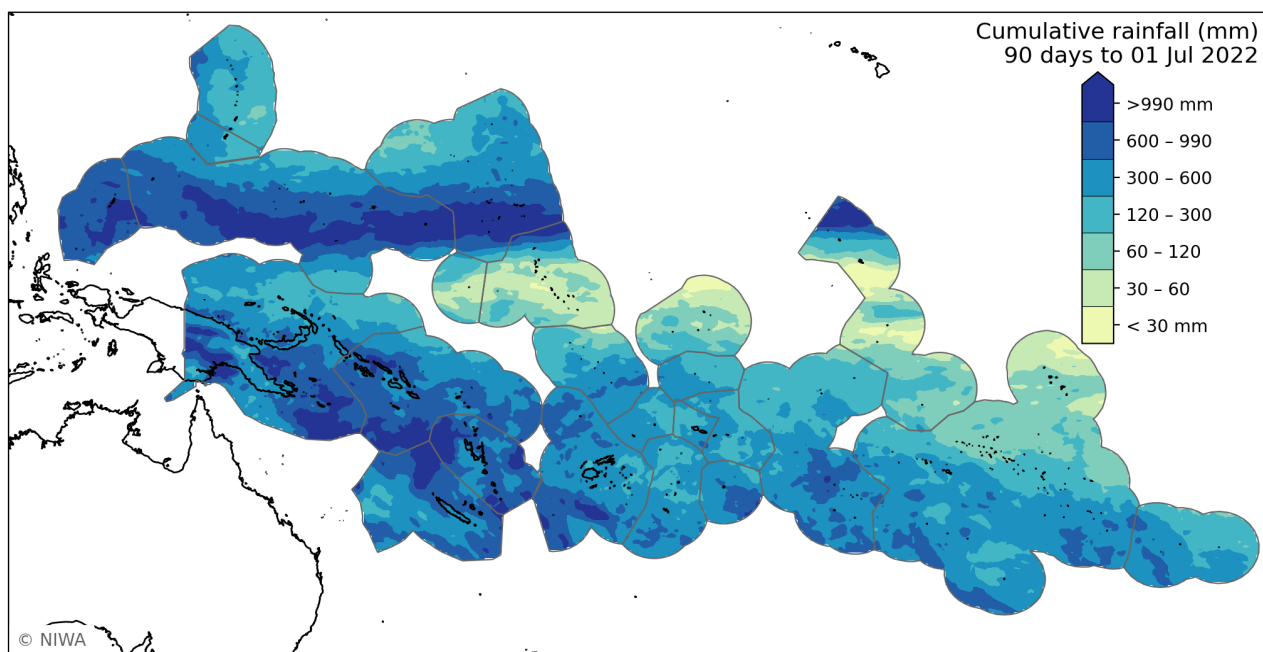
A pulse of tropical convection looks to move over the region in early in July and then into the western Pacific by mid-July, bringing rainfall to areas including Vanuatu, New Caledonia, Fiji and Tonga.

Regional situation summary (1 July 2022)

Rainfall estimates for the last month & three months are shown below. Rainfall was particularly heavy in the western North Pacific and toward the South Pacific sub-tropics with lower amounts along the equator, typical of a La Niña like pattern.

During April-June (top plot), less than 60 mm of rainfall fell over the 3 months in parts of Nauru & Kiribati (Gilbert & Line Islands).

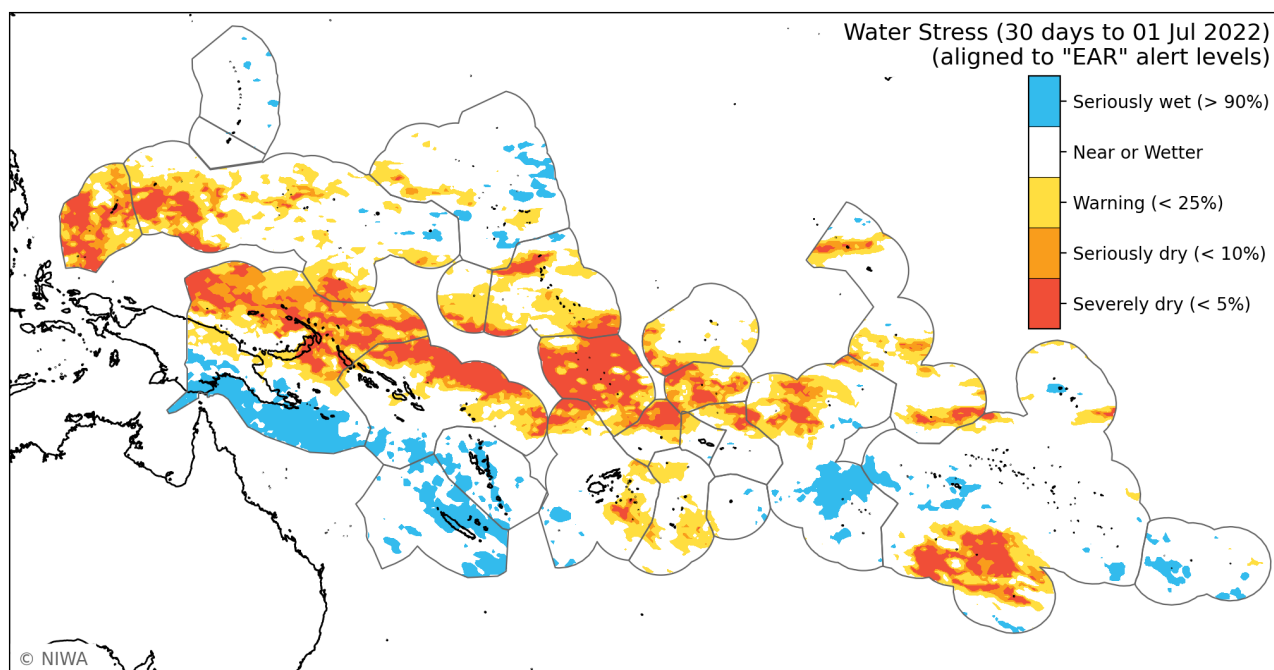
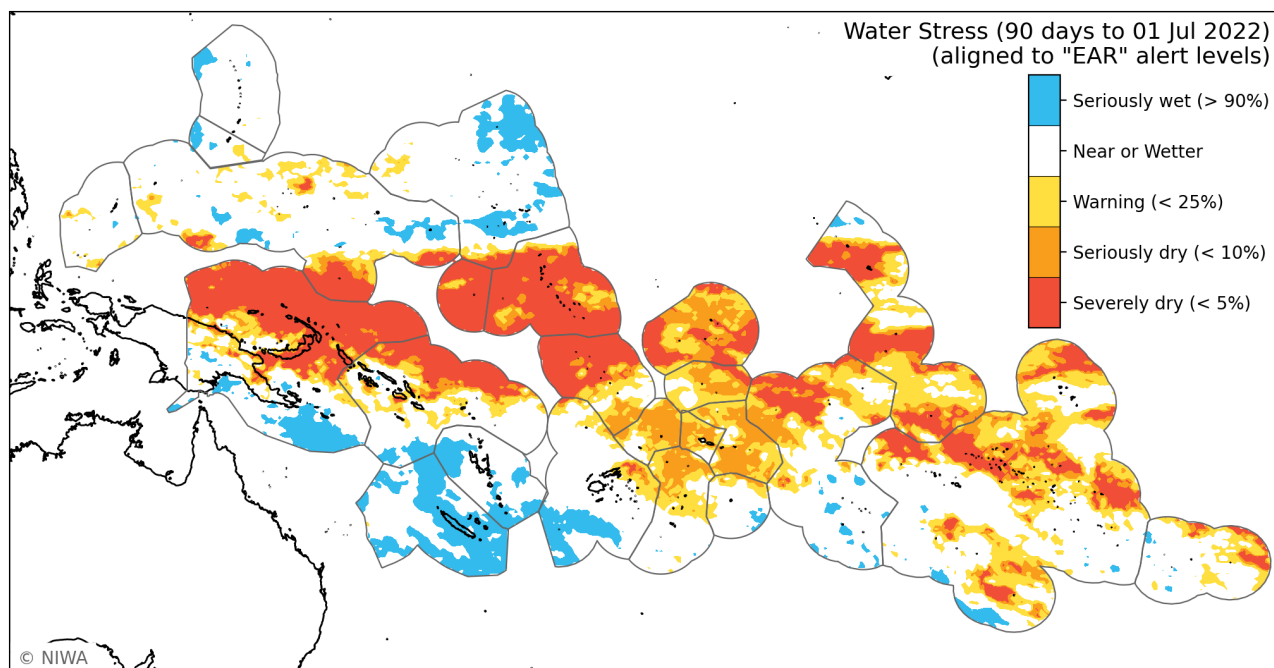
During June (bottom plot), heavy rainfall (>300 mm) fell in parts of FSM, Marshall Islands, Papua New Guinea, with >250 mm in parts of Vanuatu & New Caledonia. Less than 20 mm fell in parts of Fiji (eastern Division), Tonga, Kiribati (Gilbert and Line Islands).



EAR regional situation summary (1 July 2022)

The regional thresholds for cumulative rainfall over the last 90 and 30 days are shown in the plots below. During April-June (top plot), severely or seriously dry conditions affected Papua New Guinea, parts of Solomon Islands, Nauru, Kiribati (Gilbert, Phoenix and Line Islands), Tuvalu, Samoa, American Samoa, Tokelau, Cook Islands, Tuamotu/Gambier Islands, and Austral Islands.

During June (bottom plot), severely (<5th percentile) and seriously dry (<10th percentile) conditions occurred in parts of Palau, FSM, Papua New Guinea, Kiribati (Gilbert and Line Islands), Tuvalu, Tokelau, and Austral Islands.

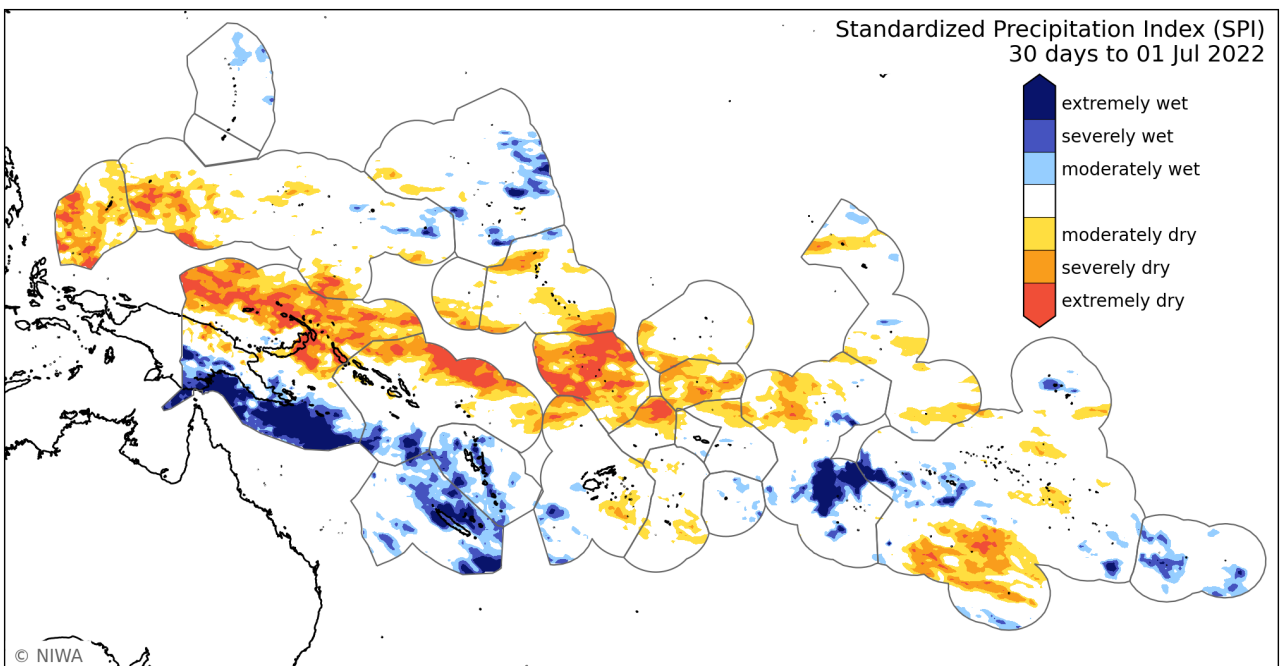
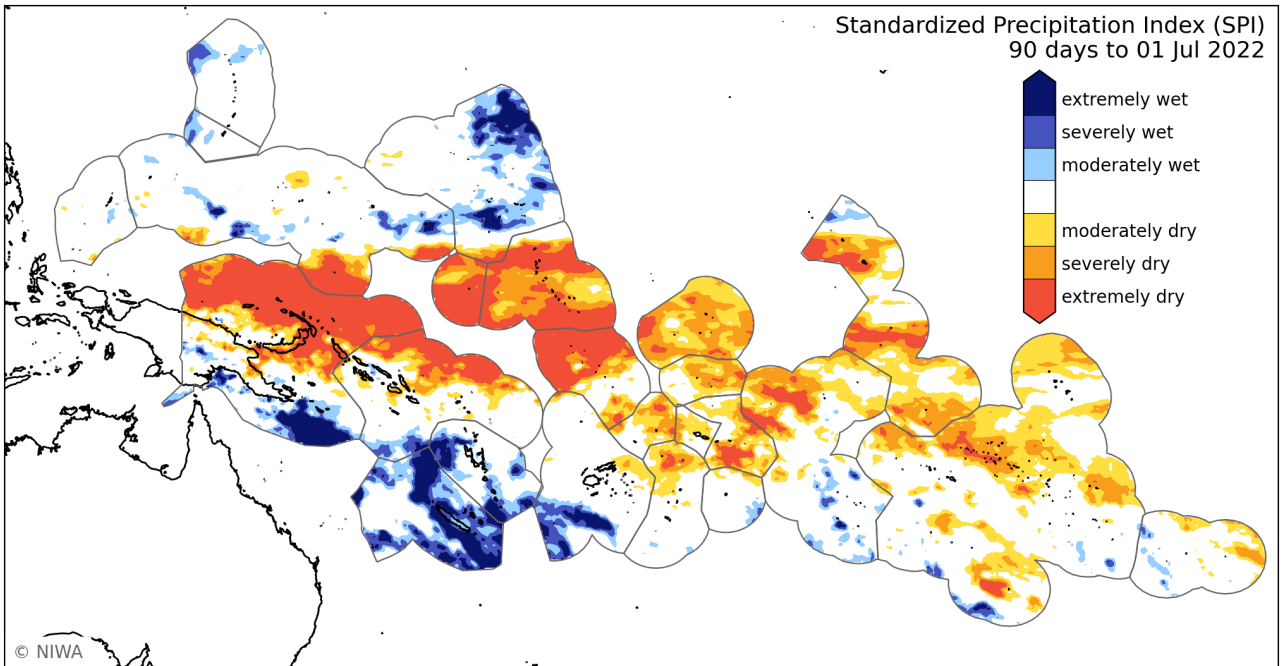


SPI Regional situation summary (1 July 2022)

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

During April-June (top plot), the driest conditions were found in Papua New Guinea, southern FSM, Nauru, Kiribati (Gilbert, Phoenix and Line Islands, Tuvalu, Tokelau, Samoa, Northern Cook Islands, Tuamotu/Gambier Islands and parts of northern Tonga.

During June (bottom plot), extremely or severely dry conditions occurred in Palau, western FSM, northern Papua New Guinea, Tuvalu, Northern Cook Islands, and Austral Islands.

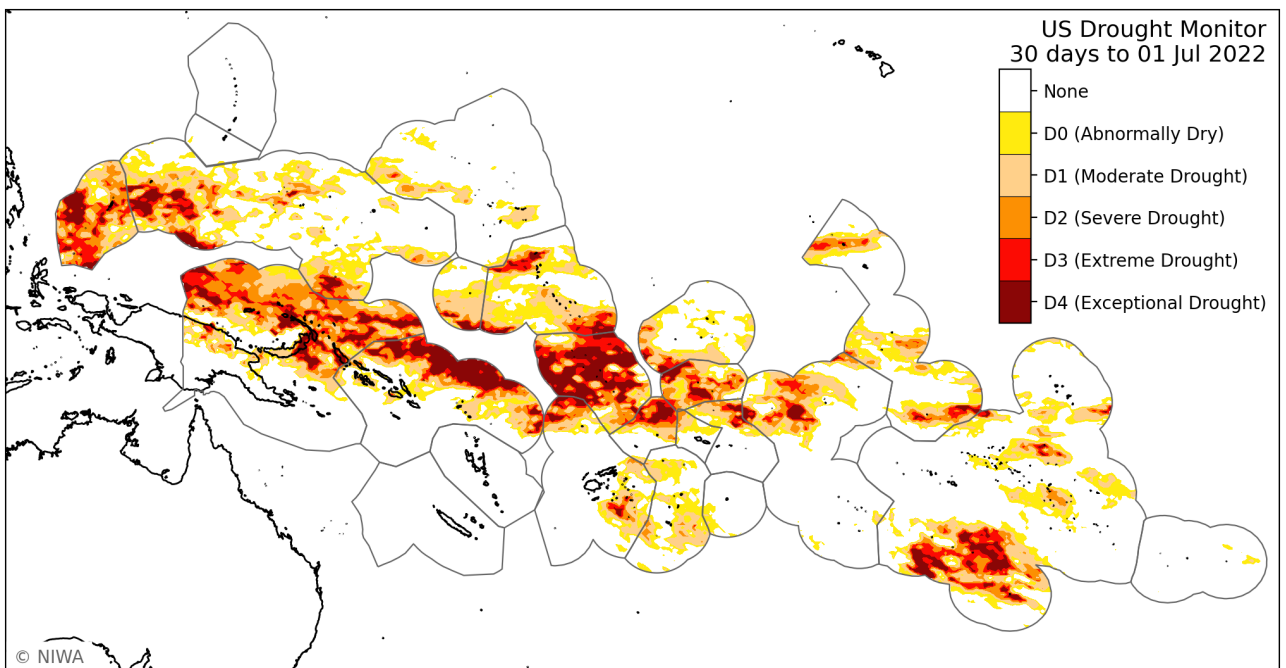
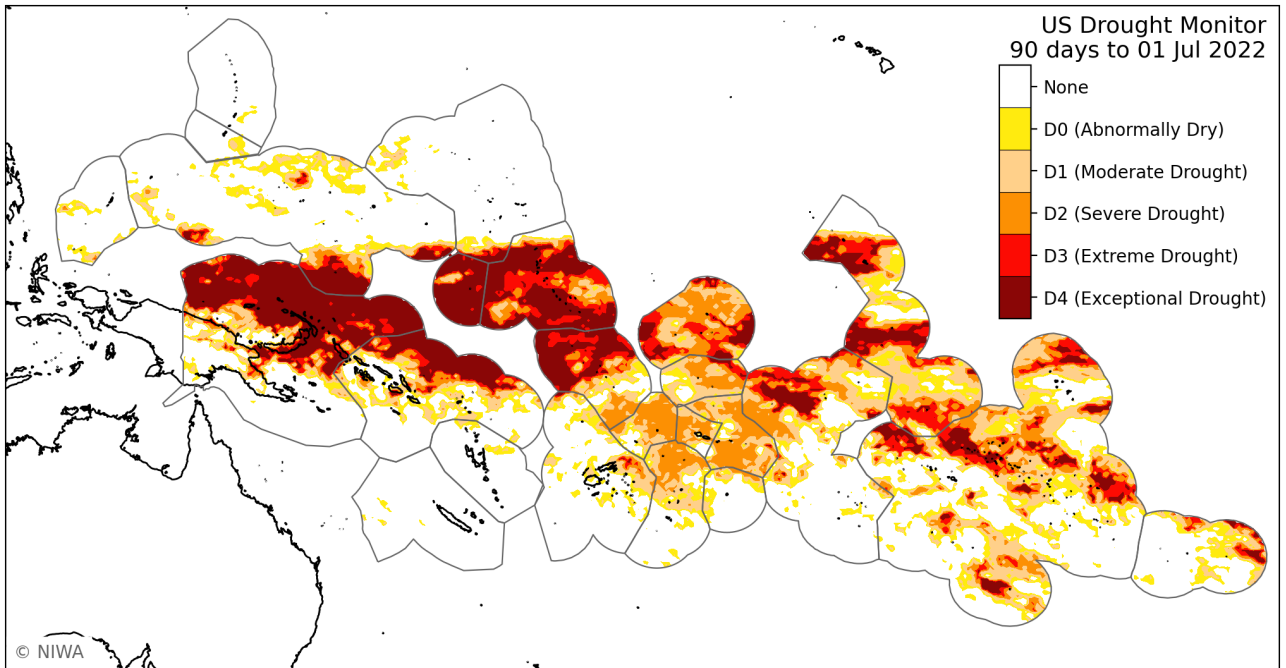


USDM Regional situation summary (1 July 2022)

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

During April-June (top plot), extreme or exceptional drought occurred in Papua New Guinea, parts of the Solomon Islands, Nauru, Kiribati (Gilbert, Phoenix and Line Islands), Tuvalu, Northern Cook Islands, Society Islands, Tuamotu/Gambier Islands, Austral Islands, and Marquesas.

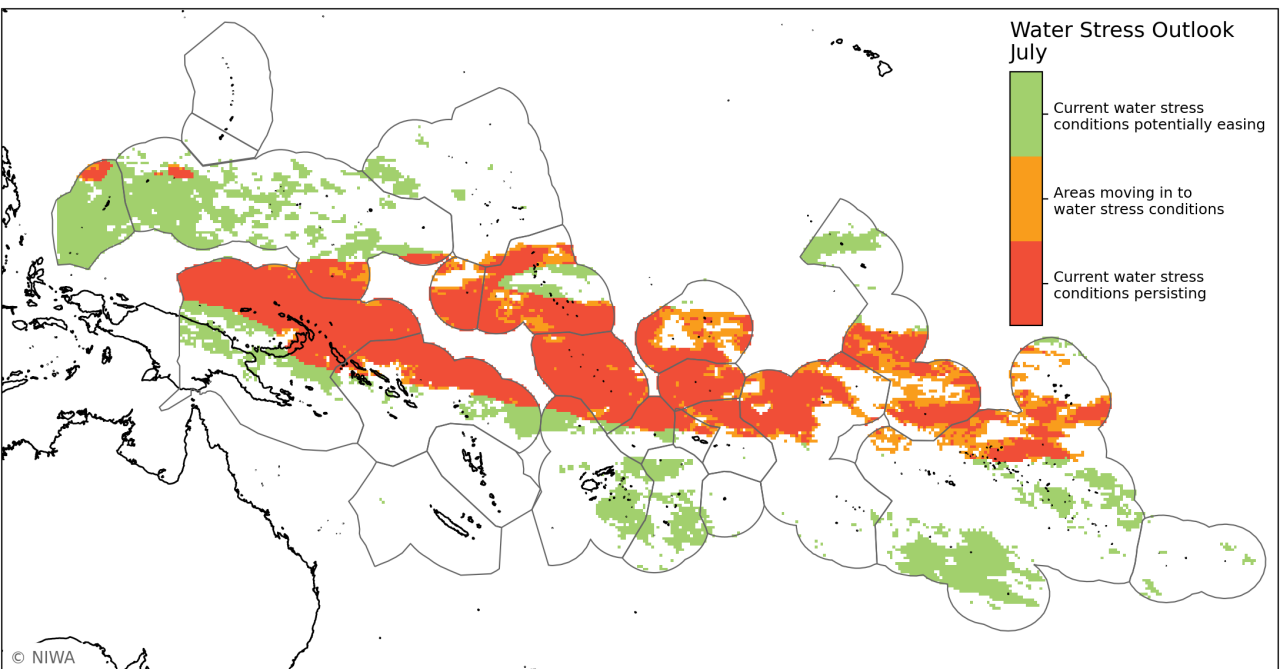
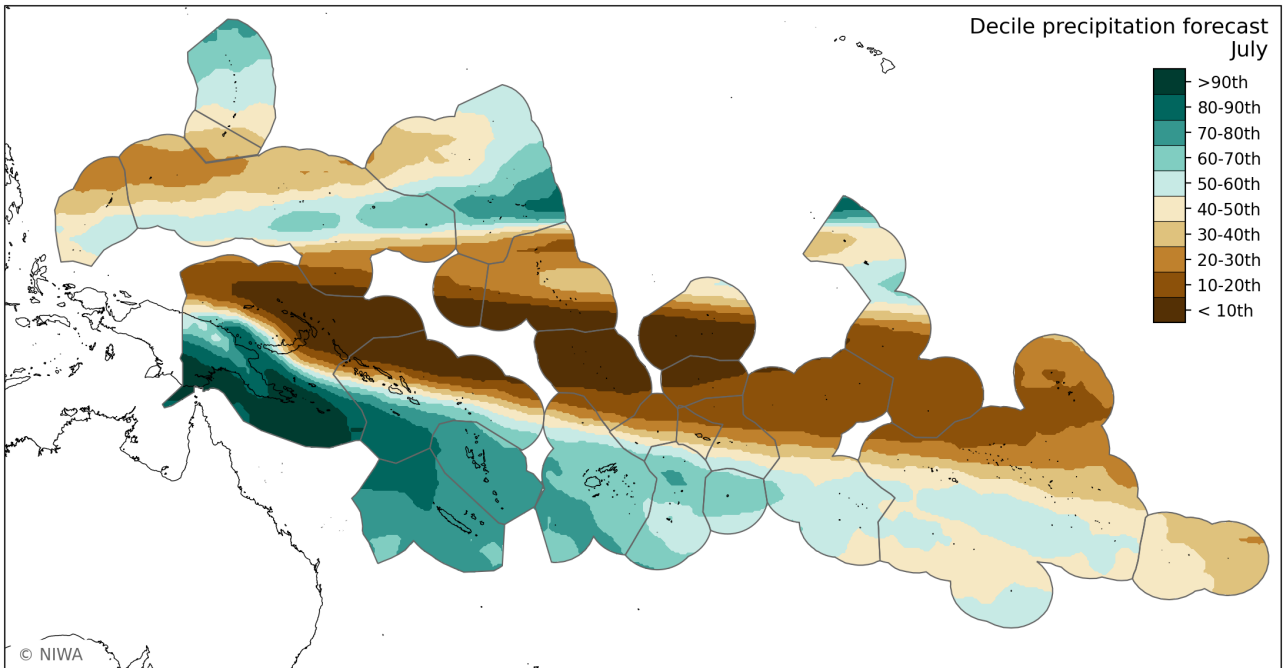
During June (bottom plot), extreme or exceptional drought occurred in Palau, western FSM, Papua New Guinea, Tuvalu, Tokelau, parts of Kiribati (Gilbert and Line Islands), parts of Fiji, Northern Cook Islands, & the Austral Islands.



July 2022 forecast summary

During July, there is a high chance for drier than normal conditions along and extending southeastward of the equator and in parts of the western North Pacific.

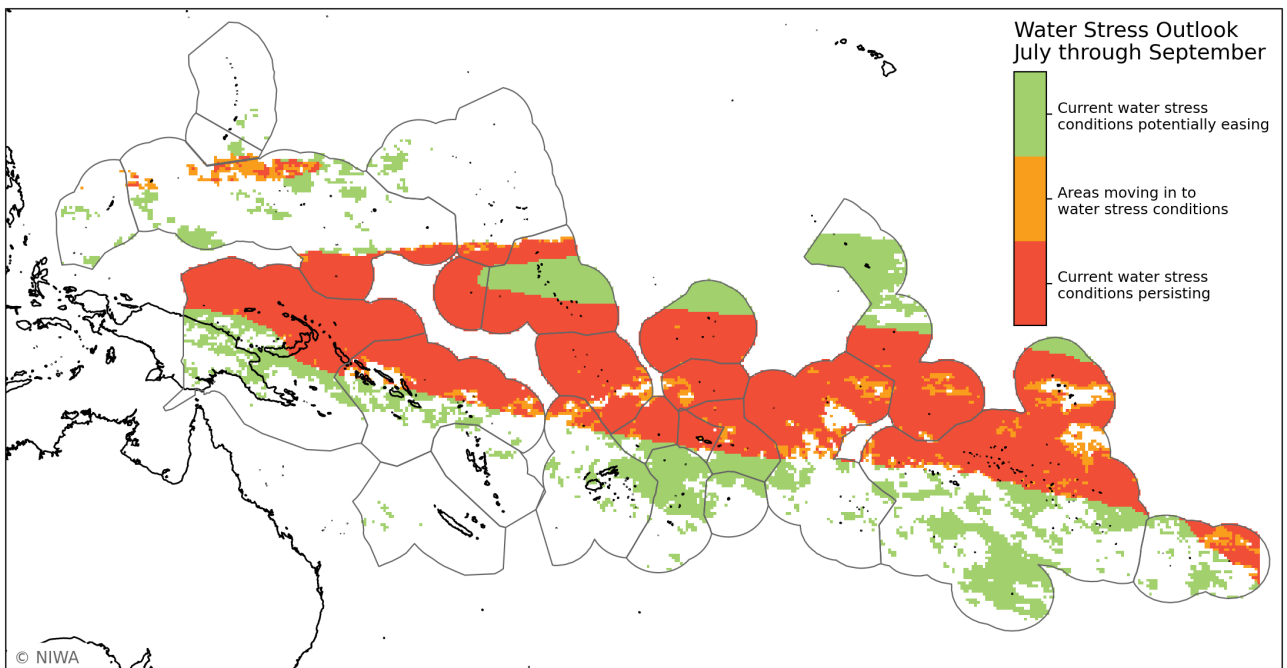
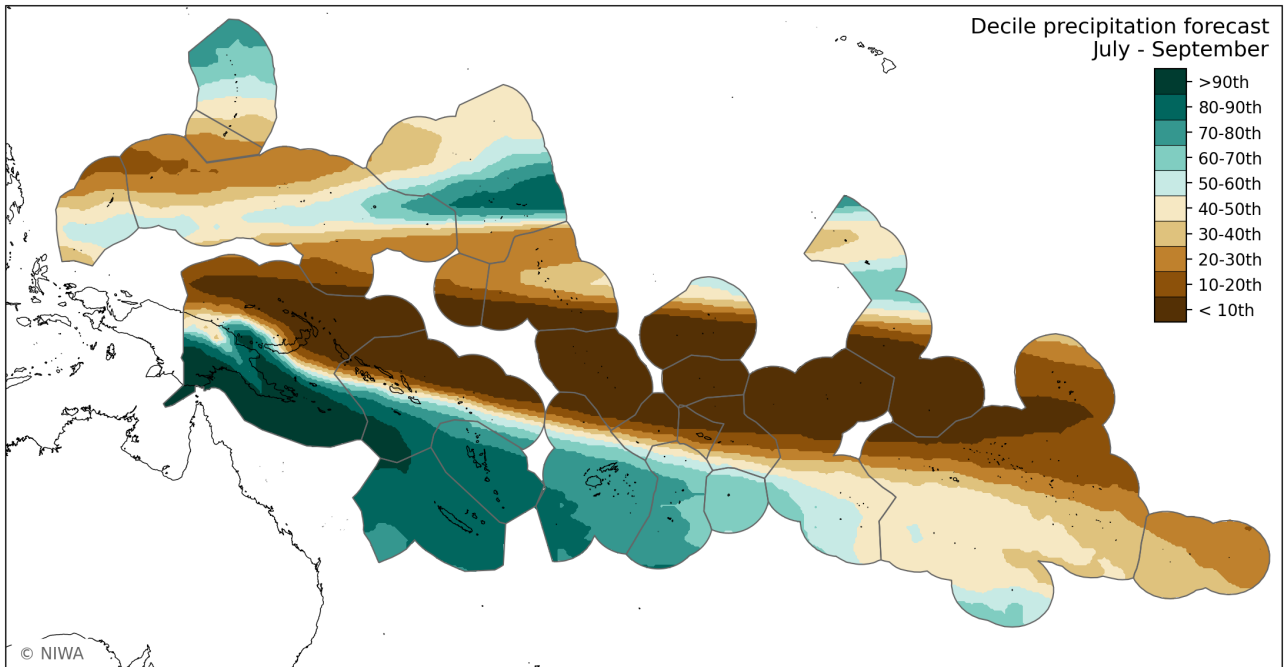
The island groups most likely to be drier than normal are parts of Palau, northern FSM, eastern PNG, northern Solomon Islands, Nauru, Kiribati, Tuvalu, Tokelau, northern Wallis & Futuna, Samoa, Northern Cook Islands, Marquesas, the Tuamotu Archipelago, and Pitcairn Islands. Water stress is forecast to continue in many of these island groups, but ease in southern Palau, southern and western FSM, parts of Fiji, Tonga and parts of the Austral Islands.



July – September 2022 forecast summary

Seasonal rainfall patterns remain consistent with La Niña, with drier than normal conditions along and extending southeastward of the equator and in parts of the western North Pacific.

The island groups most likely to be drier than normal are northern Palau, northern and southern FSM, northern PNG, northern Solomon Islands, Nauru, Kiribati, Tuvalu, Tokelau, northern Wallis & Futuna, Samoa, American Samoa, Northern Cook Islands, Marquesas, the Tuamotu Archipelago, and Pitcairn Islands. Water stress may persist over many of these island groups but ease southern PNG, southern Solomon Islands, parts of Kiribati, Tonga, Fiji, southern Tuvalu, and parts of the Society and Austral Islands.

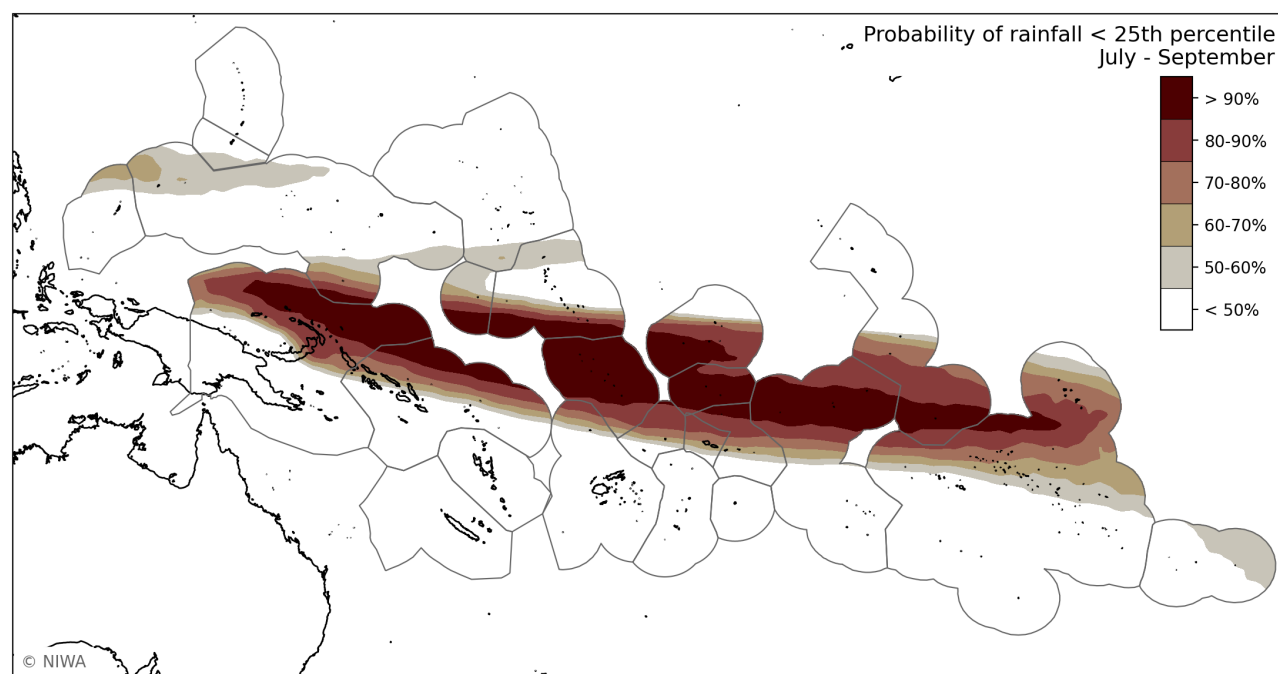
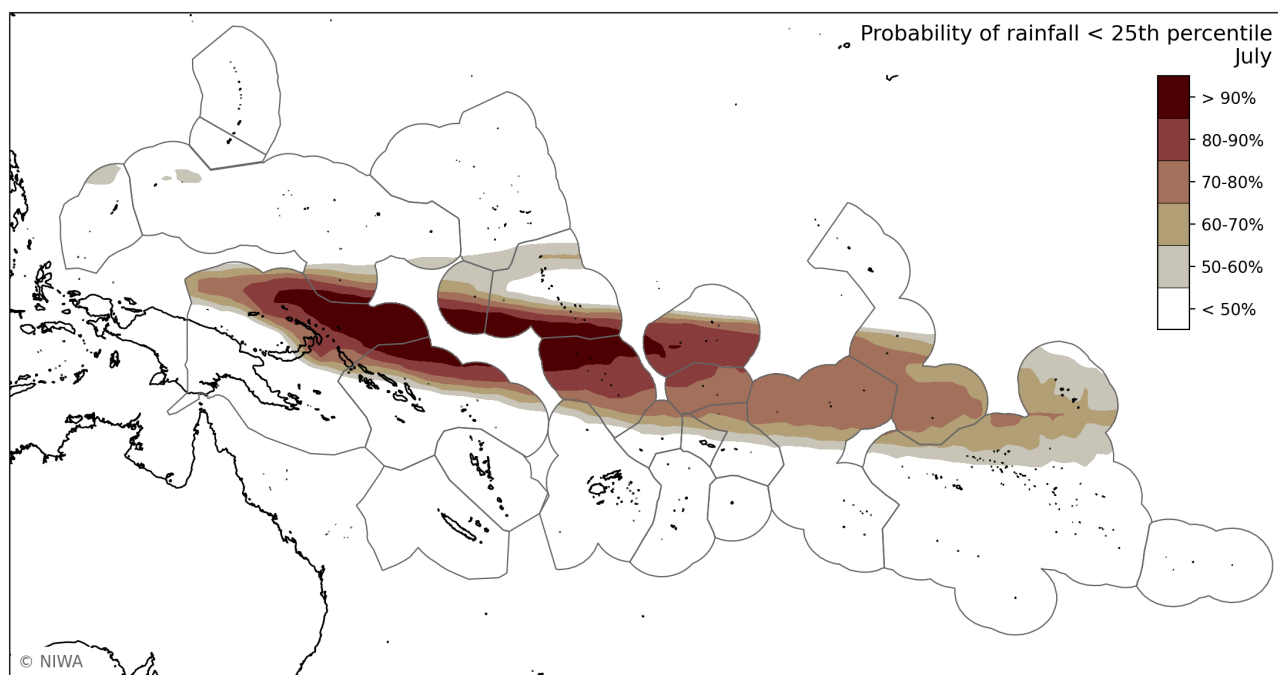


Probabilities of rainfall < 25th percentile

The probability (likelihood) of dry conditions with cumulative rainfall being less than the 25th percentile for July (top plot) and for the season (July-Sept, bottom plot) are shown.

For July, very dry conditions are most likely for northern PNG, northern Solomon Islands, Nauru, Tuvalu, Tokelau, northern Wallis & Futuna, parts of Kiribati, Northern Cook Islands, Marquesas and northern Tuamotu Archipelago.

For July-September, very dry conditions are likely in many of these island groups, with chances increasing for Northern Cook Islands and northern French Polynesia.






Island Climate Update



About

Understanding the Island Climate Update bulletin

The ICU utilises satellite rainfall data from the [NASA GPM-IMERG](#) and a multi-model ensemble forecast utilising 480+ members derived from nine Global Climate Models available from the [Copernicus Climate Data Store](#).

Bulletin page	Description
Rainfall watch	Rainfall plots are derived from NASA GPM-IMERG satellite rainfall 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 NASA GPM-IMERG satellite rainfall data. Different Pacific Island Meteorological Services use different approaches to defining drought and water stress. Hence 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>
 Online Resources	<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 UNDM indices. • A range of probabilistic one to five monthly and seasonal forecast plots updated shortly after the 15th of each month.



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 PRAS2201.

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