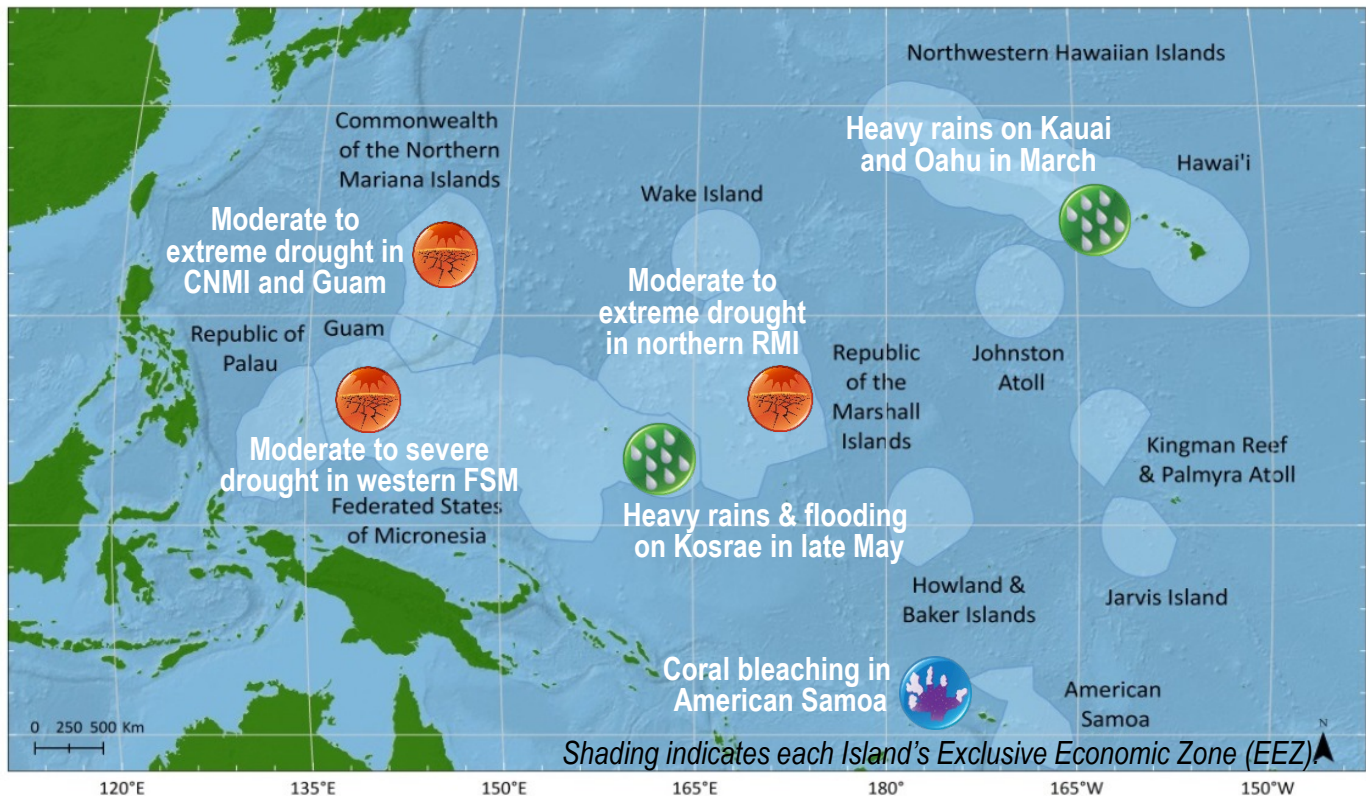


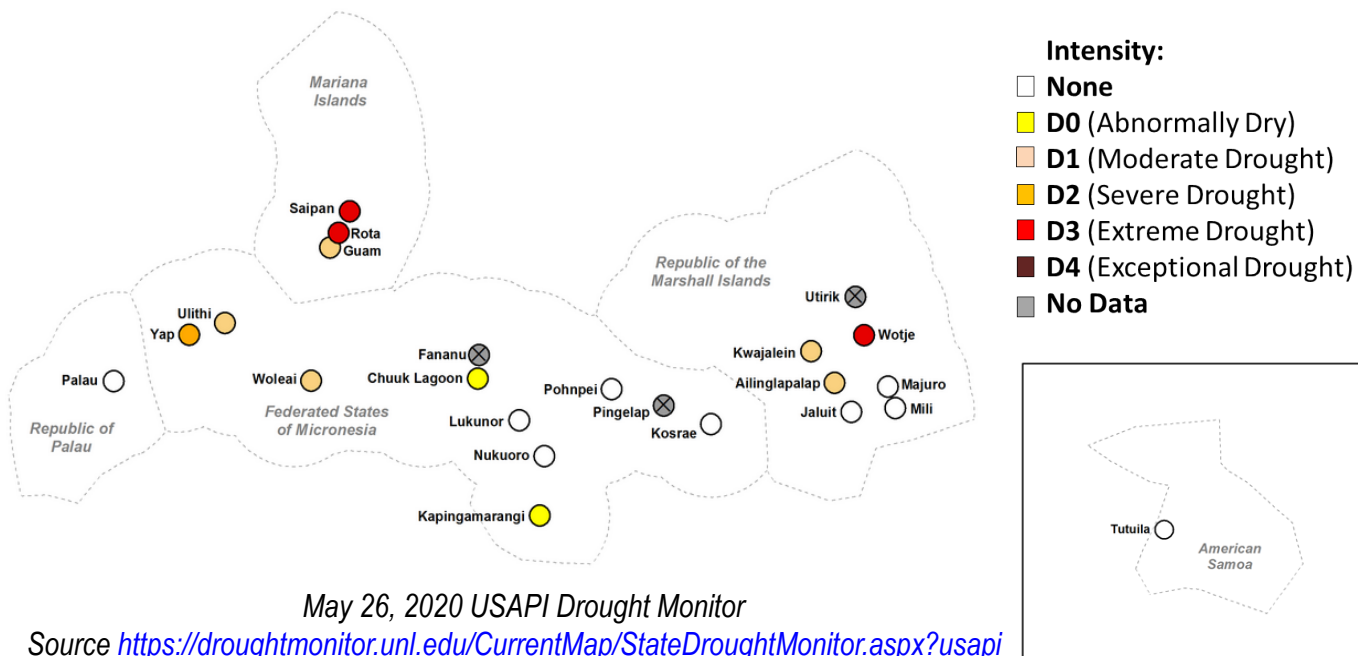
Significant Events – For March 2020 – May 2020



Highlights for Hawaii and the U.S. Affiliated Pacific Islands

- Moderate to Extreme drought conditions across parts of the Commonwealth of the Northern Mariana Islands (CNMI), Guam, western Federated States of Micronesia (FSM) and in northern portions of the Ralik and Ratak chains of the Republic of the Marshall Islands (RMI).
- Driest April on record in Saipan (CNMI) while Ulithi (FSM) had its second driest April on record.
- Wettest January through April period on record at Pago Pago, American Samoa.
- Heavy rains and severe flooding impacted Kauai in late March with Lihue observing its third wettest March on record.
- Heavy rains and localized flooding during May in the Republic of Palau.
- Above-normal ocean temperatures and coral bleaching around American Samoa.

Climate Overview – For March 2020 – May 2020



The **Oceanic Niño Index (ONI)** for March-April-May (MAM) 2020 indicated that **ENSO-neutral conditions** were present despite the development of positive sea-surface temperature (SST) anomalies during March and April in the central and western tropical Pacific. Median precipitation for the period (MAM) was well below normal in the CNMI on Saipan (3.07 in [78 mm]; 50% of normal), with drought intensifying to “Extreme” Drought (D3) by early April. Further south, Guam observed 11.96 in. (304 mm; 112% of normal) for MAM with drought conditions improving from Severe (D2) to Moderate (D1) in response to above-normal precipitation in May. In western portions of the FSM, below-normal precipitation in March and April led to intensification of drought in Yap, Ulithi, and Woleai with Yap observing 13.86 in. (352 mm; 71% of normal) while further to the east Kapingamarangi logged 35.51 in. (902 mm; 100% of normal) for MAM. In the RMI, Majuro observed 35.05 in. (902 mm; 136.5% of normal) for MAM with the Majuro reservoir at 85% of total capacity by the end of May while Kwajalein saw below-normal rainfall with 15.33 in. (389 mm; 88% of normal). In American Samoa, Pago Pago observed 30.71 in. (780 mm; 92.8% of normal) for MAM as well as observing its wettest January-April on record. In the Republic of Palau, below-normal rainfall in March led to the development of drought conditions by April. By early May, heavy rainfall from two tropical disturbances led to drought amelioration with the observing station in the state of Airai setting a record for the month with 24.24 in. (616 mm; 154% of normal). In the Hawaiian Islands, wetter-than-normal conditions prevailed during March and April with Lihue, Kauai observing its 3rd wettest May on record with 15.62 in. (397 mm; 603% of normal). By the end of May, only 7% of the Hawaiian islands were experiencing drought conditions, according to the U.S. Drought Monitor.

Sea levels in March continued to be moderately above normal (+10 cm) in the tropical central Pacific, near normal in the eastern Pacific, and somewhat below normal (-5 to -10 cm) in the western Pacific. For April and May, near-normal sea levels were occurring across most of the tropical Pacific with the exception of areas around Hawaii and the Samoan Islands, which were above normal. For the same period, below-normal sea levels were observed around Guam.

With the southwestern Pacific Tropical Cyclone (TC) season coming to an end, a total of 9 TCs formed with four becoming major including Rita, Tino, Uesi, and Harold —the most notable, TC Harold, reaching Category 5.



Severe flooding on Kauai in late March 2020.
Photo credit: Hawaii News Now.



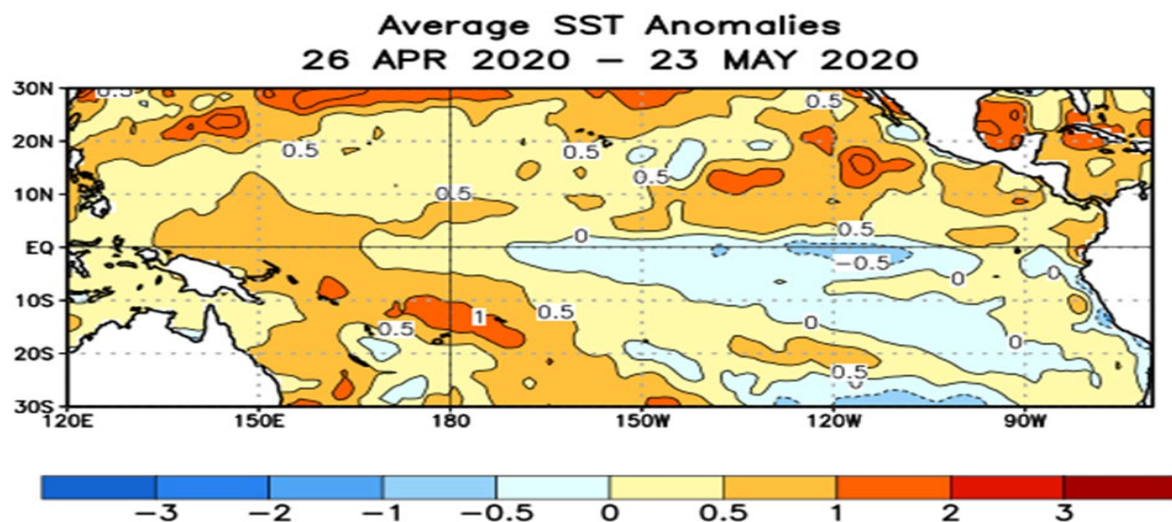
Coral bleaching of *Acropora hyacinthus* (Tutuila, American Samoa). Photo credit: Eric Brown, NPS.

Ecosystems – Anomalously warm ocean temperatures and coral bleaching were reported by the National Park Service around American Samoa in April.

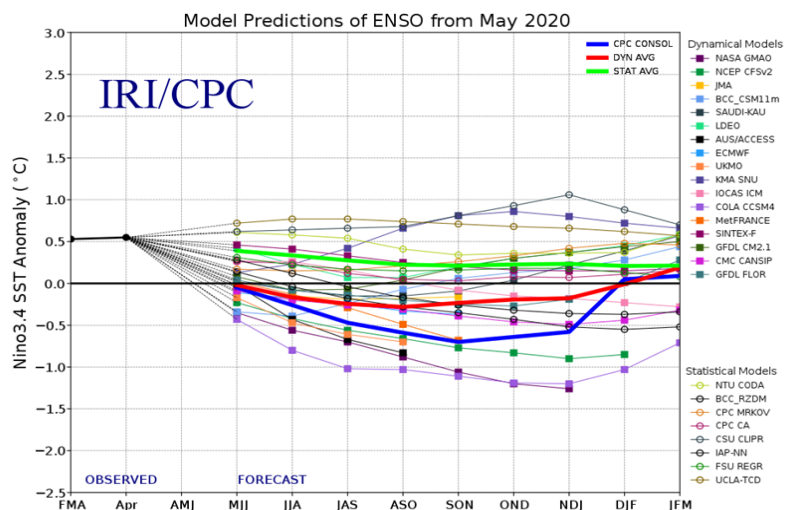
Facilities and Infrastructure – On the windward side of Oahu, combined high seas and swell led to areas of coastal highway flooding and beach erosion at Mokapu in early March. In Palau, heavy rainfall in May caused localized flooding and road damage within Aimeliik, Airai, and Kosor.

Water Resources – Low water levels and short-term dryness led the Palau Public Utilities Corporation to implement daily water rationing during overnight hours in April, however, beneficial rainfall from tropical cyclone activity in May led to removal of mandatory water rationing restrictions by May 22. Below-normal rainfall and developing drought conditions led to water distribution to parts of Kwajalein Atoll where reverse osmosis units were not unavailable. On Yap, despite improving drought conditions during May, the main reservoir remained low. Water distribution also occurred in northern and southern Chuuk state and east Yap.

Wildfires – Wildfires occurred on the island of Hawaii, Palau, Yap, and across the Mariana Islands in April.



Average Sea Surface Temperature Anomalies (°C) for the week centered on May 13, 2020. Source: NOAA NWS CPC



May 2020 IRI/CPC Forecast

Source <https://iri.columbia.edu/our-expertise/climate/forecasts/ens0/current/>

According to ENSO prediction models, **ENSO-neutral is favored through Northern Hemisphere summer 2020** (~65% chance), with chances decreasing into autumn (to 45-50%). Oceanic temperatures are expected to decrease through the summer months with models showing increasing chances of a weak La Niña developing by fall.

NOAA's Coral Reef Watch 4-month (Jun-Sep 2020) bleaching outlook projects **high heat stress** (Alert Level 1 and 2) over an area extending from the eastern Caroline Islands to the Northern Marianna Islands.

During the period June through August 2020, **rainfall** is projected to be **near normal to below normal** for CNMI, Guam, Yap, Palau, western FSM, and the Hawaiian Islands while areas of eastern FSM are expected to be **near normal**. Rainfall is projected to be **near normal to above normal** for areas of RMI (Kwajalein, Majuro) and American Samoa.

Over the next six months, some dynamical models suggest development of a La Niña sea level pattern in the equatorial Pacific with **above-normal sea levels in the west and below-normal sea levels in the east**. In the tropical western Pacific, there is a likelihood of increasing sea level anomalies for many islands in the region including southern Micronesia while **near-or-above normal sea levels** are expected to persist for the next six months around Hawaii Islands.

According to the NWS Central Pacific Hurricane Center and NOAA's Climate Prediction Center, **tropical cyclone activity during the Central Pacific Hurricane season is expected to be near-to-below normal (75% chance)** with 2 to 6 tropical cyclones predicted to impact the region.

NOAA NWS Weather Forecast Office
Honolulu & Guam:

<http://www.prh.noaa.gov/pr/hnl/>
<http://www.prh.noaa.gov/pr/guam/>

NOAA National Centers for
Environmental Information:

<http://www.ncei.noaa.gov/>

NOAA NMFS Pacific Island Fisheries
Science Center:

<http://www.pifsc.noaa.gov/>

NOAA OceanWatch - Central Pacific:

<http://oceanwatch.pifsc.noaa.gov/>

NOAA Coral Reef Watch:

<http://coralreefwatch.noaa.gov/>

USGS Pacific Islands Water Science
Center: <http://hi.water.usgs.gov/>

USGS Science Center – Pacific
Coastal and Marine Science Center:

<http://walrus.wr.usgs.gov/>

University of Hawaii - Joint Institute of
Marine and Atmospheric Research:

<http://www.soest.hawaii.edu/jimar/>

University of Guam - Water and
Environmental Research Institute:

<http://www.weriguam.org/>

University of Hawaii Sea Level
Center:

<https://uhslc.soest.hawaii.edu/>

University of Hawaii Asia Pacific Data
Research Center (APDRC) -

<http://apdrc.soest.hawaii.edu/index.php>

Western Regional Climate Center

<https://wrcc.dri.edu/>