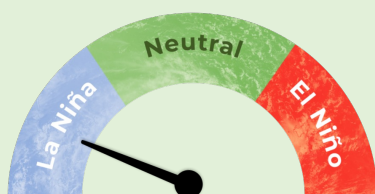


Island Climate Update



ENSO Watch
August 2022

Recent



La Niña

La Niña conditions continued in the equatorial Pacific during July.

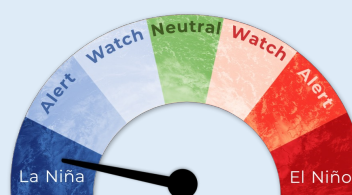
Sea surface temperatures (SSTs) were in the neutral range during July, but the Southern Oscillation Index (SOI) was +1.7 for May-July, well above the La Niña threshold.

Very strong trade winds during July are expected to lead to a restrengthening of La Niña in the coming months.

70% chance for **La Niña** conditions during **August – October 2022.**

Chance for **ENSO neutral** conditions during **November 2022 – January 2023**

65%



La Niña Event

Forecast

ENSO situation summary

The NINO3.4 Index anomaly (in the central equatorial Pacific) over the last month (through 31 July) was -0.34°C (climatology: 1961-1990); the latest weekly anomaly was -0.43°C , showing a late-month cooling trend. The index was -0.63°C relative to the more modern 1991-2020 climatological period. The July monthly SOI was +0.9, which was near the La Niña threshold.

Large changes took place in the subsurface equatorial Pacific during July in response to much stronger than normal trade winds. The strong trades drove the development of an upwelling Kelvin wave, which will likely further cool the equatorial Pacific in the coming months.

At the end of July, substantially cooler than average subsurface waters (3°C to 5°C below average) were focused in the central Pacific, particularly at 100-150 m depth. The effect of the upwelling Kelvin wave will likely see cooler waters migrate eastward

and toward the surface over the next 1-2 months, reinforcing the oceanic La Niña signal.

Trade winds across the equatorial Pacific were much stronger than normal during July, in some cases by as much as 10-15 knots – this qualified as near-record strength. This was associated with rapidly cooling sub-surface ocean temperatures across the central part of the basin. Strong trade winds are predicted to continue over the next month or beyond with cooling seas likely.

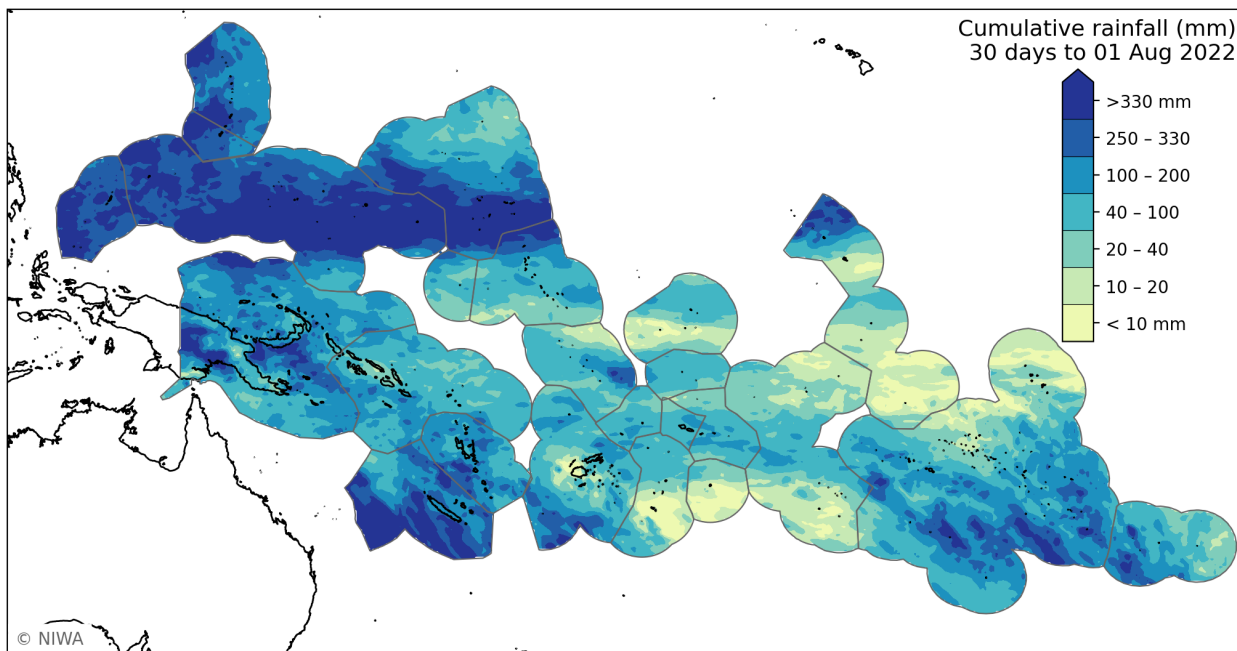
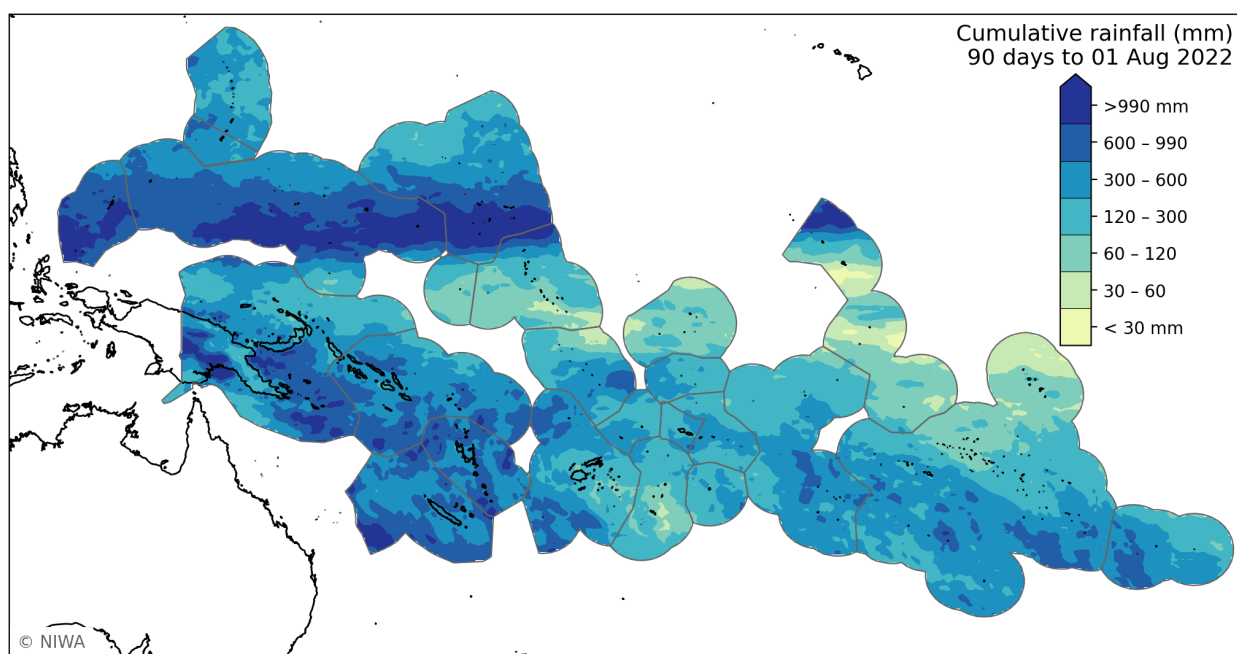
Taking these factors into account, La Niña conditions are most likely to continue during August-October (70% chance). During November-January, there is a 65% chance for La Niña and a 35% chance for ENSO neutral. During February-April, ENSO neutral is favoured at 65%. Overall, this implies that a “triple dip” La Niña (three consecutive La Niña events from 2020-2022) is likely.

Regional situation summary (1 August 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 May-July (top plot), less than 120 mm of rainfall fell in parts of Nauru, Kiribati, Tonga, and Tuamotu/Gambier Islands.

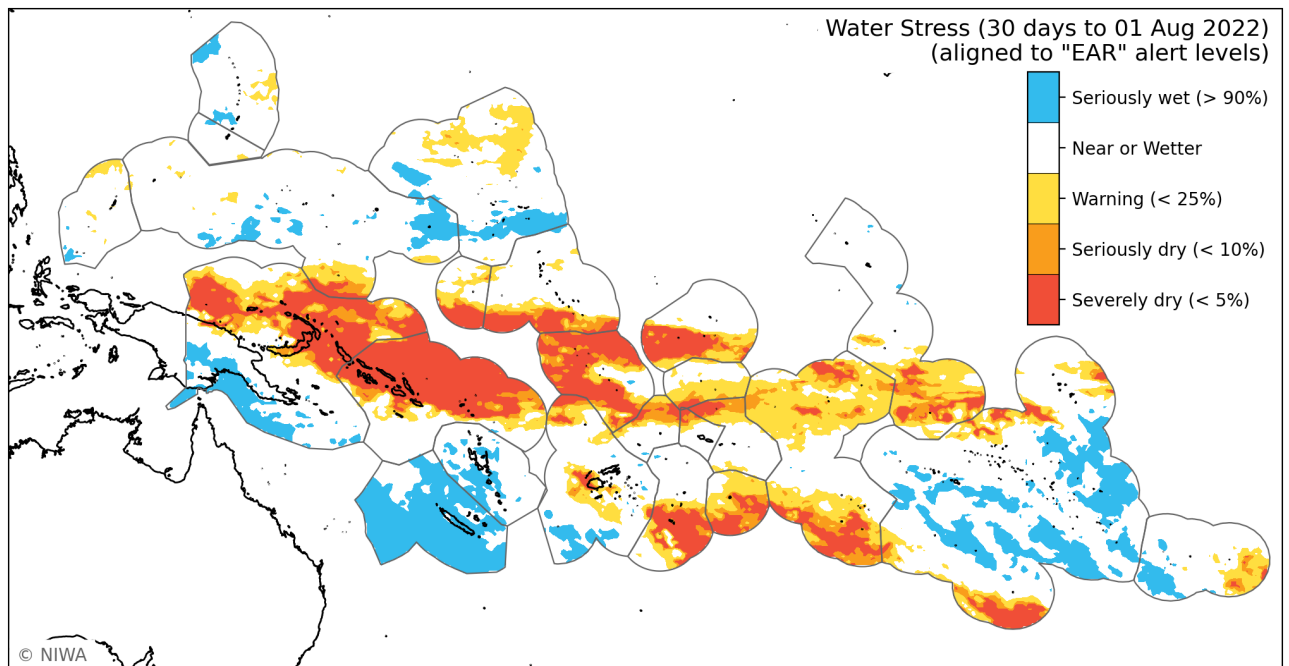
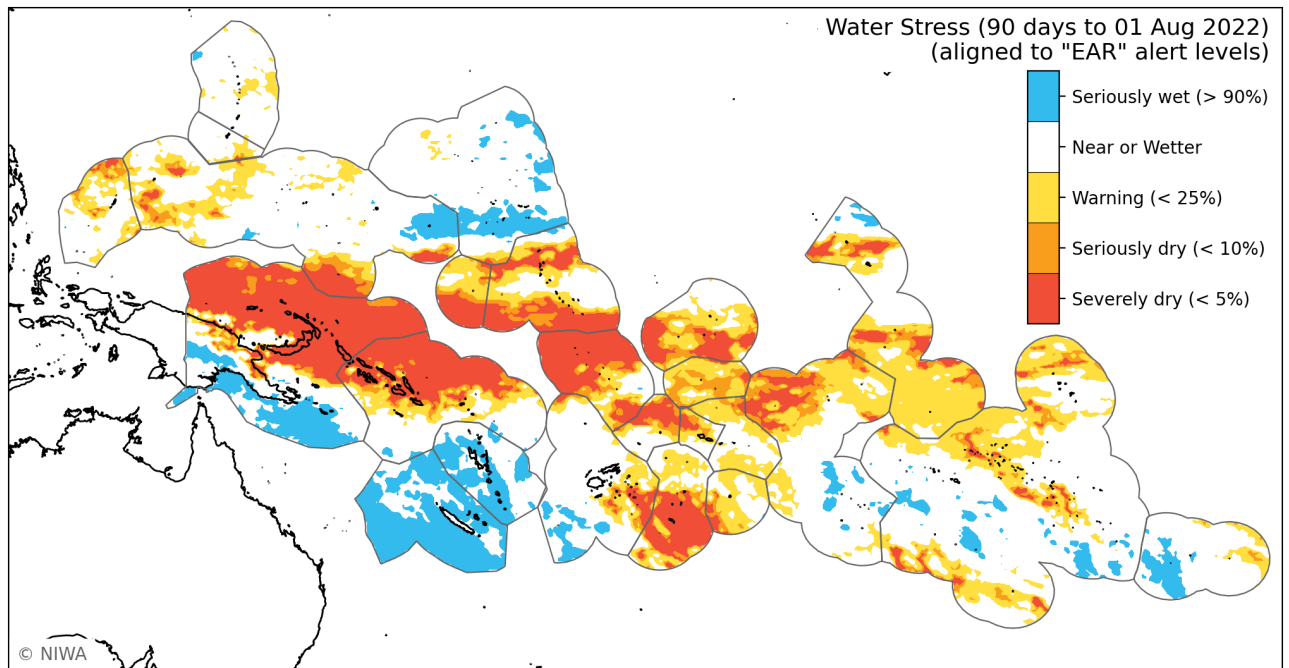
During July (bottom plot), less than 20 mm of rainfall fell in parts of Kiribati (Phoenix and Line Islands), Northern Cook Islands, Marquesas, Northern Tuamotu/Gambier Islands, Fiji (Western Division), Tonga, Niue, and Southern Cook Islands.



EAR regional situation summary (1 August 2022)

The regional thresholds for cumulative rainfall over the last 90 and 30 days are shown in the plots below. During May-July (top plot), severely or seriously dry conditions affected Papua New Guinea, Solomon Islands, Nauru, Kiribati (conditions became slightly less dry during July, particularly in the north), Tuvalu, Tokelau, American Samoa, Tokelau, Northern Cook Islands, and Tuamotu/Gambier Islands.

During July (bottom plot), severely and seriously dry conditions occurred in parts of Papua New Guinea, Solomon Islands, southern parts of Kiribati, Tuvalu, Fiji (western division), Tonga, Niue, and Cook Islands.

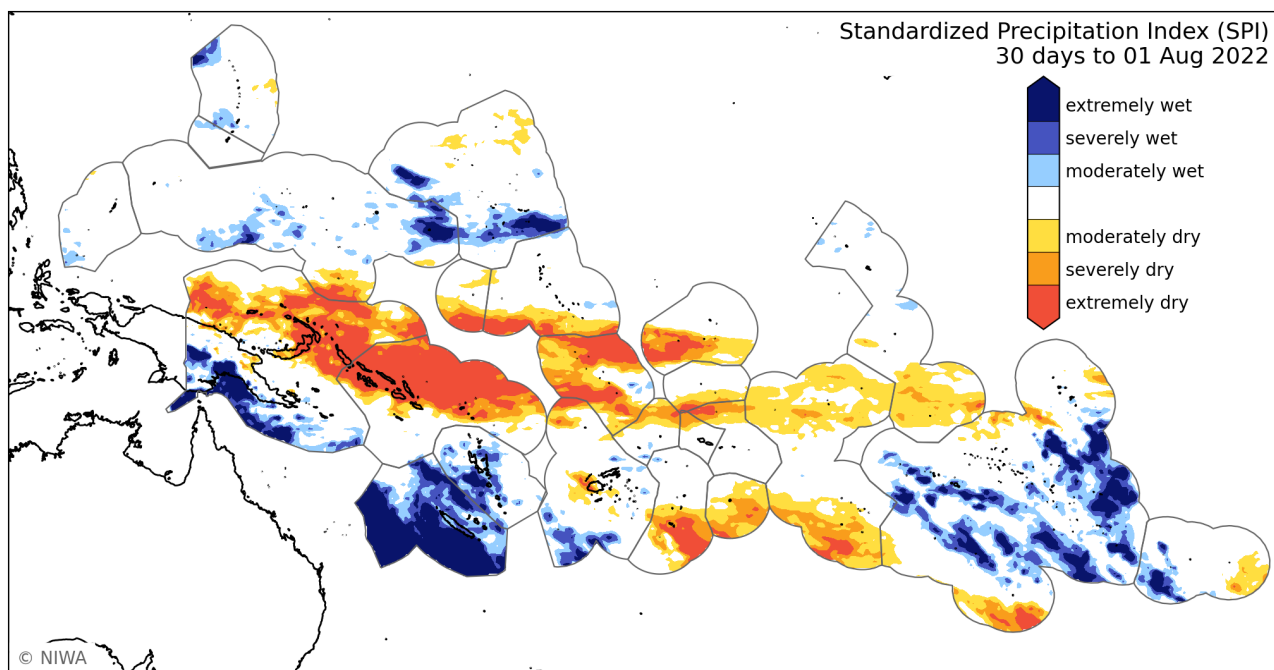
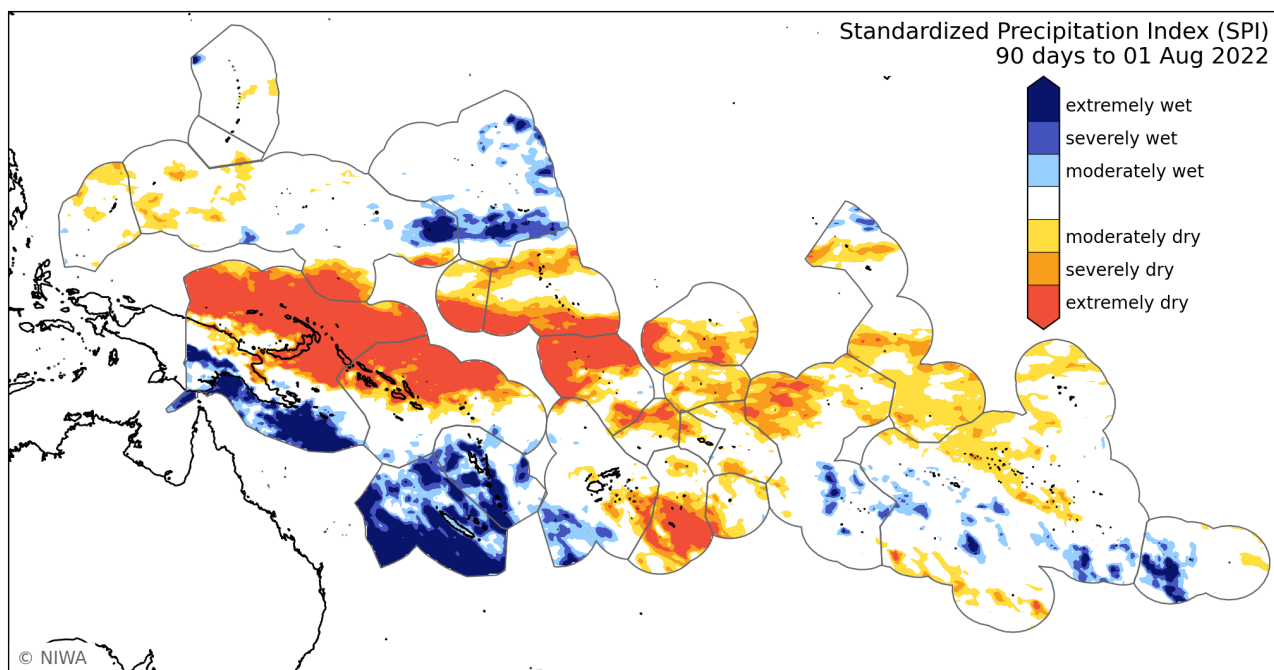


SPI Regional situation summary (1 August 2022)

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

During May-July (top plot), the driest conditions were found in Papua New Guinea, southern FSM, Solomon Islands, Kiribati, Tuvalu, Tokelau, Tonga, and Northern Cook Islands. Conversely, conditions were extremely wet in parts of New Caledonia and Vanuatu.

During July (bottom plot), extremely or severely dry conditions occurred in Papua New Guinea, Solomon Islands, southern Kiribati, Tuvalu, Fiji (western division), Tonga, Niue, and Southern Cook Islands.

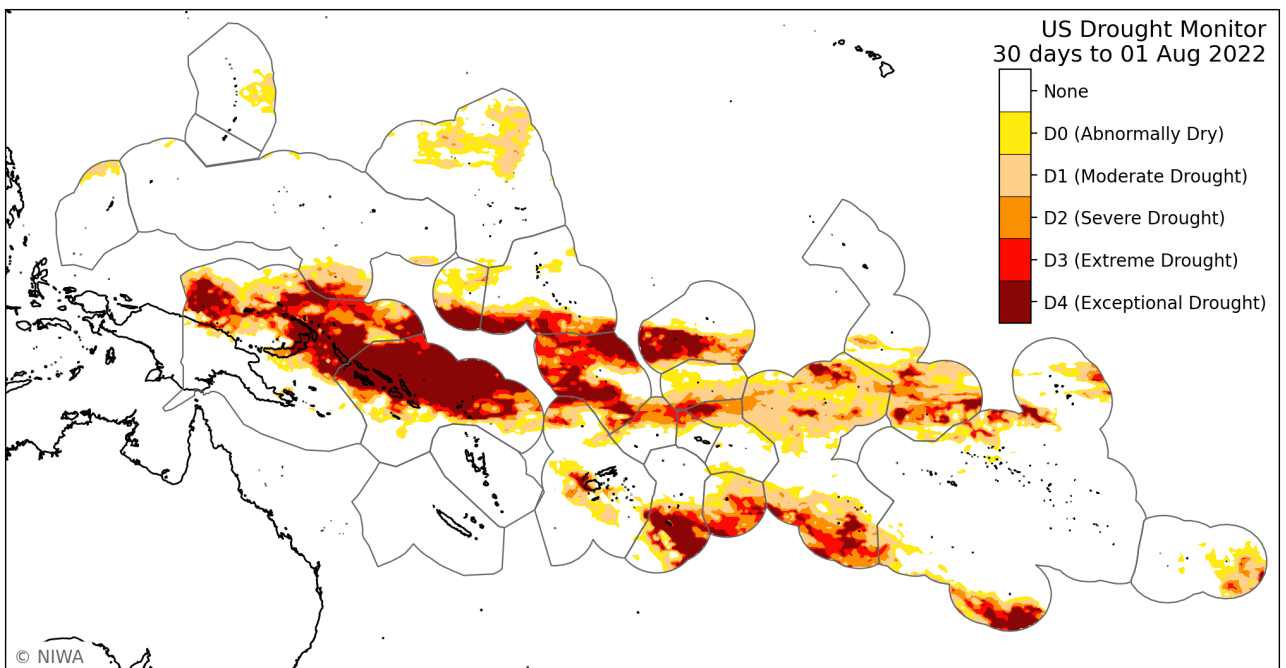
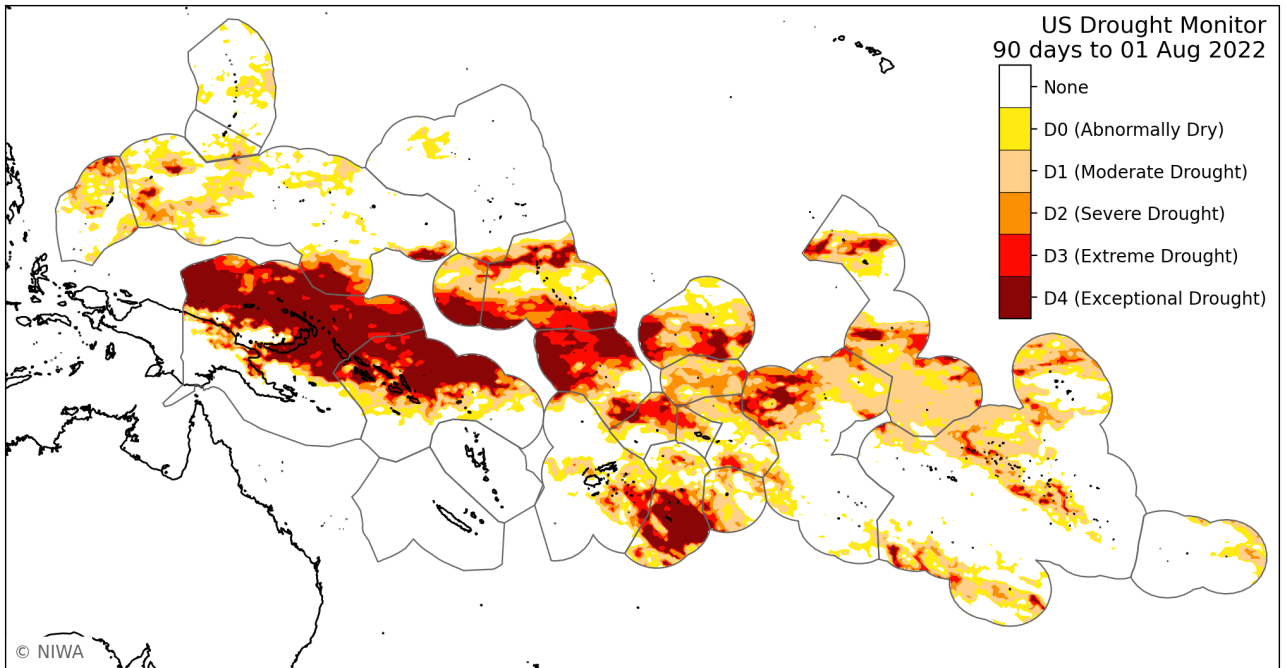


USDM Regional situation summary (1 August 2022)

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

During May-July (top plot), extreme or exceptional drought occurred in Papua New Guinea, southern FSM, Solomon Islands, Kiribati, Tuvalu, eastern Fiji, Tonga, Northern Cook Islands, and Tuamotu/Gambier Islands.

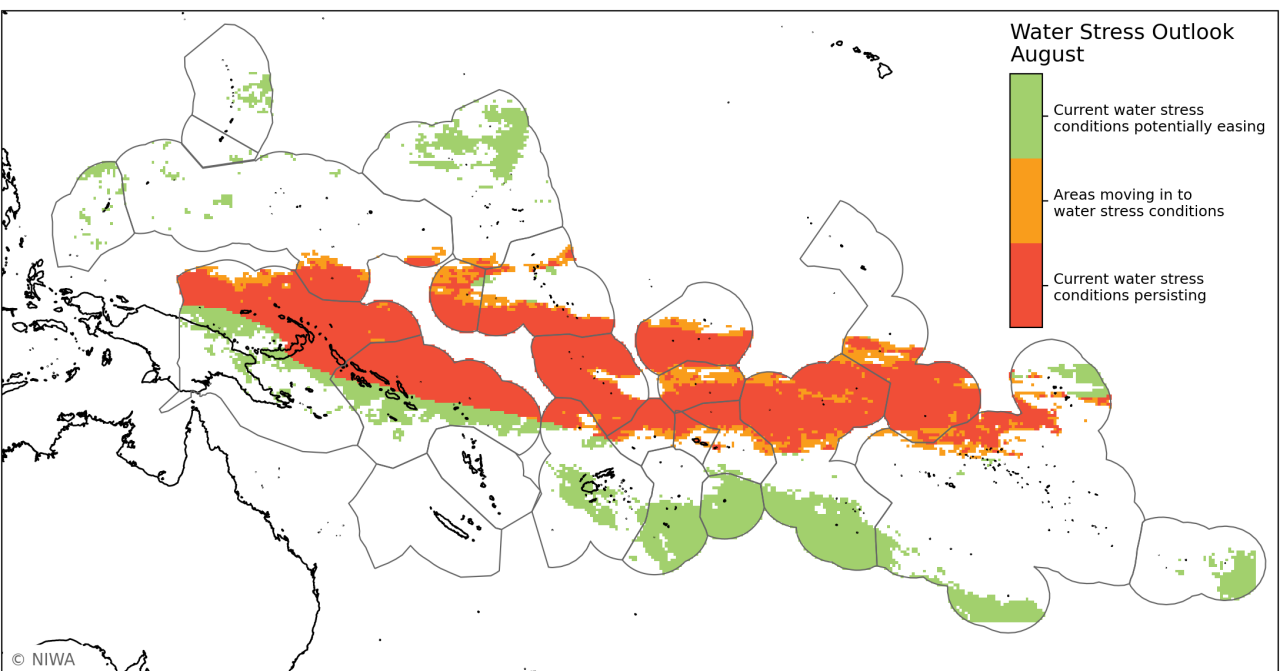
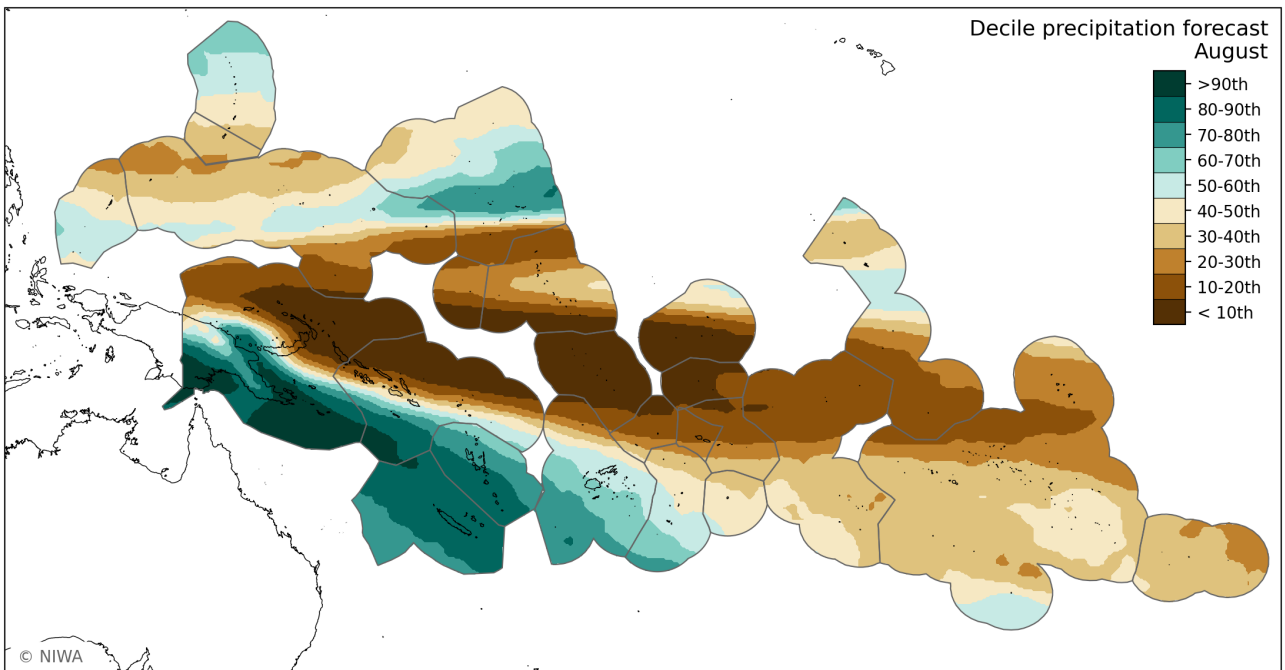
During July (bottom plot), extreme or exceptional drought occurred in Papua New Guinea, southern FSM, Solomon Islands, southern Kiribati, Tuvalu, Fiji (western division), Tonga, Niue, and Cook Islands.



August 2022 forecast summary

During August, there remains a high chance for drier than normal conditions along and extending southeastward of the equator and in parts of the western North Pacific, generally consistent with La Niña. The August forecast has a higher chance for drier than normal conditions east of Tonga compared to July.

Water stress is forecast to continue or develop in parts of eastern Papua New Guinea, southern FSM, Solomon Islands, Nauru, southern Kiribati, Tuvalu, Northern Cook Islands, and Tuamotu/Gambier Islands. Water stress conditions may ease in Fiji and Tonga.

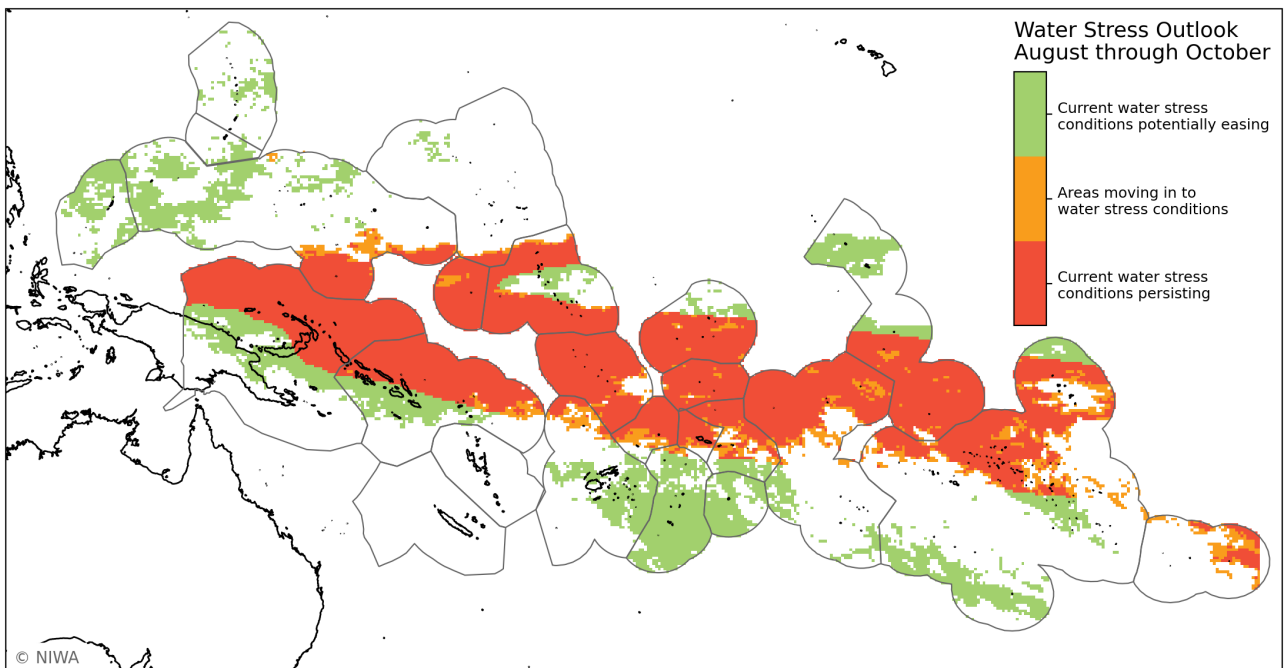
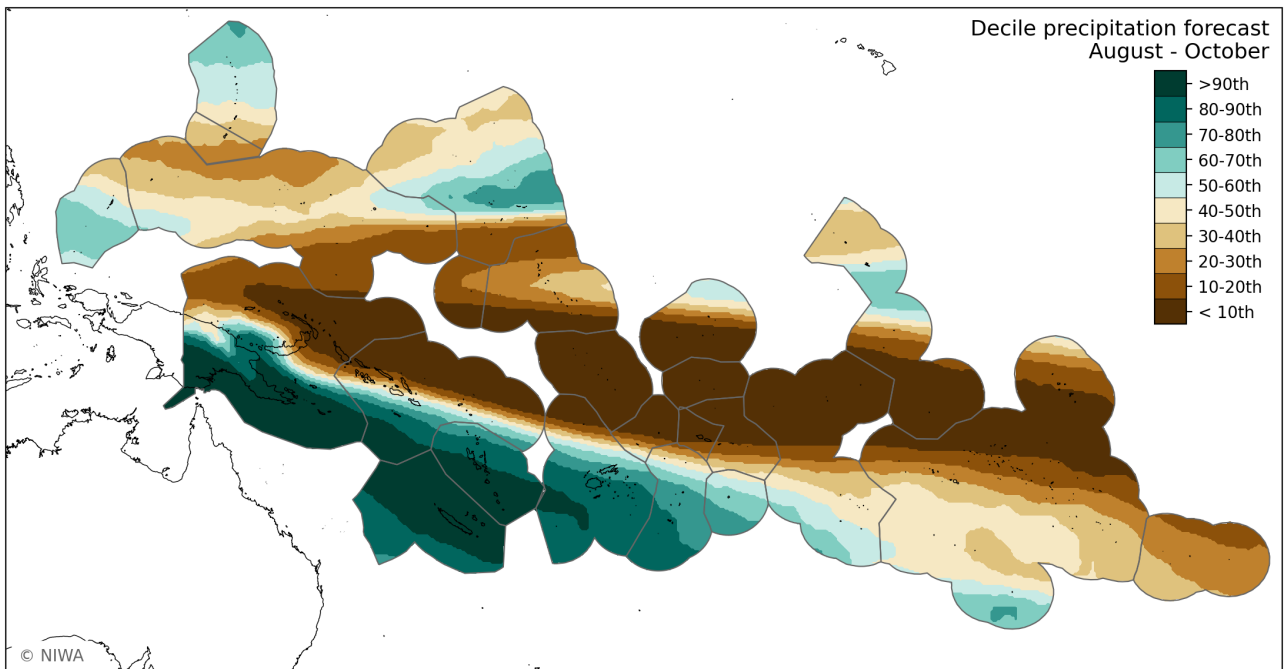


August – October 2022 forecast summary

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 Guam, FSM, eastern Papua New Guinea, Solomon Islands, Nauru, Kiribati, Tuvalu, Tokelau, Wallis & Futuna, Samoa, American Samoa, Northern Cook Islands, and Polynesia. Overall, the highest chance for drier than normal conditions shifted southward slightly compared to last month.

Water stress may persist over many of these island groups but ease in Palau, Fiji, Tonga, and Niue.

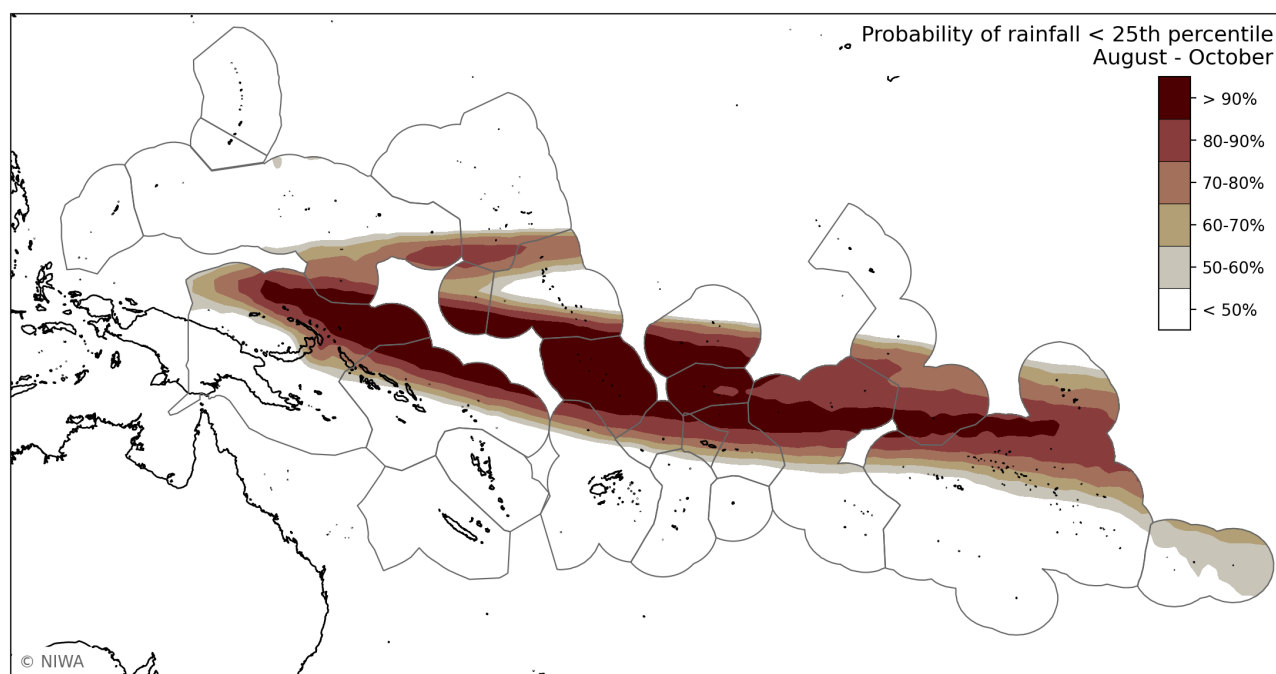
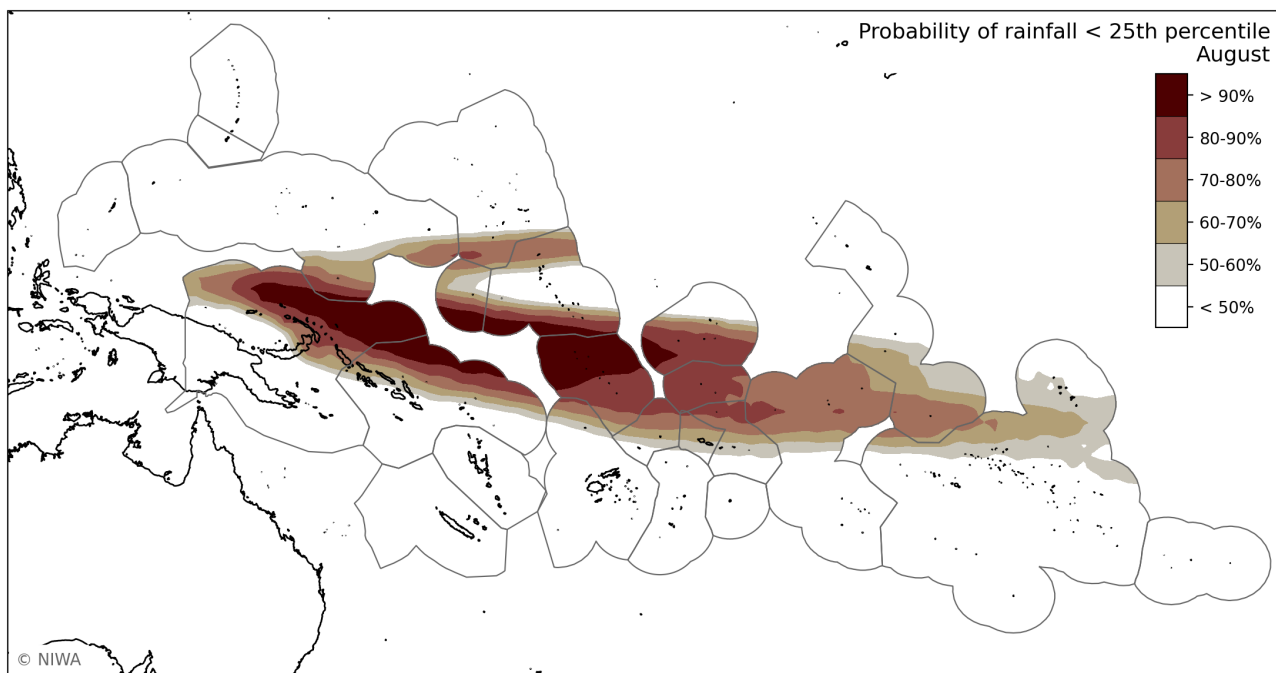


Probabilities of rainfall < 25th percentile

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

For August, very dry conditions are most likely in eastern PNG, far southern FSM and Marshall Islands, northern Solomon Islands, Nauru, southern Kiribati, Tuvalu, Tokelau, northern Wallis & Futuna, Samoa, American Samoa, Northern Cook Islands, and northern Tuamotu/Gambier Islands.

For August-October, very dry conditions are likely in many of these island groups, with chances increasing for Kiribati, Samoa, American Samoa, Northern Cook Islands, and parts of 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.

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