



# NWS Climate Services

## April PEAC Audio Conference Call Summary

8 April, 1430 HST (9 April 2021, 0030 GMT)



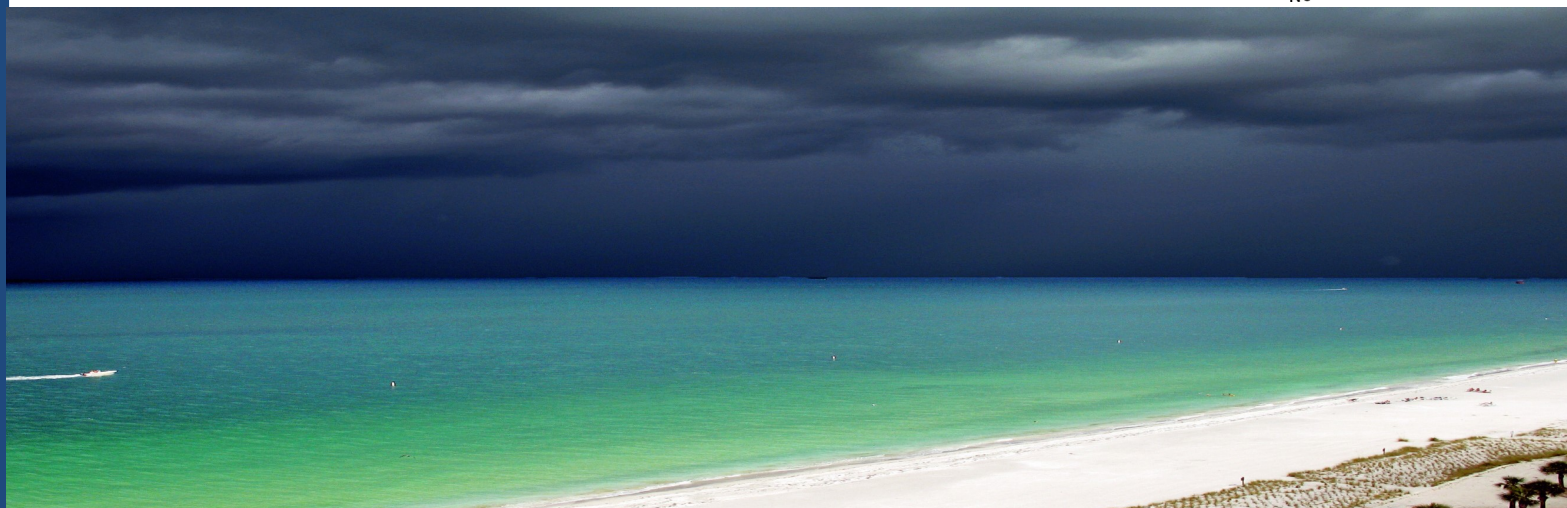
NOAA



UOG/WERI



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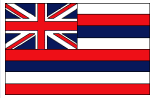


### March rainfall totals reported

% Normal: **blue** above normal & **red** below normal. Departure from normal: **blue**-above & **red**-below (same for 3 mon %)

	Rainfall	% Norm	Normal	Departure	3 mon %
	Inches	March	Inches	inches	JFM
Airai	8.84	115	7.67	1.18	33.49
Yap	8.63	189	4.56	4.07	28.72
Chuuk	18.55	223	8.32	10.23	41.40
Pohnpei	28.50	216	13.17	15.33	54.12
Kosrae	31.20	194	16.06	15.14	80.84
Kwajalein	6.21	264	2.35	3.86	10.52
Majuro	15.00	228	6.58	8.42	30.47
Guam NAS	2.70	130	2.07	0.63	7.82
Saipan	0.86	46	1.89	-1.03	6.31
Pago Pago	9.45	88	10.68	-1.23	43.93
Lihue	11.89	459	2.59	9.30	17.67
Honolulu	4.21	533	0.79	3.42	8.98
Kahului	9.78	520	1.88	7.90	14.06
Hilo	24.99	232	10.78	14.21	55.59

## Reports from around the Region



**Hawaii** (Kevin Kodama)

Precipitation Summaries for HI can also be found:

[https://www.weather.gov/hfo/hydro\\_summary](https://www.weather.gov/hfo/hydro_summary)

### Kauai

All of the rain gages on Kauai recorded monthly rainfall totals that were 2 to 4 times greater than the average for March. The USGS' rain gage on Mount Waialeale had the highest monthly total of 111.72 inches (295 percent of average) and the highest daily total of 14.44 inches on March 13. While this monthly total is incredibly high, it did not come close to breaking the March record of 148.83 inches set in 1982. There were no March rainfall records broken across the island. However, the Kalaheo, Omao, and Port Allen gages recorded their highest March totals since 2006. Lihue Airport's 11.89 inches (258 percent of average) marked its sixth wettest March, well below the record of 36.13 inches from 2006.

Rainfall totals for 2021 through the end of March were above average at all of the gages on Kauai. Mount Waialeale had the highest year-to-date total of 191.03 inches (219 percent of average). On average, this amount of rainfall is not reached until July at this location.

### Oahu

Similar to Kauai, many of the gages on Oahu had monthly totals 2 to 4 times greater than the March average. The USGS' Poamoho Rain Gage No. 1 had the highest monthly total of 52.32 inches (248 percent of average) and the highest daily total of 19.02 inches during the flash flood event on March 9. There were no monthly records broken. However, the following gages had their highest March totals since 2006: Ahuimanu Loop, Aloha Tower, Bellows AFS, Hakipuu Mauka, Kahuku, Kahuku Training Area, Kii, Kunia, Lualualei, Makua Range, Manoa Lyon Arboretum, Maunawili, Mililani, Moanalua Stream, Olomana Fire Station, Palisades, Palolo Fire Station, Poamoho Experiment Farm, Punaluu Pump, Schofield Barracks, Waianae Boat Harbor, Waianae Kawiwi, Waianae Valley, Waipio, and Wheeler AAF.

Most of the Oahu rainfall totals were above average for 2021 through the end of March. A few sites on the leeward slopes of the Waianae Range, and Kamehame on the eastern end of the island, had near average totals. The highest year-to-date total was 83.88 inches (152 percent of average) at the Poamoho Rain Gage No. 1

### Maui

March rainfall totals across Maui County were all above average. The USGS' rain gage at West Wailuaiki Stream had the highest monthly total of 50.47 inches (174 percent of average) and the highest daily total of 12.28 inches on March 18. The Haiku gage (20.94 inches, 355 percent of average) posted its highest March rainfall total on record. Kahului Airport's 9.78 inches (399 percent of average), while impressive, fell short of the record March total of 10.90 inches set in 1967. Elsewhere in the county, Pukalani and Waikapu Country Club had their highest March totals since 2004, Makapalapai's was the highest since 2005, and Kaunakakai Mauka, Lahainaluna, Mahinahina, and Molokai Airport the highest since 2006.

All of the Maui County rainfall totals for 2021 through the end of March were near to above average. The USGS' Puu Kukui gage had the highest year-to-date total of 104.86 inches (110 percent of average).

### Big Island

Most of the March totals from the Big Island were above average. The exceptions mainly came from the slopes of the Kohala Mountains where several sites had below average totals. Out of the automated real-time sites, the Piihonua gage had the highest monthly total of 38.29 inches (192 percent of average) and the highest daily total of 10.01 inches on March 8. There was a CoCoRaHS manually observed site located on the slopes above Hilo that had a March total of 45.01 inches with a maximum daily total of 12.70 logged on the morning of March 9. Presumably, most of this daily total occurred on March 8, as was the case at Piihonua. The Pahoia gage posted its highest March total on record, beating the previous record of 29.68 inches set in 1991. Kealakekua had its highest March total since 1997, Laupahoehoe's was the highest since 2004, and Kapapala Ranch, Kona Airport, Pahala, Pali 2, Piihonua, and South Point the highest since 2006.

## Current State of ENSO and predictions

Issued 08 April 2021

ENSO Alert System Status: [La Niña Advisory](#)

**Synopsis:** A transition from La Niña to ENSO-Neutral is likely in the next month or so, with an 80% chance of ENSO-neutral during May-July 2021.

La Niña continued during March, reflected by negative sea surface temperatures (SST) anomalies, which extended across much of the equatorial Pacific Ocean. SST anomalies weakened but continue to oscillate week-to-week in most of the Niño index regions, particularly in the eastern Pacific Ocean. Except for Niño-1+2, the latest weekly Niño index values were at or near  $-0.5^{\circ}\text{C}$ . Sub-surface ocean temperatures also weakened during the month, with the integrated anomalies averaged between the 180-100°W becoming positive during the middle of the month. Currently, negative subsurface temperature anomalies are present from the surface to approximately  $\sim 100\text{m}$  below the surface only in the eastern Pacific between 110°W and 80°W.

Low-level easterly wind anomalies are present but weak across the equatorial Pacific, and are most notable in the far western Pacific. Upper-level wind anomalies were westerly across most of the tropical Pacific. The suppression of tropical convection over the western and central Pacific persisted during March, although the enhancement of rainfall around the Philippines and Indonesia weakened. The Southern Oscillation and Equatorial Southern Oscillation were weakly positive in March. Overall, the trend in the coupled ocean-atmosphere system is consistent with a weakening La Niña.

Most of the models in the IRI/CPC plume predict a transition to ENSO-neutral during the Northern Hemisphere spring 2021. The forecaster consensus agrees that a transition is imminent, with a 50-50% chance of La Niña or ENSO-neutral for the March-May average, and then predicts ENSO-neutral to continue at least through the Northern Hemisphere summer. In part, due to the uncertainty in predictions made at this time of year, the forecast for the Northern Hemisphere Fall 2021 has lower confidence with a 40-50% chance of either La Niña or ENSO-Neutral, with a small chance for El Niño.

In summary, a transition from La Niña to ENSO-Neutral is likely in the next month or so, with an 80% chance of ENSO-neutral during May-July 2021.

## 6. Rainfall Verification JFM– January, February, March (Sony)

The verification result of JFM rainfall forecasts was 7 hits and 7 misses (Heidke score: 0.3365). The 7 missed stations were Chuuk, Kwajalein, Guam, Saipan, Pago Pago, Honolulu, and Kahului.

DJF Verification Location	Rainfall Outlook	Final Probs	3 month Verification		
			% norm	Total (in)	Tercile
<b>Palau</b>					
Airai 7° 22' N, 134° 32' E	Above	20:30:50	121	33.49	Above
<b>FSM</b>					
Yap 9° 29' N, 138° 05' E	Above	20:35:45	178	28.72	Above
Chuuk 7° 28' N, 151° 51' E	Avg-below	35:35:30	161	41.40	Above
Pohnpei 6° 59' N, 158° 12' E	Above	25:35:40	152	54.42	Above
Kosrae 5° 21' N, 162° 57' E	Avg-above	30:35:35	176	80.84	Above
<b>RMI</b>					
Kwajalein 8° 43' N, 167° 44' E	Above	25:35:40	129	10.52	Avg.
Majuro 7° 04' N, 171° 17' E	Avg-above	30:35:35	144	30.47	Above
<b>Guam and CNMI</b>					
Guam 13° 29' N, 144° 48' E	Avg-above	30:35:35	86	7.82	Below
Saipan 15° 06' N, 145° 48' E	Avg-above	30:35:35	90	6.31	Below
<b>American Samoa</b>					
Pago Pago 14° 20' S, 170° 43' W	Avg.	30:40:30	122	43.93	Above
<b>State of Hawaii</b>					
19.7° - 21.0' N, 155.0° - 159.5' W					
Lihue	Avg-above	30:35:35	266	17.67	Above
Honolulu	Avg-below	35:35:30	306	8.98	Above
Kahului	Avg-below	35:35:30	268	14.06	Above
Hilo	Avg-above	30:35:35	198	55.59	Above

Heidke:	0.3365
RPSS:	0.0198

### Tercile Cut-offs for AMJ Season based on 1981-2010 Pacific Rainfall Climatologies (Luke He)

	Koror	Yap	Chuuk	Pohnpei	Guam	Saipan	Majuro	Kwai
below (<)								
33.33%	23.9	14.98	22.35	34.4	8.52	6.98	20.29	7.24
near								
66.66%	32.43	21.91	31.31	43.28	11.35	9.47	24.26	11.19

above (>)

	Lihue	Honolulu	Kahului	Hilo	Pago Pago	Kosrae
below (<)						
33.33%	6.52	2.08	4.24	22	35.08	43.67
near						
66.66%	13.75	7.8	8.23	44.53	42.92	53.33

above (>)

## Rainfall Outlook AMJ– April, May, June (Sony)

(-) means no changes were made from original outlook/ probability

### AMJ

Location	RF Outlook	Probs (original)	Change RF Outlook (Final)	Change Probs (Final)
Airai	Above	<del>25:35:40</del>	Avg-above	20:40:40
Yap	Above	25:35:40	-	-
Chuuk	Above	25:35:40	-	-
Pohnpei	Above	25:35:40	-	-
Kosrae	Avg-above	30:35:35	-	-
Kwajalein	Avg-above	30:35:35	-	-
Majuro	Avg-above	30:35:35	-	-
Guam	Above	<del>25:35:40</del>	Avg-above	30:35:35
Saipan	Above	<del>25:30:45</del>	Avg-above	30:35:35
Pago Pago	Avg-below	35:35:30	-	-
Lihue	Avg-above	30:35:35	-	-
Honolulu	Avg-above	30:35:35	-	-
Kahului	Avg.	30:40:30	-	-
Hilo	Avg.	30:40:30	-	-

### Tercile Cut-offs for AMJ Season based on 1981-2010 Pacific Rainfall Climatologies (Luke He)

	Koror	Yap	Chuuk	Pohnpei	Guam	Saipan	Majuro	Kwaj
below (<)								
33.33%	34.28	21	32.97	49.71	13.05	8.14	25.63	15.41
near								
66.66%	42.1	32.89	39.15	56.96	15.95	11.06	34.51	26.35

above (>)

	Lihue	Honolulu	Kahului	Hilo	Pago Pago	Kosrae
below (<)						
33.33%	4.74	1.23	1.25	21.42	22.42	47.62
near						
66.66%	5.97	1.77	2.17	29.01	33.53	51.87

above (>)

## 7. Drought monitoring updates (Richard Heim).

### A. End-of-March Monthly Drought Assessment:

- i. With WxCoder III data, we have 23 stations in the monthly analysis.
- ii. March was dry (less than the 4- or 8-inch monthly minimum needed to meet most water needs) in the Marianas, northern Marshalls, and at Lukunor in the FSM; it was wet elsewhere. March was drier than normal at Saipan, Lukunor, Kapingamarangi, and Pago Pago, and wetter than normal elsewhere. The end-of-March monthly analysis (March 31) is consistent with the weekly analyses for March 30 and April 6, and is the same as the March 30 & April 6 analyses. Compared to the end-of-February monthly analysis:
  - a. The USDM status worsened at Saipan (D0 to D1) and Wotje (D2 to D3).
  - b. The USDM status improved at Guam & Rota (D1 to D0), Kwajalein (D2 to D1), Kapingamarangi (D3 to D2), Fananu & Jaluit (D1 to D-Nothing), and Majuro (D0 to D-Nothing).
  - c. The USDM status stayed the same at the other stations:
    1. D-Nothing everywhere else.
  - d. Utirik was plotted as missing due to missing data for the month.
- iii. Some March 2021 precipitation ranks:
  - a. **Kapingamarangi:** 8<sup>th</sup> driest March in their 31-year record; **the 5 time periods from April-March through August-March were the driest on record**, the 5 time periods from September-March through January-March were the 3<sup>rd</sup> driest, and February-March was 5<sup>th</sup> driest.
  - b. **Saipan:** 4<sup>th</sup> driest March (40 years) and 3<sup>rd</sup> driest April-March (12-month period) (32 years), but 15<sup>th</sup> driest February-March.
  - c. **Jaluit:** 7<sup>th</sup> driest June-March (35 years) but 17<sup>th</sup> wettest March.
  - d. **Wotje:** 5<sup>th</sup> driest January-March (38 years) but 14<sup>th</sup> wettest March.
  - e. On wet side: wettest March at Ailinglaplap (38 years) (all but 2 of the last 12 time periods were wettest on record); 2<sup>nd</sup> wettest March at Ulithi (38 yrs) & Mili (38 yrs); 3<sup>rd</sup> wettest March at Woleai (39 yrs), Pohnpei (70 yrs), & Chuuk (70 yrs); 2<sup>nd</sup> wettest April-March (last 12 months) at Ailinglaplap (35 yrs); 3<sup>rd</sup> wettest April-March at Pago Pago (55 yrs), Kosrae (33 yrs), & Pohnpei (69 yrs).

7. Drought monitoring updates (Continue).

- B. Current (Weekly) Drought Conditions: The discussion above is the monthly (end of March) analysis. The latest weekly USAPI USDM assessment may show different USDM classifications. The latest weekly USAPI USDM assessment is for April 6.
  - i. The April 6 analysis is the same as the end of March analysis.
  
- C. March 2021 NCEI State of the Climate Drought Report: The March 2021 NCEI SotC Drought report will go online next Tuesday.
  - i. The web page url will be:

## 7. Drought monitoring updates (Continue).

### D. Use of SPI and Percent of Normal Precipitation in USAPI Drought Monitoring: -- NO CHANGE IN STATUS

- i. The SPI is used to determine Dx levels for the Mainland US.
  - a. D0: SPI between -0.5 & -0.8
  - b. D1: SPI between -0.8 & -1.3
  - c. D2: SPI between -1.3 & -1.6
  - d. D3: SPI between -1.6 & -2.0
  - e. D4: SPI -2.0 or less
- ii. Percent of Normal Precipitation is also used to identify areas to look at. If below normal, location is a candidate for drought.
- iii. It's not that straightforward for the USAPI.
  - a. The monthly normal precipitation amount can vary significantly from month to month due to the strong seasonality of equatorial Pacific precipitation resulting from the seasonal migration of the Inter-Tropical Convergence Zone (ITCZ) and occurrence of tropical cyclones.
  - b. During the wet season, the monthly normal can be well above the monthly minimum precipitation needed to meet most water needs.
    1. In these cases, the station can be below normal and have a negative SPI, yet still have plenty of rain and not be in any danger of being in drought.
    2. This is one reason why the monthly and weekly minimum rainfall criteria are so important.

### E. Automated Ingest of Daily Rainfall Data: -- NO CHANGE IN STATUS

- i. Automated Program: -- NCEI changed servers in June 2020, so the automated program is now running on climon-prod instead of cmb-us. It is also running in parallel on climon-dev. The automated program that ingests the USAPI station daily data has been modified to send out a master file of the current data to the authors, in case NCEI's web pages go down because of a future government shut down or for other reasons.
- ii. Updates and Fixes
  - a. Kwajalein is getting into the automated data system now, but Pago Pago still is not getting in on a regular basis. Efforts are being made to get Pago Pago in there.
  - b. Find out why Saipan's ASOS data are being transmitted and getting into our automated process instead of the manual gauge WxCoder III data.
  - c. Add new stations to the automated process (Capital Hill 1, Nimitz Hill, Koror COOP, Mwoakilloo). I need to identify the WxCoder I.D. call sign and the COOP station numbers for these stations, then find them in our (NCEI) metadata base, then determine if they are being captured from the NOAAPort feed.



## 7. Drought monitoring updates (Continue).

- a. <https://www.ncdc.noaa.gov/temp-and-precip/drought/usapi-pcp/>
- b. The "All Indicators" tab is the most used tab by USDM authors:
  1. <https://www.ncdc.noaa.gov/temp-and-precip/drought/usapi-pcp/all>
- c. The "Weekly", "Monthly", and "Seasonal" tabs have data tables as well as maps plotting the values.
- d. The web page is updated automatically every day by a computer program that automates the ingest and processing of the data. The program runs every morning at 10 a.m. EST; it also sends out an email every day containing daily and weekly rainfall totals for several USAPI stations.
- e. Some data on the web page are color coded to indicate wet or dry conditions (weekly and monthly precipitation totals), missing days (grey), and USDM categories (monthly and seasonal rank percentiles).
- f. The web page is for internal use by NWS Pacific Island personnel and USDM author personnel. It is not for public release (NCEI does not have the staff to answer questions from the public and media and other users about why there is missing data).

### F. USAPI USDM Authors: -- NO CHANGE IN STATUS

- i. The OCONUS (USAPI) USDM became an operational product at the beginning of March, with authorship rotating amongst the NCEI, NDMC, USDA, & CPC authors.
- ii. There are 7 USAPI USDM (OCONUS) authors: Ahira Sanchez-Lugo and myself (Richard Heim) from NCEI; Curtis Riganti, Claire Shield, and Deb Bathke from NDMC; Brad Rippey (from USDA); Anthony Artusa (from CPC).
  - a. Claire, Curtis, & Brad have authored besides Ahira & me.
- iii. With the June 4, 2019 map, the U.S. Virgin Islands have been added to the USDM product suite. The USDM web site (<https://droughtmonitor.unl.edu/>) has been revised so that two USDM products (sets of maps) are produced each week: a CONUS USDM and an OCONUS USDM. The OCONUS USDM includes the USAPI and the US Virgin Islands (dots), while the CONUS USDM is what has been done for years (50 States & Puerto Rico) (polygon shapefiles).

### G. USAPI Listserv: -- NO CHANGE IN STATUS

- i. NDMC (National Drought Mitigation Center) set up a listserv for communication of the USAPI USDM analyses and discussion, similar to the listservs that were set up for the Mainland and for the U.S. Virgin Islands. **We have been using this for communications, both for sending out the USAPI USDM analyses and it is also for NWS offices to report drought impacts to the authors and rest of the group.**
- ii. If others want to be added to the listserv, let me (Richard Heim) or Brian Fuchs know and Brian will get them added.
- iii. There is also a DMUpdate Listserver for those who just want to know when the new USDM maps are released.