NWS Climate Services

March PEAC Audio Conference Call Summary

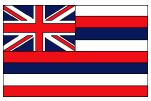
9 March, 1430 HST (10 March 2023, 0030 GMT)

February 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	February	Inches	inches	DJF
Airai	8.74	90	9.73	-0.98	118
Yap	6.11	118	5.19	0.92	128
Chuuk	15.60	215	7.25	8.35	133
Pohnpei	13.99	146	9.55	4.44	112
Kosrae	24.25	188	12.93	11.32	136
Kwajalein	1.32	50	2.64	-1.32	115
Majuro	9.51	138	6.88	2.63	123
Guam NAS	5.69	188	3.03	2.66	239
Saipan	3.05	118	2.59	0.46	214
Pago Pago	13.19	110	12.00	1.19	98
Lihue	8.67	471	1.84	6.83	206
Honolulu	3.16	319	0.99	2.17	123
Kahului	1.01	94	1.07	-0.06	111
Hilo	37.95	320	8.38	18.44	143

Reports from around the Region



Hawaii (Kevin Kodama)

Precipitation Summaries for HI can also be found:

https://www.weather.gov/hfo/hydro_summary

Kauai

All of the gages on Kaua'i had well above average rainfall totals for the month of February. The U.S. Geological Survey's (USGS) rain gage on Mount Wai'ale'ale had the highest monthly total of 63.84 inches (261 percent of average). This was also the highest February total at this site since 1979. Mount Wai'ale'ale also had the highest daily total of 11.39 inches on February 21. Records for the highest February rainfall were broken at the Hanapēpē, Kalāheo, 'Ōma'o, and Wailua Experiment Station rain gages. These four sites have data records going back around 30 years. The Līhu'e Variety Station and Wainiha Power House gages had their highest February totals since 1989.

The rainy conditions since the second half of January have pushed 2023 rainfall totals into above average levels at all of the gages on Kaua'i. The Mount Wai'ale'ale gage had the highest year-to-date total of 80.53 inches (164 percent of average). Some of the gages on Kaua'i have year-to-date totals 3 to 4 times higher than their average through the end of February.

Oahu

February rainfall totals across O'ahu were above average at most of the rain gages. Near to below average totals were posted by sites on the far eastern end of the island, such as Waimānalo (88 percent of average), Kamehame (69 percent of average), and Bellows Air Force Station (56 percent of average). The USGS' Poamoho Rain Gage No. 1 had the highest monthly total of 25.64 inches (163 percent of average). The Waiawa Correctional Facility (CF) gage had the highest daily total of 5.62 inches on February 4. The Kunia, Moanalua, Palisades, and Waiawa CF gages recorded their highest February totals in just over 30 years of data. The Kalaeloa, Mākua Range, Waipi'o, and Wai'anae gages had their highest February totals since 2004.

Most of the rain gages on O'ahu had near to above average rainfall totals for 2023 through the end of February. Below average totals were mainly on the far eastern end of the island. The USGS' Poamoho Rain Gage No. 1 had the highest year-to-date total of 38.19 inches (113 percent of average).

Maui

While most of the gages recorded near to above average rainfall for the month of February, Maui County had the driest overall conditions in the state and managed to miss significant flooding impacts. Below average totals were mainly along the leeward areas. The USGS' rain gage at West Wailuaiki Stream had the highest monthly total of 29.05 inches (196 percent of average). The highest daily total of 2.64 inches came from the USGS' Pu'u Kukui gage on February 24. There were no February rainfall records broken among the Maui County totals. The Lahainaluna gage had its highest February total since 2004.

Rainfall totals for 2023 through the end of February were above average at most of the Maui County rain gages. The rain gage at West Wailuaiki Stream had the highest year-to-date total of 61.64 inches (177 percent of average).

Big Island

The Big Island had a very wet February. Most of the gages had well above average monthly totals, with several windward and Ka'ū District sites having totals 3 to nearly 6 times greater than the February average. The USGS' rain gage at Honoli'i Stream had the highest monthly total of 56.58 inches (396 percent of average). Hilo Airport had the highest daily total of 11.13 inches on February 18. While this was a record for that day, it did not break into the top 10 highest daily totals for this site. The all-time daily record at Hilo Airport currently stands at 16.87 inches on February 20, 1979. This was part of a 2-day total of 28.37 inches for February 19-20, 1979. Records for the highest February rainfall total were broken at Glenwood, Mountain View, and Pi'ihonua. These sites have data records going back about 30 years. Kapāpala Ranch and the Mauna Loa Observatory had their highest February totals since 1979 and 1982, respectively. Hakalau, Hilo Airport, Pāhoa, and Waiākea Uka had their highest February totals since 2008. For Hilo Airport, it was the fifth highest February total on record. The record February total of 45.55 inches occurred in 1979.

Most of the Big Island rainfall totals were near to above average for 2023 through the end of February. Gages in the North Kohala and South Kohala Districts had mostly below average totals. The USGS' rain gage at Honoli'i Stream had the highest year-to-date total of 60.11 inches (192 percent of average).

Current State of ENSO and predictions

Issued 9 March 2023

ENSO Alert System Status: Final La Niña Advisory

Synopsis: **La Niña has ended and ENSO-neutral conditions are expected to continue through the Northern Hemisphere spring and early summer 2023.**

During February 2023, below-average sea surface temperatures (SSTs) weakened and currently persist only in the central Pacific Ocean. The latest weekly Niño-3.4 index value was -0.2°C. In contrast to the central Pacific, SSTs in parts of the eastern Pacific Ocean were significantly above average, with the latest Niño-1+2 index value at +1.1°C. In the last month, area-averaged subsurface temperatures became slightly above average, with positive temperature anomalies spanning the Pacific, though remaining mostly at depth. The atmospheric circulation anomalies across the tropical Pacific are lagging the changes in the ocean. Low-level easterly wind anomalies continue over the central Pacific Ocean. Upper-level westerly wind anomalies were evident over most of the Pacific. Suppressed convection persisted over the central tropical Pacific, while enhanced convection was observed over Indonesia. Collectively, the coupled ocean-atmosphere system was consistent with ENSO-neutral.

The most recent IRI plume favors ENSO-neutral to continue through the spring, with El Niño forming during summer 2023 and persisting through the fall. In contrast, the forecaster consensus favors ENSO-neutral through summer 2023, with elevated chances of El Niño developing afterwards. The smaller chances of El Niño relative to the model predictions are primarily because ENSO forecasts made during the spring are less accurate, and also the tropical Pacific atmosphere is still fairly consistent with a cool/La Niña-like state. However, it is possible that strong warming near South America may portend a more rapid evolution toward El Niño and will be closely monitored. In summary, La Niña has ended and ENSO-neutral conditions are expected to continue through the Northern Hemisphere spring and early summer 2023.

This discussion is a consolidated effort of the National Oceanic and Atmospheric Administration (NOAA), NOAA's National Weather Service, and their funded institutions. Oceanic and atmospheric conditions are updated weekly on the Climate Prediction Center web site (El Niño/La Niña Current Conditions and Expert Discussions). Additional perspectives and analysis are also available in an ENSO blog. A probabilistic strength forecast is available here. The next ENSO Diagnostics Discussion is scheduled for 13 April 2023.

6. Rainfall Verification (DJF)- December, January, February

The verification result of **DJF** rainfall forecasts was 11 hits and 3 misses (Heidke score: 0.5191).

December, January, February (DJF) 2022 Verification

Updated 3/14/2023 DJF

Location	UKMO	ECMWF	CA	NASA	NCEP	IRI	APCC	Initial: Rainfall Outlook	Initial: Final Probs	3 mo Verification % norm	3 mo Verification Total (in)	3 mo Verification Tercile	Post Conference PEAC Forecast Final	Post Conference PEAC Probs Final
Palau														
Airai 7° 22' N, 134° 32' E	Above	Above	Above	Avg-below	Above	Above	Above	Above	20:30:50	118	39.54	Above		
FSM														
Yap 9° 29' N, 138° 05' E	Above	Above	Above	Avg-below	Above	Above	Above	Above	25:30:45	128	25.79	Above		
Chuuk 7° 28'N, 151° 51'E	Above	Above	Above	Avg-below	Above	Above	Above	Avg-Above	30:35:35	133	37.94	Above		
Pohnpei 6° 59'N, 158° 12'E	Above	Above	Above	Above	Above	Above	Above	Above	20:30:50	112	43.52	Avg.		
Kosrae 5° 21'N, 162° 57'E	Avg.	Above	Above	Below	Avg.	Above	Above	Avg.	25:40:35	136	62.07	Above		
RMI														
Kwajalein 8° 43'N, 167° 44'E	Above	Above	Avg-above	Avg.	Avg.	Avg-above	Above	Above	25:35:40	115	14.28	Avg.		
Majuro 7° 04' N, 171° 17'E	Below	Above	Above	Below	Avg.	Clim.	Above	Above	30:30:40	123	31.95	Above		
Guam and CNMI														
Guam 13° 29'N, 144° 48' E	Above	Above	Avg-above	Avg-above	Avg.	Clim.	Above	Above	25:30:45	239	29.03	Above		
Saipan 15° 06'N, 145° 48' E	Above	Above	Avg-above	Avg-above	Avg.	Clim.	Above	Above	25:30:45	214	19.22	Above		
American Samoa														
Pago Pago 14° 20'S, 170° 43'W	Avg-below	Clim.	Avg-below	Avg-below	Avg-above	Clim.	Above	Avg-below	35:35:30	98	37.48	Avg.		
State of Hawaii														
19.7° - 21.0' N, 155.0° - 159.5' W														
Lihue	Above	Above	Above	Avg-above	Avg.	Clim.	Above	Avg-above	30:35:35	206	18.65	Above		
Honolulu	Above	Above	Above	Avg-above	Avg.	Clim.	Above	Avg-above	30:35:35	123	5.83	Avg.		
Kahului	Above	Above	Above	Avg-above	Avg.	Clim.	Above	Avg-above	30:35:35	111	9.72	Above		
Hilo	Above	Above	Above	Avg-above	Avg.	Clim.	Above	Avg-above	30:35:35	143	47.49	Above		

11	Hit
3	Miss
Heidke:	0.5191
RPSS:	0.1591

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

	Koror	Yap	Chuuk	Pohnpei	Guam	Saipan	Majuro	Kwaj
below (<)								
33.33%	26.42	17.47	25.39	34.23	11.41	8.66	24.24	11.78
near								
66.66%	37.21	25.53	32.01	45.42	16.49	11.56	30.01	16.47
above (>)								

	Lihue	Honolulu	Kahului	Hilo	Pago Pago	Kosrae
below (<)						
33.33%	7.45	3.68	4.64	19.58	35.2	43.72
near						
66.66%	13.98	8.62	8.68	33.29	46.65	53.68
above (>)						

6. Rainfall Outlook MAM– March, April, May

FMA Forecast Location	Rainfall Outlook	Probability Pre-Conference	Final Outlook	Final Probability
Palau				
Airai 7º 22' N, 134º 32' E	Above	25:35:40	-	-
FSM				
Yap 9º 29' N, 138º 05' E	Above	25:35:40	-	-
Chuuk 7º 28'N, 151º 51'E	Avg-Above	30:35:35	-	-
Pohnpei 6º 59'N, 158º 12'E	Above	25:35:40	Avg-Above	30:35:35
Kosrae 5º 21'N, 162º 57'E	Above	25:35:40	Avg-Above	30:35:35
	-	-		
RMI				
Kwajalein 8º 43'N, 167º 44'E	Avg	20:40:30	-	-
Majuro 7º 04' N, 171º 17'E	Avg	24:40:35	-	-
Guam and CNMI				
Guam 13º 29'N, 144º 48' E	Above	25:35:40	Avg-Above	30:35:35
Saipan 15º 06'N, 145º 48' E	Avg-Above	30:35:35	-	-
American Samoa				
Pago Pago 14º 20'S, 170º 43'W	Avg-below	35:35:30	-	-
State of Hawaii				
19.7º - 21.0' N, 155.0º - 159.5' W				
Lihue	Above	25:35:40	-	-
Honolulu	Above	25:35:40	-	-
Kahului	Above	25:35:40	-	-
Hilo	Above	25:35:40	-	-

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

	Koror	Yap	Chuuk	Pohnpei	Guam	Saipan	Majuro	Kwaj
below (<)								
33.33%	26.86	14.74	30.3	46.13	7.61	5.88	21.02	9.74
near								
66.66%	33.44	22.41	36.94	58.61	11.51	8.02	32.44	21.13
above (>)								

	Lihue	Honolulu	Kahului	Hilo	Pago Pago	Kosrae
below (<)						
33.33%	5.32	1.83	2.45	22.5	27.97	51
near						
66.66%	7.98	3.05	4.64	34	38.33	55.49
above (>)						

Drought Monitoring Updates: (Richard Heim)

Drought monitoring updates.

3. Drought monitoring updates.

A. End-of-February Monthly Drought Assessment:

i. With WxCoder III data, we have 23 stations in the monthly analysis.

ii. February was dry (less than the 4- or 8-inch monthly minimum needed to meet most water needs) in the northern and western RMI, western FSM, parts of the southern and eastern FSM, and northern Marianas (Saipan); it was wet in Palau, American Samoa, and elsewhere in the Marianas, FSM, and RMI (Majuro and Mili). February was drier than normal at Kapingamarangi, Lukunor, & Kwajalein, and wetter than normal elsewhere.

The end-of-February monthly analysis (February 28) is consistent with the weekly analysis for February 28 and is the weekly analysis (except Lukunor is D0-S on the monthly map when it was missing on the weekly map). Compared to the end-of-January monthly analysis:

D1 improved to D0 on Kapingamarangi.
D0 began at Lukunor & Pingelap.
D1 began at Kwajalein & Wotje.
The USDM status stayed the same (D-Nothing) at the other stations.
Utirik & Fananu were plotted as missing due to missing data for the month.

Some February 2023 precipitation ranks:

Kapingamarangi: 10th wettest February (in a 36-year record), but 2nd driest rank for May-February & April-February, and driest March-February.

Lukunor: 9th driest February (39 years), and driest July-February through April-February, 2nd driest August-February & March-February.

Pingelap: 9th driest February (41 years).

At the wet end of the scale:

Mili: 2nd wettest February and wettest for November-February through March-February.

B. Current (Weekly) Drought Conditions: The discussion above is the monthly (end of February) analysis. The latest weekly USAPI USDM assessment may show different USDM classifications. The latest weekly USAPI USDM assessment is for March 7.

The March 7 analysis has D1 at Kapingamarangi but is otherwise the same as the February monthly analysis.

C. February 2023 NCEI State of the Climate Drought Report: The February 2023 NCEI SotC Drought report will go online next week.

The web page url for the February report will be:
https://www.ncei.noaa.gov/access/monitoring/monthly-report/drought/202302#regional-usapi