



Significant Events – For December 2024–February 2025



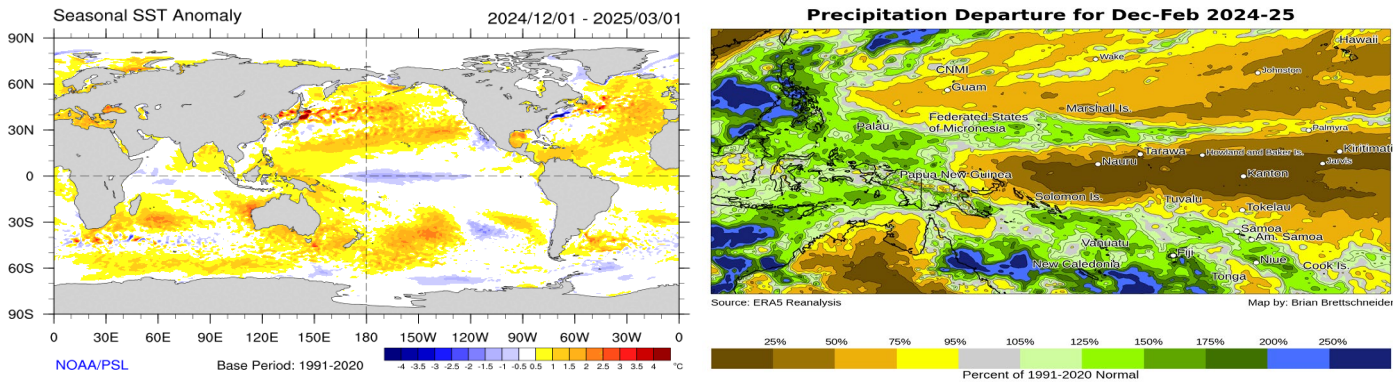
## Highlights for Hawaii and the U.S. Affiliated Pacific Islands

- During the December-February period (DJF), weak La Niña conditions (Oceanic Niño Index [ONI] =  $-0.6^{\circ}\text{C}$  for DJF) were observed with below-average sea surface temperatures (SSTs) across the east-central equatorial Pacific Ocean. Currently, La Niña conditions are present and expected to persist in the near-term, with a transition to ENSO-neutral conditions likely during the March-May 2025 period (66% chance), according to the latest (3/10/25) ENSO status update by NOAA Climate Prediction Center (CPC).
- For the DJF period, above-normal precipitation was observed across areas of the U.S. Affiliated Pacific Islands (USAPI) including portions of the Federated States of Micronesia (FSM), the Republic of the Marshall Islands (RMI), American Samoa, and Palau. Conversely, below-normal rainfall was observed in areas of FSM, including Yap, as well as in the Mariana Islands, where moderate-to-severe drought developed in Guam, Rota, and Saipan during February. In the Hawaiian Islands, drought conditions improved in response to a strong winter storm event that brought significant rainfall accumulations and flash flooding in late January—particularly on the Big Island, Maui, Molokai, and Oahu. However, dry conditions prevailed across the island chain during February, leading to re-development of drought conditions.
- According to reanalysis data, near-normal to below-normal SSTs were observed (DJF) across an area extending from the west-central equatorial Pacific Ocean to the east-central equatorial Pacific Ocean. In the western tropical Pacific Ocean, SSTs were above normal, with areas of coral bleaching observed near Pohnpei, FSM.

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# Climate Overview – For December 2024–February 2025



Seasonal sea surface temperature anomaly map for 12/1/24 to 3/1/25 (left) and 3-month seasonal precipitation departures from normal for the December 2024–February 2025 period for the central and western tropical Pacific Ocean with warmer colors representing drier-than-normal conditions and cooler colors wetter-than-normal conditions (right).

Source: NOAA Physical Sciences Laboratory; ERA5 Reanalysis, B. Brettschneider, National Weather Service (right).

By the end of the DJF period, SSTs were near to below normal across the central and east-central tropical Pacific Ocean, while above-normal SSTs were present in a shallow layer (upper 50 meters) in the eastern tropical Pacific Ocean near South America. According to the NOAA CPC update (3/10/25), Niño region SST departures were as follows: Niño 3.4 at 0.0°C, Niño 3 at 0.5°C, Niño 1+2 at 1.6°C, and Niño 4 at -0.3°C.

Below-normal sea levels (~-5 to -10 cm anomalies) were observed in proximity to the equator (from ~5°N to ~5°S) during the DJF period in an area extending from the west-central Pacific Ocean through the east-central Pacific Ocean. In contrast, above-normal sea levels were observed in the Hawaiian Islands as well as across much of the western tropical Pacific, including in the Mariana Islands and areas of western FSM (~+5 to +10 cm anomalies), according to data from the University of Hawaii Sea Level Center.

During the DJF period, drought-free conditions prevailed across much of the USAPI until late January-February when drought conditions emerged in the Marianas (Saipan, Rota, Guam), areas of FSM (Yap, Pingelap), and in RMI (Kwajalein). For DJF precipitation totals, Airai (Palau) recorded 42.64 in. (125% of normal). In FSM, Yap observed 13.61 in. (62% of normal; 13<sup>th</sup> driest), Kapingamarangi 31.51 in. (96% of normal), Pohnpei 61.87 in. (154% of normal; 2<sup>nd</sup> wettest), Lukunor 32.96 in. (102% of normal), Kosrae 58.98 in. (110% of normal), and Chuuk 30.66 in. (103% of normal). In the Mariana Islands, Saipan observed 7.28 in. (72% of normal; 7<sup>th</sup> driest) and Guam 12.96 in. (87% of normal). In the RMI, Majuro observed 35.85 in. (126% of normal), while Kwajalein logged 9.46 in. (61% of normal; 12<sup>th</sup> driest). In Pago Pago, American Samoa, precipitation for DJF was well above normal (64.93 in., 161% of normal; 4<sup>th</sup> wettest). Moreover, the observing stations at Siufaga Ridge and Toa Ridge, located in the mountainous, higher-elevation terrain of the National Park of American Samoa, logged 52.90 in. and 39.26 in., respectively. In the Hawaiian Islands, dry conditions prevailed across most of the island chain during DJF, except for isolated areas of the Big Island, Maui, Molokai, and Oahu, which received significant rainfall and associated flash flooding during late-January, including in Honolulu, where a daily rainfall record (3.57 in.) was broken on 1/30/25. For the DJF period, Lihue observed 4.45 in. (40% of normal; 6<sup>th</sup> driest), Honolulu 6.11 in. (102% of normal), Molokai 3.72 in. (43% of normal; 6<sup>th</sup> driest), Kahului 5.08 in. (70% of normal), Kailua-Kona 4.07 in. (114% of normal), and Hilo 12.70 in. (42% of normal; 8<sup>th</sup> driest).

In the South Pacific region (east of 135°E), tropical cyclone (TC) activity has been below normal, with 4 named storms and a regional Accumulated Cyclone Energy (ACE) Index of 30 (normal 45.9) by 3/1/25, according to the Colorado State University Tropical Meteorology Project.

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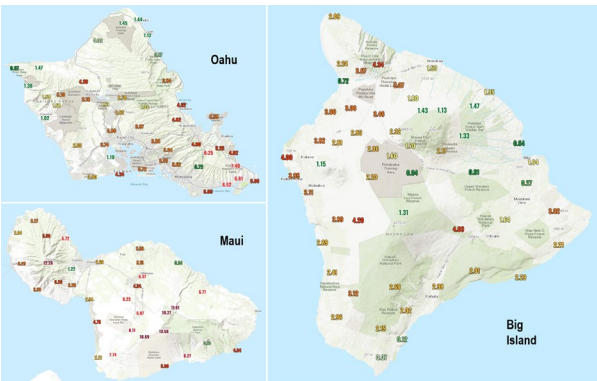
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Funnel cloud observed on 1/28/25 south of Pago Pago International Airport, Tutuila Island, American Samoa.  
Source: National Weather Service, Pago Pago.



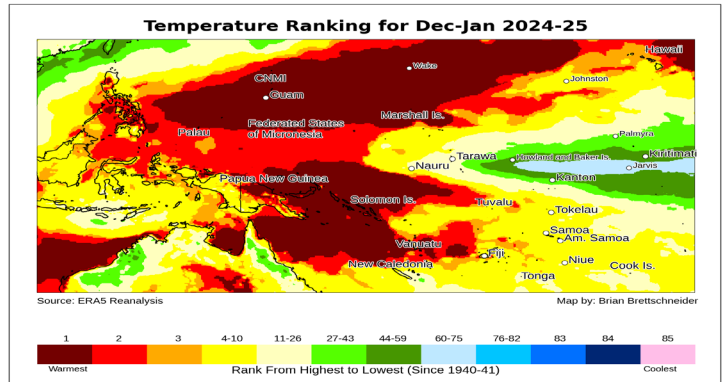
Severe weather associated with the South Pacific Convergence Zone led to significant landslide activity on Ta'ū Island, Manu'a Islands, American Samoa in late February 2025.  
Source: Manu'atele Community Worldwide, FB.



Late-January storm event rainfall totals for Oahu, Maui, and Big Island, which brought flash flooding, power outages, and school closures (12/8/24).  
Source: National Weather Service, Honolulu.

**Facilities and Infrastructure** – In the Manu'a Islands of American Samoa, heavy rainfall and saturated soils triggered landslides that blocked roadways between the villages of Fitiuta, Ta'ū, and Faleāsao in late February. In the Hawaiian Islands, a strong low-pressure system brought heavy rainfall and flash flooding across areas of the island chain, with the worst flooding observed in the Kuli'ou'ou and Hawai'i Kai areas on Oahu and in southwest Maui in Kīhei, where areas of South Kīhei Road were closed due to flooding which impacted businesses and residences. On the Big Island, flooding led to school closures at 6 public school in South Kona. In addition, Hawaiian Electric reported power outages to customers on Hawaii, Maui, and Oahu counties where gale-force winds downed trees and debris onto power lines (1/30-31/25).

**Heat** – In the western Pacific, anomalously warm air temperatures were observed during the DJF period in areas of the Marianas, FSM, and RMI (below). In the Commonwealth of the Northern Mariana Island, Saipan International Airport observed its warmest DJF period on record with a 3-month mean maximum temperature of 88.9°F as well as its highest 3-month mean minimum temperature (78.5°F) on record. In FSM, Pohnpei logged its warmest DJF mean average temperature (83.2°F) and its warmest mean minimum temperature (78.8°F) on record.

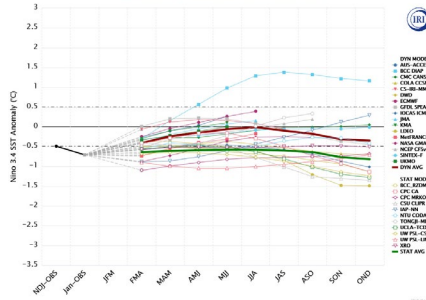
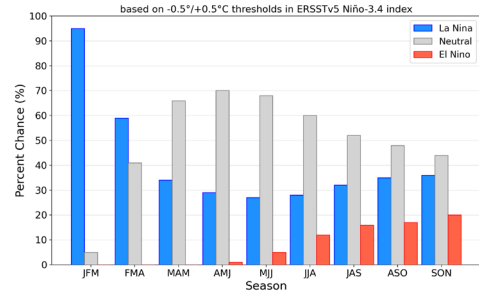


2-meter surface air temperature rankings for the Dec 2024-Jan 2025 period for the Pacific Ocean region.  
Source: ERA5 Reanalysis, B. Brettschneider, National Weather Service.

**Water Resources** – In Majuro (RMI), reservoir storage reached 85% of total capacity (36,000,000 gallons) on 2/25/25. Across the Hawaiian Islands, 7-day average streamflows (3/4/25) were below normal at numerous USGS gauging stations, including along Hawaii's longest river, Wailuku River (9<sup>th</sup> percentile), at Piihonua, Hawaii.

Official NOAA CPC ENSO Probabilities (issued February 2025)

Model Predictions of ENSO from Feb 2025

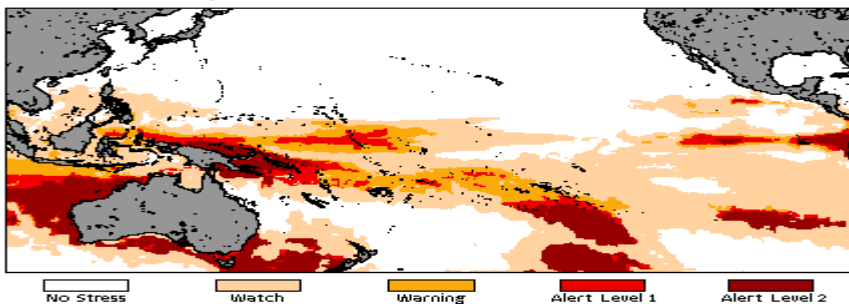


Forecast for each of the three possible ENSO categories for the next 8 overlapping 3-month seasons. Blue bars show the chances of La Niña, gray bars the chances for neutral, and red bars the chances for El Niño (left); and ENSO forecast model predictions (right).  
Source: NOAA CPC (left); Columbia University IRI (right).

According to the latest ENSO prediction model simulations (above right), La Niña conditions are expected to persist in the near-term. ENSO-neutral conditions are favored to emerge during the March-May 2025 period (66% chance). Moreover, the dynamical models in the IRI plume (above right) continue to predict persistence of ENSO-neutral conditions into the Northern Hemisphere summer as indicated by the Niña 3.4 index values falling between  $-0.5^{\circ}\text{C}$  and  $+0.5^{\circ}\text{C}$ . In terms of seasonal sea level anomalies, ACCESS-S2 and NOAA NCEP CFSv2 models suggest a dip in the equatorial central and eastern Pacific, while elevated levels are expected in the western Pacific and around the Hawaiian Islands, according to the University of Hawaii Sea Level Center (3/10/25).

The NOAA Coral Reef Watch four-month coral bleaching heat stress outlook (Mar-Jun 2025) calls for a high probability (90%) of high heat stress (Alert Level 1-2) developing in areas across the western tropical Pacific Ocean, including areas around the Gilbert Islands, New Guinea, and the Solomon Islands.

2025 Mar 4 NOAA 90% Probability Bleaching Heat Stress for Mar–Jun 2025  
Experimental, v5.0, CFSv2–based, 26 to 112 Members



NOAA Coral Reef Watch four-month coral bleaching heat stress outlook for Mar-Jun 2025. Red and maroon colors represent areas with a high probability of coral bleaching heat stress Alert Levels 1 & 2. Source: NOAA NESDIS.

Looking at the March-May 2025 precipitation forecast, normal rainfall amounts are favored for eastern FSM, American Samoa, and the Hawaiian Islands. Elsewhere, above-average precipitation is forecasted for areas of central and western FSM, Palau, and areas of the Mariana Islands, while below-normal rainfall is favored in RMI.

NOAA Coral Reef Watch:  
<https://coralreefwatch.noaa.gov/>

NOAA National Centers for Environmental Information:  
<https://www.ncei.noaa.gov/>

NOAA NMFS Pacific Island Fisheries Science Center:  
<https://www.fisheries.noaa.gov/about/pacific-islands-fisheries-science-center>

NOAA NWS Weather Forecast Offices Honolulu, Guam, & Pago Pago:  
<https://www.weather.gov/hfo/>  
<https://www.weather.gov/gum/>  
<https://www.weather.gov/ppg/>

NOAA OceanWatch - Central Pacific Node:  
<https://oceanwatch.pifsc.noaa.gov/index.html>

NPS Pacific Island Inventory & Monitoring Network:  
<https://www.nps.gov/im/pacn/index.htm>

University of Guam - Water and Environmental Research Institute:  
<https://weri.uog.edu/>

University of Hawaii - Asia Pacific Data Research Center (APDRC):  
<https://apdrc.soest.hawaii.edu/>

University of Hawaii – Cooperative Institute for Marine & Atmospheric Research:  
<https://www.soest.hawaii.edu/jimar/index.htm>

University of Hawaii - Sea Level Center:  
<https://uhslc.soest.hawaii.edu/>

USGS Science Center - Pacific Coastal and Marine Science Center:  
<https://www.usgs.gov/pacific-coastal-and-marine-science-center>

USGS Pacific Islands Water Science Center:  
<https://www.usgs.gov/pacific-coastal-and-marine-science-center>

Western Regional Climate Center:  
<https://wrcc.dri.edu/>

