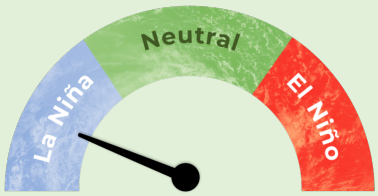
Island Climate Update

NIWA
Taihoro Nukurangi

ENSO Watch
May 2022

Recent



La Niña

La Niña conditions continued in the equatorial Pacific during April.

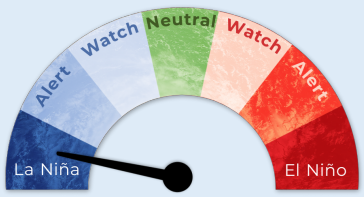
Sea surface temperatures (SSTs) were near the La Niña threshold in the central equatorial Pacific during April, on -0.66˚C.

The Southern Oscillation Index (SOI) was +2.1 during April, well within the La Niña range.

Forecast

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

Chance for **La Niña** conditions during **August - October 2022.** **50%**



La Niña Event

ENSO situation summary

The NINO3.4 Index anomaly over the last month (to 1 May) was -0.66˚C, an increase compared to the previous month but still near the La Niña threshold. The April monthly SOI was +2.1, well within the La Niña range and the 3rd highest April value on record since at least 1876 (only April 2011 and April 1904 were higher); this suggests that the atmospheric imprint of La Niña is strong.

Upper-oceanic heat content (OHC) continued to decrease. Below normal OHC was present in the central and eastern Pacific and above normal west of the International Date Line. This pattern was consistent with continued La Niña conditions.

In the subsurface equatorial Pacific, a narrow layer of above average waters was present just below the surface in the eastern Pacific. If this were to surface over the next month, it could lead to warming conditions in the NINO 1 and 2 regions. In the western Pacific, a warm pool of water intensified at depth (below 100 m). The potential eastward progression of this warm pool will be monitored in the coming months.

La Niña conditions are forecast to continue during May-July (60% chance). Between August-October, La Niña and ENSO neutral conditions are about equally likely (45-50% chance). During November-January, La Niña is favoured at around 50%.

The 2021-22 Southwest Pacific tropical cyclone (TC) season has ended. There were 7 TCs in total, slightly fewer than normal. A pulse of the Madden-Julian Oscillation developing in the Indian Ocean is forecast to move across the Pacific in mid-May; although TC season has ended, remain vigilant.

Island Climate Update

Rainfall Watch

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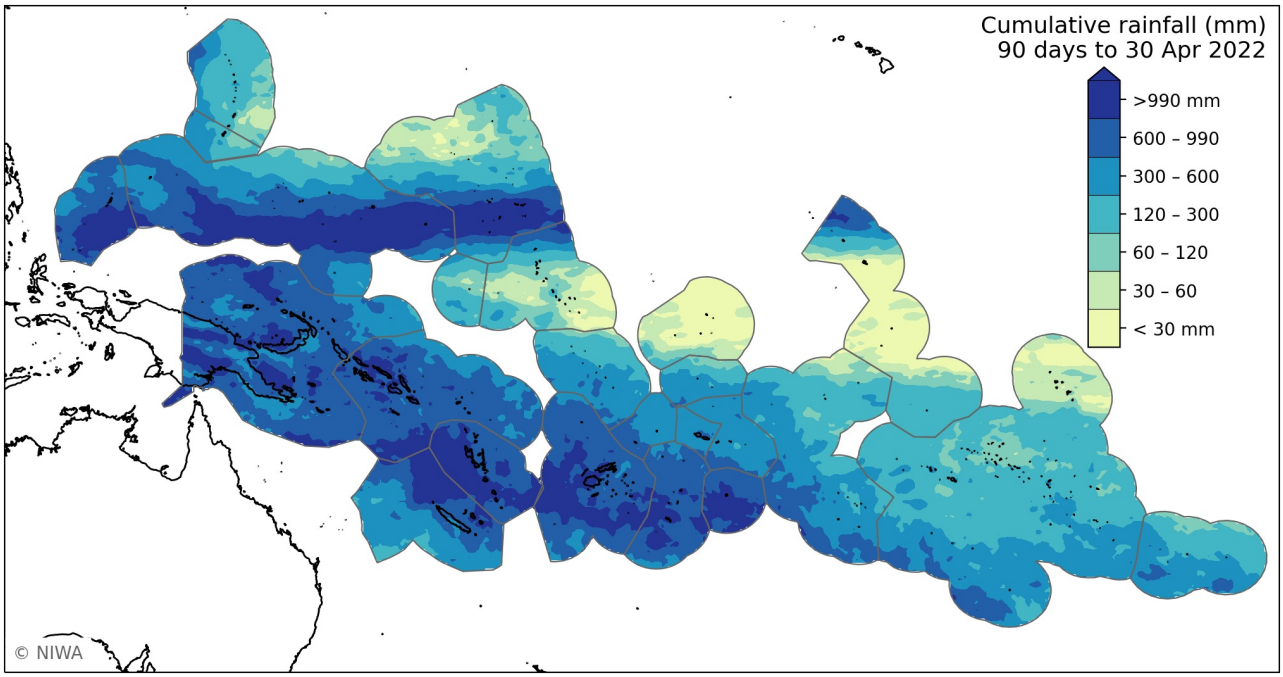
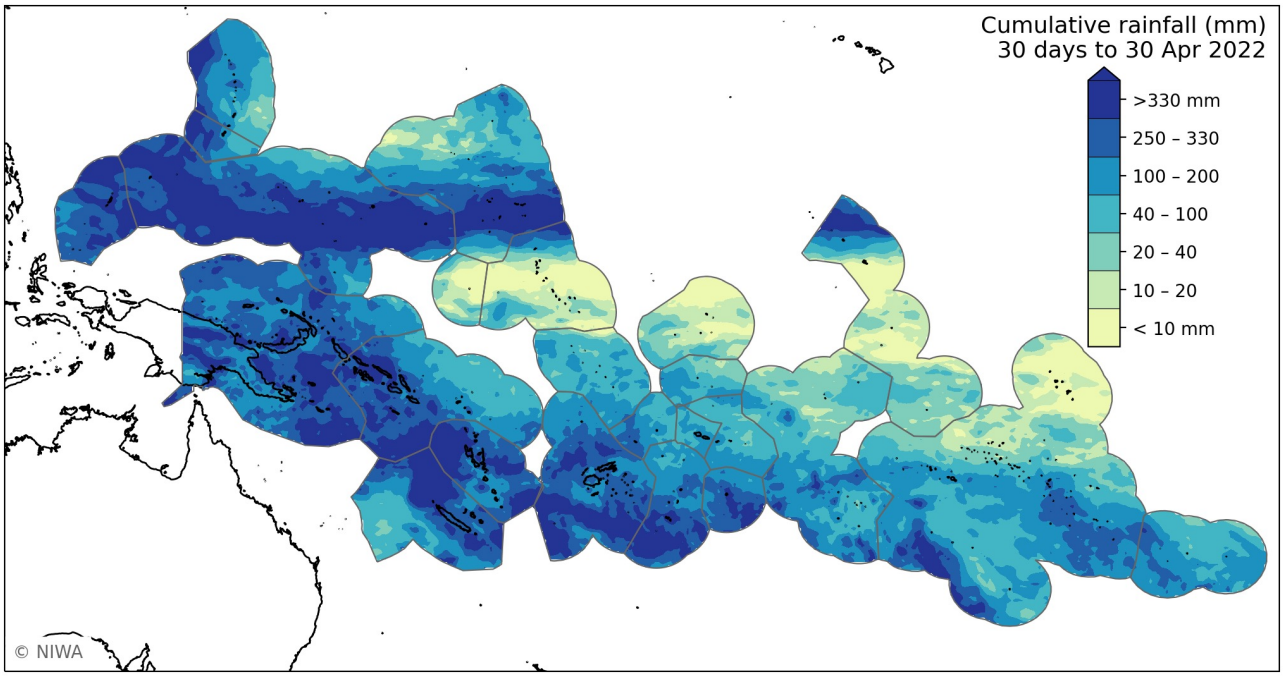
Regional situation summary (30 April 2022)

Rainfall estimates for the last month and three months are shown below. Rainfall was particularly heavy in the western North Pacific with lower amounts along the equator toward the east.

During April (bottom plot), particularly heavy rainfall totals (> 300 mm) fell in parts of Palau, FSM, southern Marshall Islands, PNG, Solomon Islands, Vanuatu, New Caledonia, and Niue. Less than 20 mm of rainfall fell in Nauru, Kiribati, and Marquesas.

During February-April (top plot), less than 60 mm of rainfall fell in parts of Kiribati and Marquesas.





Island Climate Update

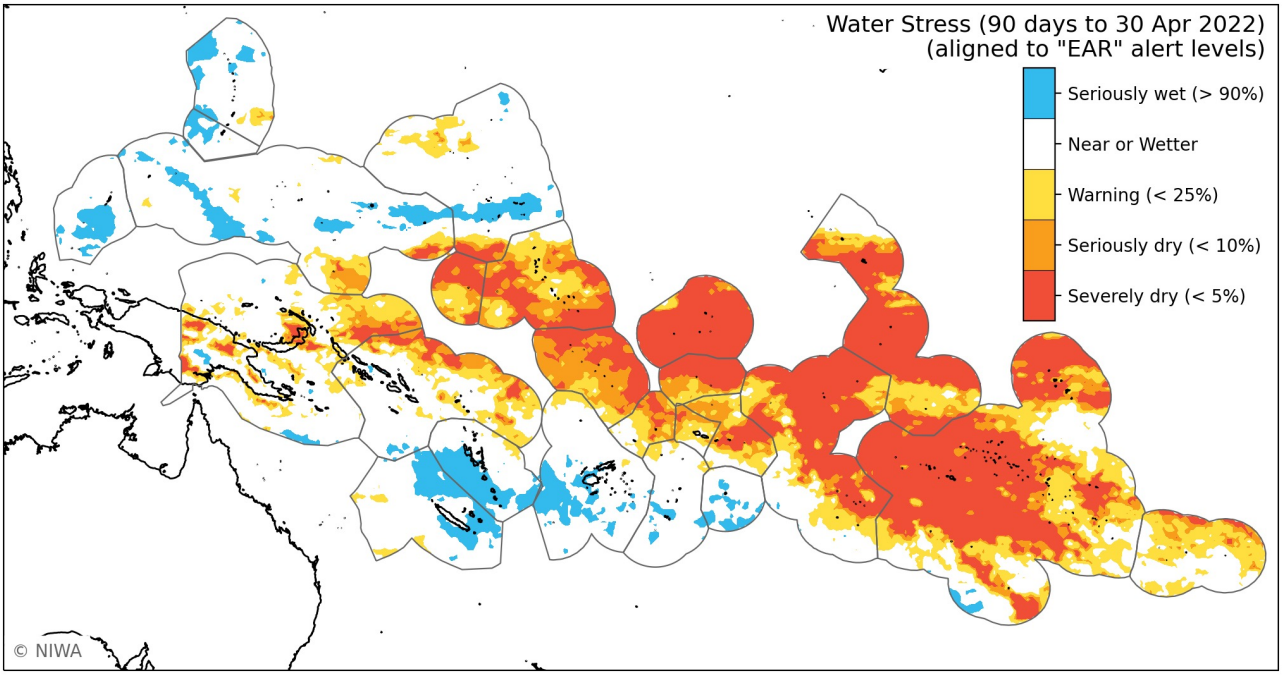
Water Stress Watch

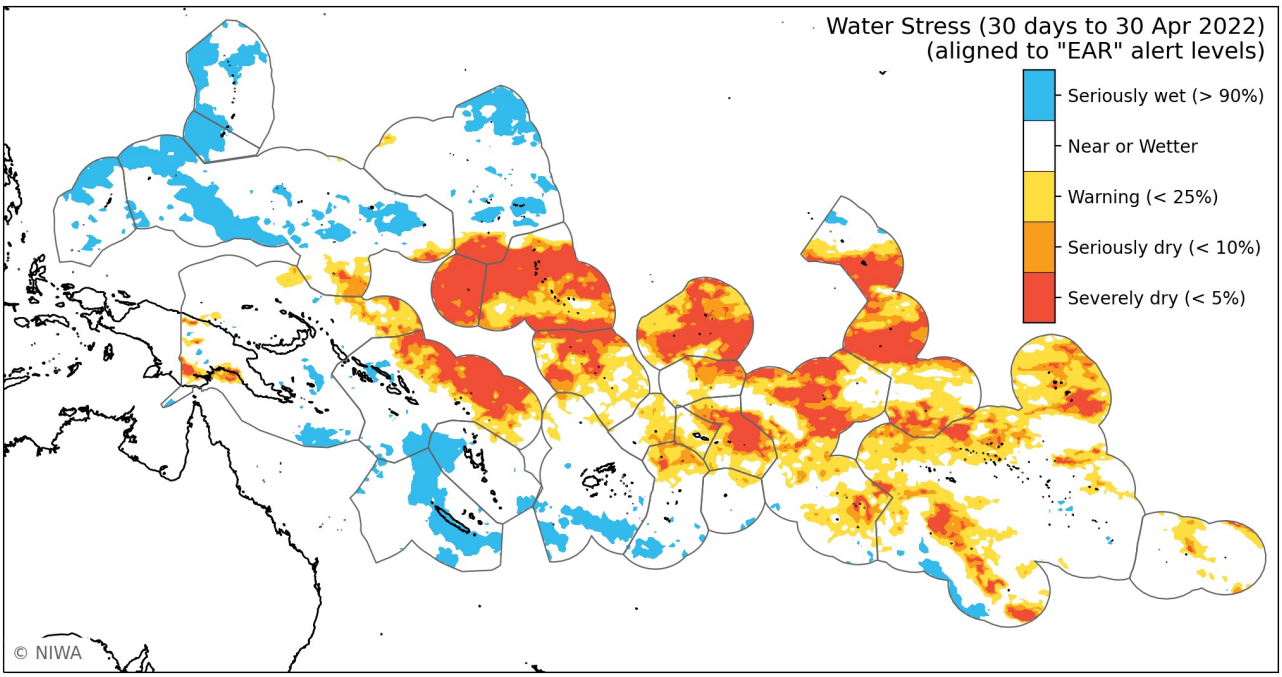
EAR regional situation summary (30 April 2022)

The regional thresholds for cumulative rainfall over the last 90 and 30 days are shown in the plots below.

During April (bottom plot), severely (<5th percentile) and seriously dry (<10th percentile) conditions were observed in Nauru, Kiribati, Tuvalu, American Samoa, Cook Islands, and Marquesas.

During February-April (top plot), severely or seriously dry conditions affected parts of PNG, Nauru, Kiribati, Tuvalu, Tokelau, Wallis & Futuna, American Samoa, Cook Islands, and French Polynesia.





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Water Stress Watch

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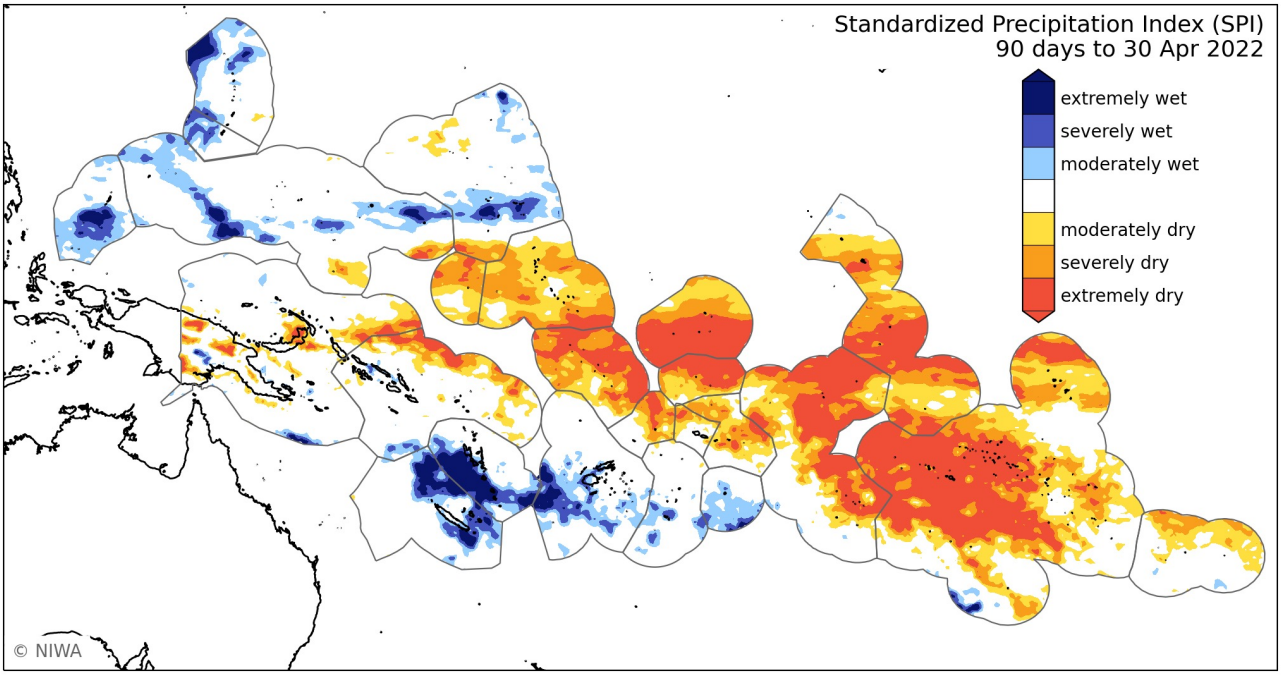
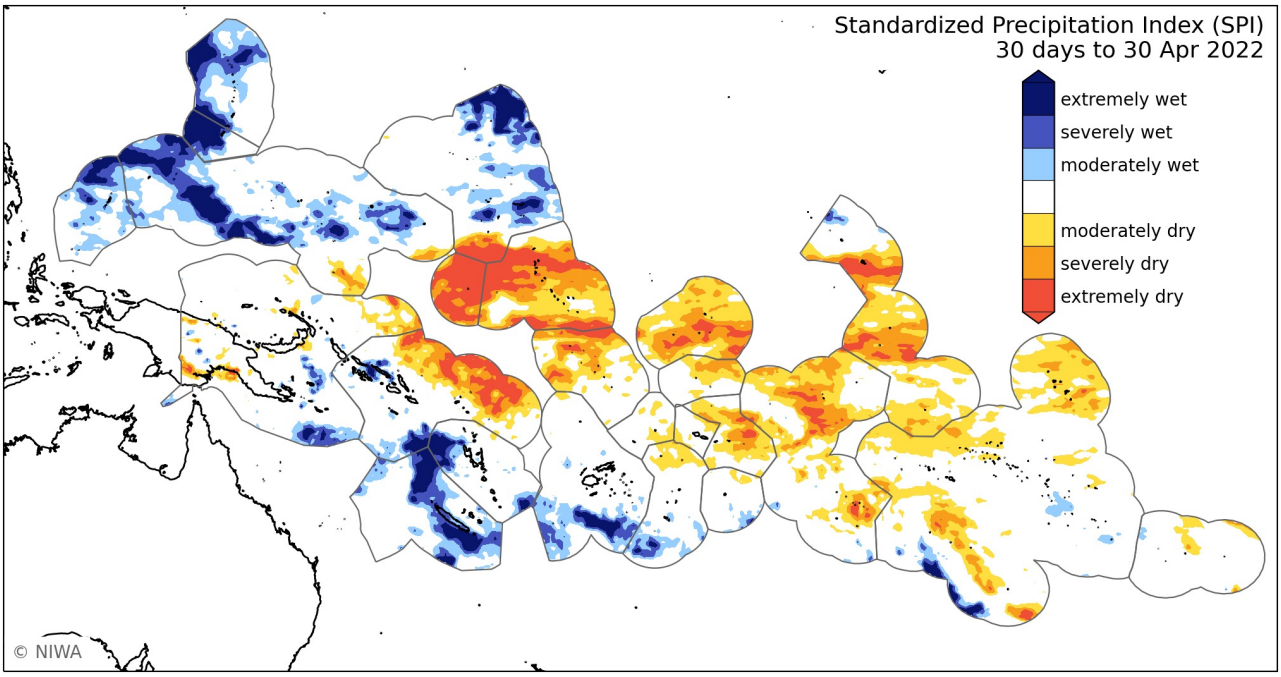
SPI Regional situation summary (30 April 2022)

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

During April (bottom plot), extremely or severely dry conditions were observed in Nauru, Kiribati, Tuvalu, American Samoa, parts of the Cook Islands and Marquesas, and the northern Austral Islands.

During February-April (top plot), the driest conditions were found in parts of PNG, Nauru, Kiribati, Tuvalu, Wallis & Futuna, Tokelau, American Samoa, Cook Islands, and French Polynesia.



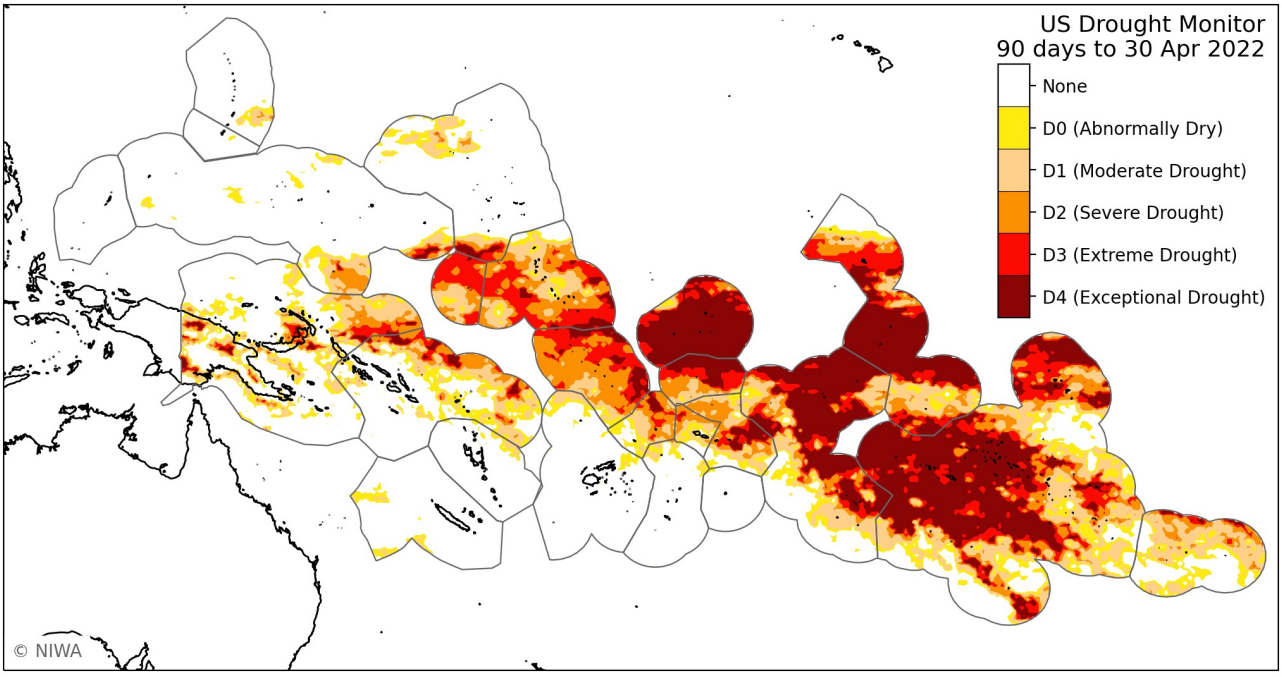


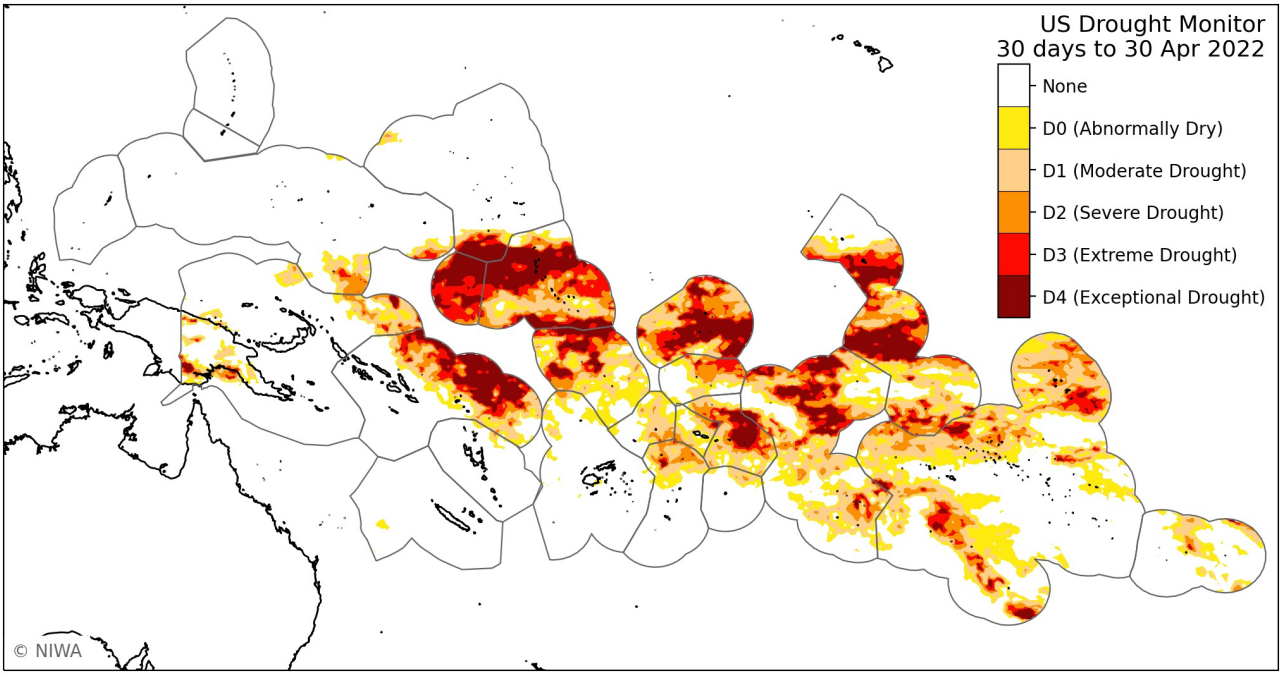
USDM Regional situation summary (30 April 2022)

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 (bottom plot), extreme or exceptional drought was observed in parts of PNG, Nauru, Kiribati, American Samoa, Cook Islands, and parts of French Polynesia.

During February-April (top plot), extreme or exceptional drought was observed in parts of PNG, southern FSM, Nauru, Kiribati, Tuvalu, Wallis & Futuna, American Samoa, Cook Islands, and French Polynesia.





Island Climate Update
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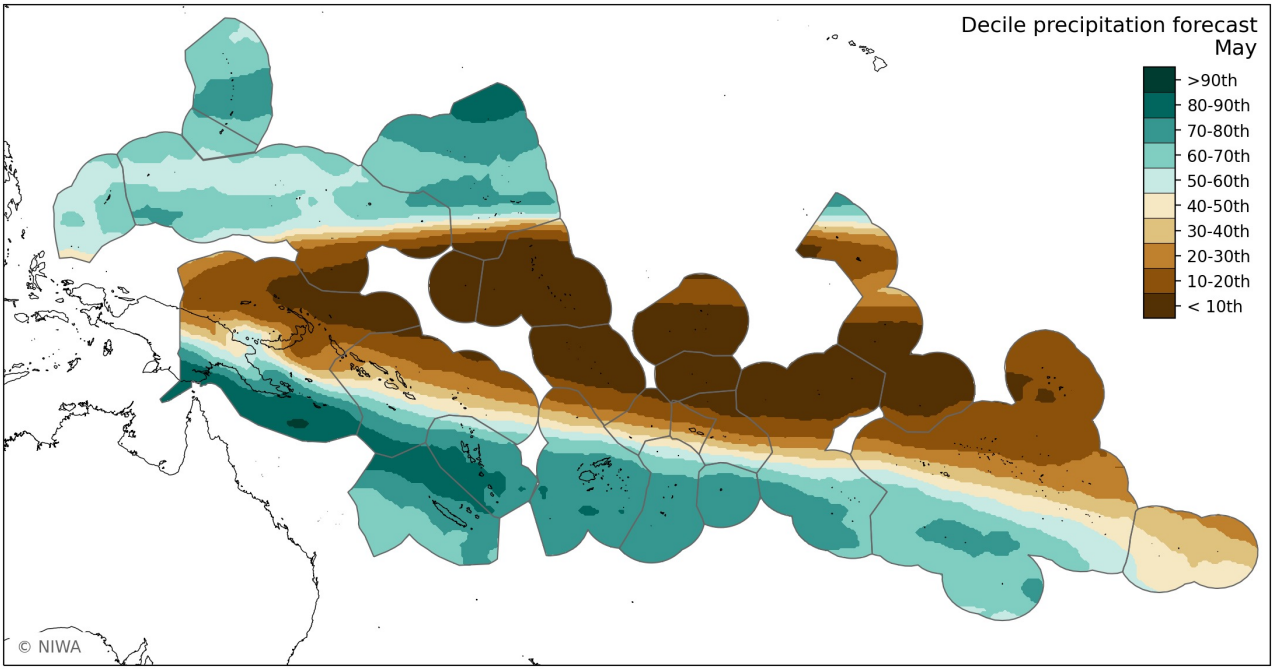
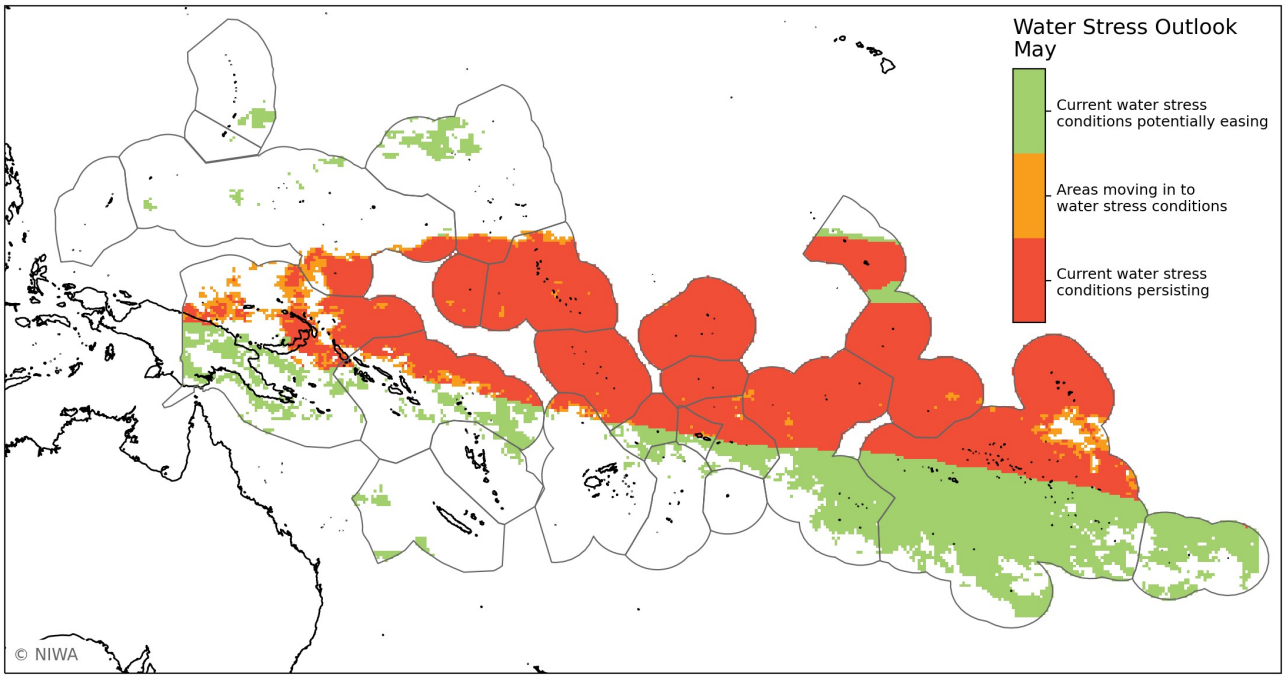
May 2022 forecast summary

During May, there is a high chance for drier than normal conditions along and extending southeastward of the equator, consistent with the continuation of La Niña conditions.

The island groups most likely to be drier than normal are eastern PNG, southern FSM, Solomon Islands, Nauru, Kiribati, Tuvalu, Tokelau, Wallis & Futuna, Samoa, American Samoa, Northern Cook Islands, Marquesas, Society Islands, and the Tuamotu Archipelago. Water stress may continue for Nauru, parts of Kiribati, Tuvalu, Tokelau, Northern Cook Islands, northern parts of French Polynesia, and Pitcairn Islands.

Water stress may persist for many of these island groups but ease in Southern Cook Islands, southern French Polynesia, and Pitcairn Islands.





Island Climate Update

Water Stress Outlook

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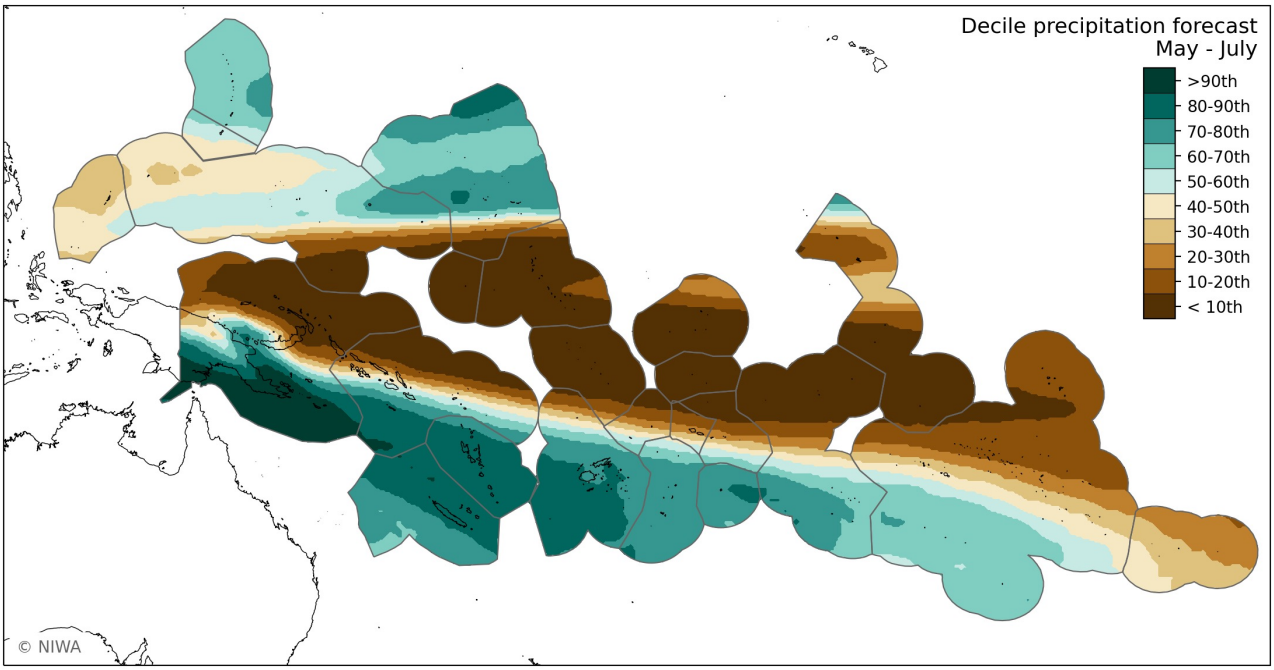
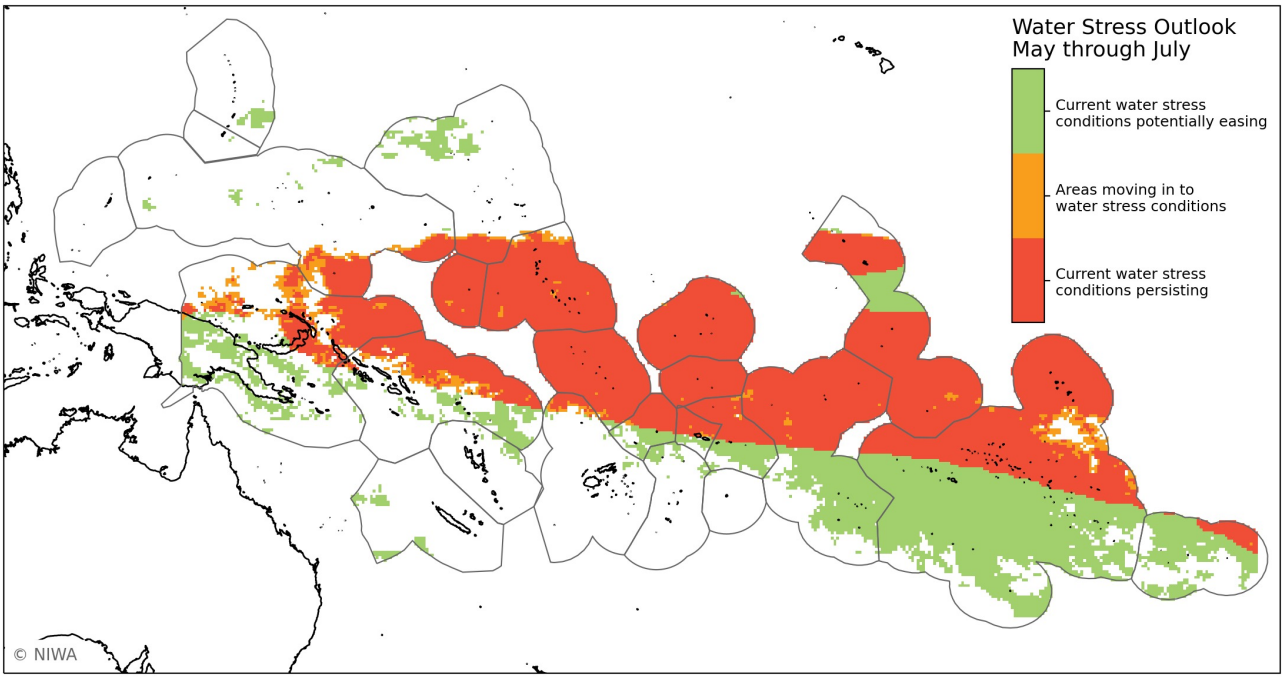
May – July 2022 forecast summary

Seasonal rainfall patterns remain consistent with the continuation of La Niña conditions.

The island groups most likely to be drier than normal are Palau, eastern PNG, northern Solomon Islands, western and southern FSM, Nauru, Kiribati, Tuvalu, Tokelau, northern Wallis & Futuna, Samoa, American Samoa, Northern Cook Islands, northern French Polynesia, and Pitcairn Islands. Water stress may persist over many of these island groups but ease in the Southern Cook Islands and southern French Polynesia.

Wetter than normal conditions are most likely in Northern Marianas, Marshall Islands, and most island groups extending southeastward of PNG.





Island Climate Update

Water Stress Outlook

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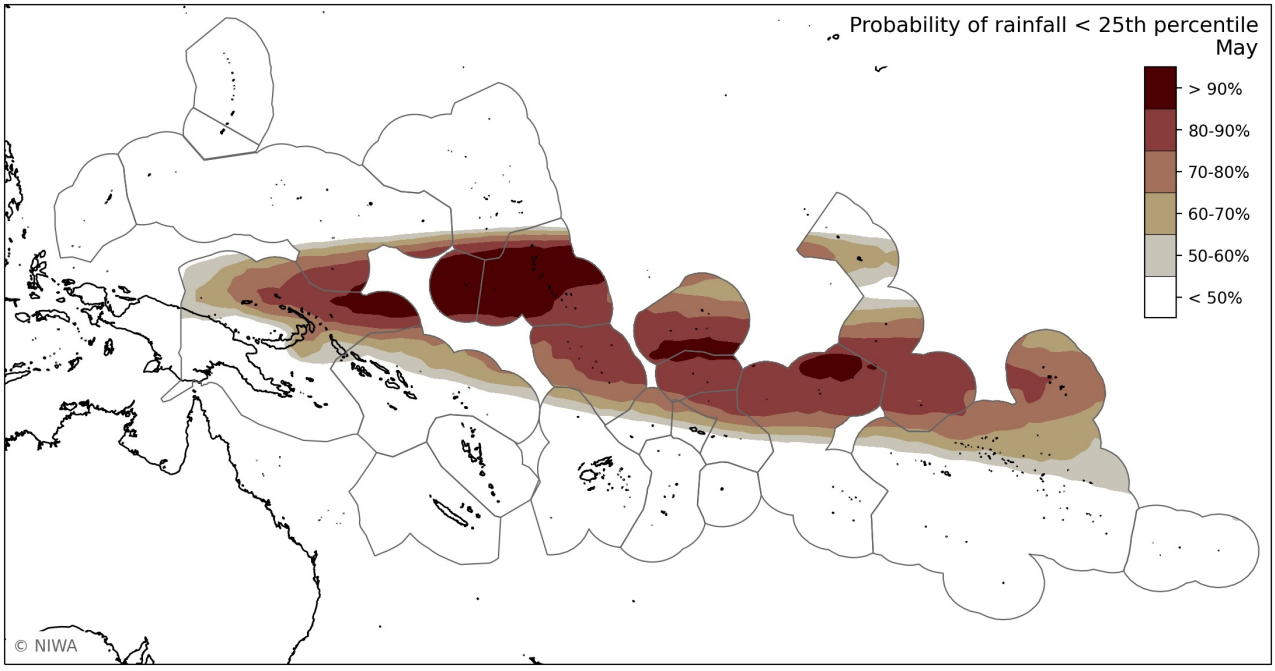
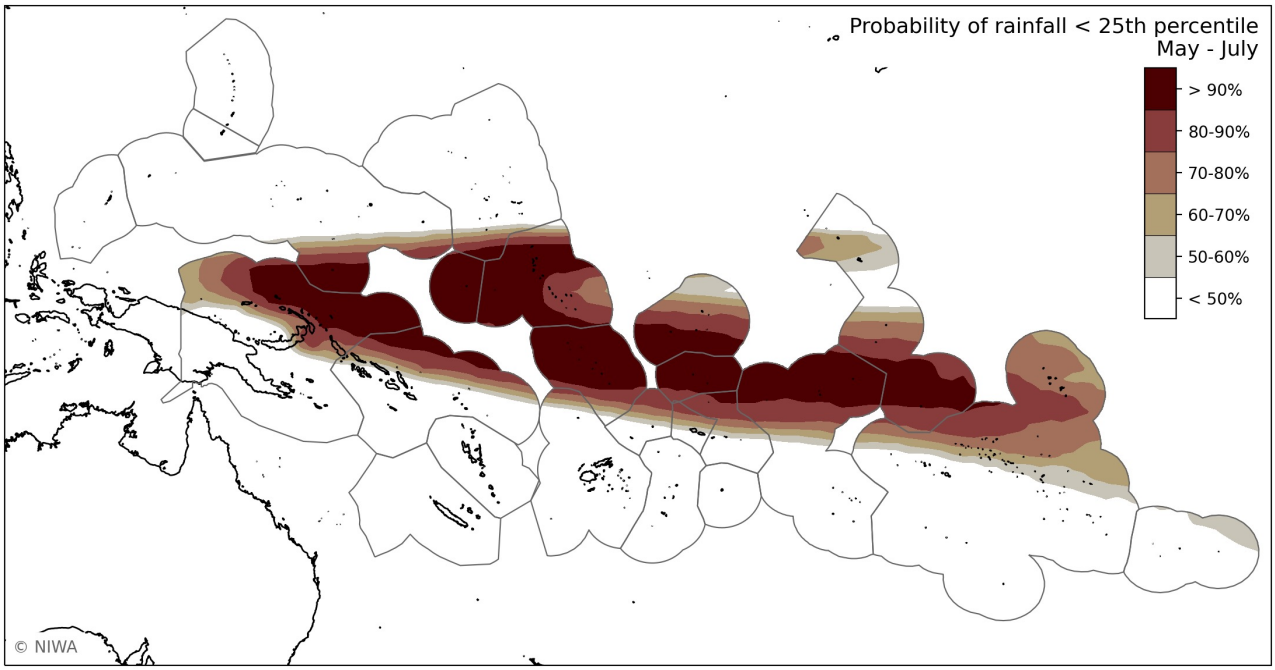
Probabilities of rainfall < 25th percentile

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

For May, very dry conditions are most likely for eastern PNG, far southern FSM, Nauru, Kiribati, Tuvalu, Tokelau, Northern Cook Islands, and northern French Polynesia.

For May-July, the chance for very dry conditions is forecast to increase for many of these island groups.





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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	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 UNDM indices. • A range of probabilistic one to five monthly and seasonal forecast plots updated shortly after the 15th of each month.

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 PRAS2201.

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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