NWS Climate Services

January PEAC Audio Conference Call Summary

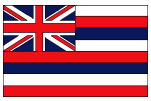
12 January, 1430 HST (13 January 2023, 0030 GMT)

December 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	December	Inches	inches	OND
Airai	11.76	86	13.62	-1.86	133
Yap	11.17	131	8.51	2.66	148
Chuuk	13.00	116	11.25	1.75	111
Pohnpei	11.59	72	16.08	-4.49	99
Kosrae	15.95	99	16.11	-0.16	120
Kwajalein	5.88	88	6.66	-0.78	113
Majuro	10.30	90	11.39	-1.09	110
Guam NAS	9.32	182	5.11	4.21	134
Saipan	5.01	130	3.85	1.16	122
Pago Pago	9.10	71	12.84	-3.74	108
Lihue	4.93	156	3.17	1.76	81
Honolulu	2.24	170	1.32	0.92	81
Kahului	3.90	147	2.66	1.24	106
Hilo	7.48	73	10.24	-2.76	102

Reports from around the Region



Hawaii (Kevin Kodama)

Precipitation Summaries for HI can also be found:

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

Kauai

Nearly all of the rain gages on Kaua'i posted near to above average rainfall totals for the month of December. The U.S. Geological Survey's (USGS) rain gage on Mount Wai'ale'ale had the highest monthly total of 18.69 inches, but this was just 62 percent of the long term December average. The USGS' Kilohana rain gage had the highest daily total of 3.88 inches on December 19.

Although wet conditions closed out the year, all of the gages on Kaua'i finished 2022 with near to below average rainfall totals. The Mount Wai'ale'ale gage had the highest annual total of 269.69 inches (68 percent of average). After a slight uptick last year, the running 30-year average of annual rainfall at Mount Wai'ale'ale resumed its long period of decline and is now at 357.71 inches. In 1997, the 30-year running average was 406.03 inches.

Oahu

December rainfall totals were near to above average at most of the gages along the slopes of the Wai'anae Range. Rainfall totals from the slopes of the Ko'olau Range were mostly near to below average. The USGS' Poamoho Rain Gage No. 1 had the highest monthly total of 10.25 inches (51 percent of average). The Poamoho Experiment Farm gage had the highest daily total of 4.06 inches on December 19. The gages at Mānoa Lyon Arboretum and Wheeler Army Airfield posted their lowest December totals since 2009. The Moanalua, Nu'uanu Upper, and Pālolo Fire Station gages had their lowest December totals since 2012.

Most of the O'ahu rain gages ended 2022 with below average totals. The USGS' Poamoho Rain Gage No. 1 had the highest annual total of 113.27 inches (50 percent of average). The Mānoa Lyon Arboretum and Luluku gages had their lowest annual totals since 1975 and 2001, respectively.

Maui

Maui County rain gages had mostly near to above average December totals. The USGS' rain gage at West Wailuaiki Stream had the highest monthly total of 13.42 inches (82 percent of average). The Kaunakakai Mauka gage recorded the highest daily total of 4.66 inches on December 18. This daily total was the main reason this site had its highest December total since 2007.

All of the Maui County rain gages finished 2022 with near to below average rainfall totals. The rain gage at West Wailuaiki Stream had the highest annual total of 199.93 inches (89 percent of average). Although the Kaunakakai Mauka gage finished the year with wet conditions, it still ended up having the lowest annual total since 2012.

Big Island

A generally dry and stable weather pattern dominated conditions across the main Hawaiian Islands through the first two weeks of December. The trade winds during a portion of this time period reached fresh to strong intensities, but rainfall totals were low overall. On December 14 and 15, the central North Pacific weather pattern began to change significantly and shifted the trade winds away from the state almost until the end of the month. Early in this period, a weak cold front approached the state from the northwest. Unstable pre-frontal conditions generated thunderstorms that approached O'ahu from the southwest during the evening of December 15. These thunderstorms were on a weakening trend as they reached O'ahu's south shore and produced only minor flooding issues. The front reached Kaua'i on December 16 and dissipated that night before reaching O'ahu. Peak rainfall totals of 1 to 2 inches did not produce significant flooding problems.

A couple of days later, a much stronger storm system moved into the area and produced the most significant weather event of the month, and possibly the year depending on what metrics are used. There is some debate on whether this was a strong extratropical system or a kona low. Regardless of nomenclature, the impacts from this low pressure system were significant in many areas of the state. The atmosphere rapidly destabilized on December 18 as a short wave trough aloft moved over the state from the west. Heavy rainfall cores were initially disorganized as the trough moved over Kaua'i and O'ahu, but coalesced into a better defined band as it moved over Maui County. The southwestern flank of Haleakalā on the island of Maui received 2 to 4 inches of rainfall within a few hours, which produced flash flooding within the normally dry gulches draining through the Kīhei area of the island. Notably, South Kīhei Road was closed for several hours due to flooding out of Kūlanihāko'i Gulch. The rain band weakened by the time it reached the west side of the Big Island, but still managed to cause flooding in several areas within the North Kohala and South Kohala Districts. These areas included the Akoni Pule Highway (Highway 270) just south of Hāwī and the Hawai'i Belt Road (Highway 190) at Kamakoa Gulch.

Current State of ENSO and predictions

Issued 12 January 2023

ENSO Alert System Status: La Niña Advisory

Synopsis: **A transition from La Niña to ENSO-neutral is anticipated during the February-April 2023 season. By Northern Hemisphere spring (March-May 2023), the chance for ENSO-neutral is 82%.**

During December, below-average sea surface temperatures (SSTs) weakened over the equatorial Pacific Ocean. All of the latest weekly Niño index values were between -0.7°C and -0.8°C. The subsurface temperature anomalies also weakened substantially, but below-average subsurface temperatures persisted near the surface and at depth in the eastern equatorial Pacific Ocean. However, the atmospheric circulation anomalies over the tropical Pacific Ocean did not notably weaken. Low-level easterly wind and upper-level westerly wind anomalies remained across most of the equatorial Pacific. Suppressed convection persisted over the western and central tropical Pacific, while enhanced convection was observed around Indonesia. Overall, the coupled ocean-atmosphere system continued to reflect La Niña.

The most recent IRI plume predicts that La Niña will transition to ENSO-neutral during the Northern Hemisphere winter 2022-23. Interestingly, the dynamical models indicate a faster transition (January-March) than the statistical models (February-April). At this time, the forecaster consensus favors the statistical models, with a transition to ENSO-neutral in the February-April 2023 season. The sustained atmospheric circulation anomalies and the weakening downwelling oceanic Kelvin wave do not support an imminent transition. However, lower accuracy during times of transition, and when predictions go through the spring, means that uncertainty remains high. In summary, a transition from La Niña to ENSO-neutral is anticipated during the February-April 2023 season. By Northern Hemisphere spring (March-May 2023), the chance for ENSO-neutral is 82%.

6. Rainfall Verification (OND)- October, November, December

The verification result of **OND** rainfall forecasts was 11 hits and 3 misses (Heidke score: 0.5937).

October, November, December (OND) 2023 Verification

Updated 1/12/2023 OND

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	Avg-above	Avg-below	Above	Above	Above	Above	20:30:50	133	50.25	Above		
FSM														
Yap 9° 29' N, 138° 05' E	Above	Avg-above	Avg.	Avg-below	Avg.	Avg-above	Above	Above	25:35:40	148	43.64	Above		
Chuuk 7° 28'N, 151° 51'E	Above	Avg.	Avg.	Above	Avg.	Below	Above	Avg-above	30:35:35	111	37.10	Avg.		
Pohnpei 6° 59'N, 158° 12'E	Above	Avg.	Avg-above	Above	Avg-below	Clim.	Below	Avg-above	30:35:35	99	45.49	Avg.		
Kosrae 5° 21'N, 162° 57'E	Avg.	Below	Above	Below	Below	Below	Below	Avg.	30:40:30	120	49.22	Above		
RMI														
Kwajalein 8° 43'N, 167° 44'E	Avg.	Avg.	Avg.	Avg-above	Avg.	Below	Avg.	Avg.	30:40:30	113	32.99	Above		
Majuro 7° 04' N, 171° 17'E	Below	Avg-below	Above	Below	Avg.	Below	Above	Avg.	30:40:30	110	41.27	Avg.		
Guam and CNMI														
Guam 13° 29'N, 144° 48' E	Above	Avg-above	Avg-below	Avg-below	Avg-below	Below	Avg.	Avg-above	30:35:35	134	32.10	Above		
Saipan 15° 06'N, 145° 48' E	Above	Avg-above	Avg.	Avg-below	Avg-below	Below	Avg.	Avg-above	30:35:35	122	24.47	Above		
American Samoa														
Pago Pago 14° 20'S, 170° 43'W	Avg.	Avg-below	Below	Avg-below	Avg-below	Clim.	Above	Avg-below	35:35:30	108	34.85	Avg.		
State of Hawaii														
19.7° - 21.0' N, 155.0° - 159.5' W														
Lihue	Above	Above	Avg-below	Avg-below	Avg.	Clim.	Below	Avg.	30:40:30	81	8.14	Avg.		
Honolulu	Above	Above	Avg-below	Avg-below	Avg.	Clim.	Below	Avg.	30:40:30	81	3.18	Below		
Kahului	Above	Above	Avg-below	Avg-below	Avg.	Clim.	Below	Avg.	30:40:30	106	5.35	Avg.		
Hilo	Above	Above	Avg-below	Avg-below	Avg-below	Clim.	Below	Avg.	30:40:30	102	30.78	Avg.		

11	Hit
3	Miss
Heidke:	0.5937
RPSS:	0.3247

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%	31.24	27.44	30.88	43.58	24.01	20.13	35.14	29.07
near								
66.66%	38.99	32.32	38.67	49.78	29.41	23.26	41.82	31.88
above (>)								

	Lihue	Honolulu	Kahului	Hilo	Pago Pago	Kosrae
below (<)						
33.33%	9.18	4.36	4.18	28.26	31.15	39.86
near						
66.66%	15.56	8.52	8.05	41.99	41.56	44.83
above (>)						

6. Rainfall Outlook JFM– January, February, March

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

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

	Koror	Yap	Chuuk	Pohnpei	Guam	Saipan	Majuro	Kwaj
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 (>)						

Drought Monitoring Updates: (Richard Heim)

Drought monitoring updates.

A. End-of-December Monthly Drought Assessment:

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

ii. December was dry (less than the 4- or 8-inch monthly minimum needed to meet most water needs) at Fananu, Kapingamarangi, Lukunor, & Ulithi (FSM); and Ailinglaplap, Jaluit, & Kwajalein (RMI); it was wet elsewhere. December was drier than normal at the eastern stations (Kwajalein, Majuro, Kapingamarangi, Lukunor, Pohnpei, Pago Pago), and wetter than normal western stations (Chuuk, Airai, Yap, Guam, Saipan).

iii. The end-of-December monthly analysis (December 31) is consistent with the weekly analyses for December 27 and January 3. Compared to the end-of-November monthly analysis:

a. D2 continued on Kapingamarangi.

b. D0 continued on Lukunor.

c. D0 ended at Wotje & Yap.

d. D0 began on Fananu, Ulithi, Ailinglaplap, Jaluit, & Kwajalein.

e. Utirik & Pingelap were plotted as missing due to missing data for the month.

iv. Some December 2022 precipitation ranks:

a. **Kapingamarangi:** 6th driest December (in a 32-year record), but driest April-December through January-December; 2nd driest rank for August-December through May-December; 4th driest Nov-Dec & Oct-Dec.

b. **Lukunor**: 3rd driest December (39 years), but driest August-December through April-December; 2nd driest March-December through January-December.

c. **Ulithi**: 8th driest December (40 years), but 2nd driest June-December.

d. **Ailinglaplap:** 6th driest December (39 years), but wettest Mar-Dec thru Jan-Dec.

e. **Jaluit**: 11th driest December (39 years), but 4th driest May-Dec & Jun-Dec.

f. **Pago Pago**: 12th driest December (57 years) Yap: 12th driest November (72 years).

g. At the wet end of the scale:

1. Nukuoro & Wotje: 3rd wettest December.

2. Mili: 17th wettest December but wettest for Sep-Dec thru Jun-Dec & Apr-Dec thru Jan-Dec

B. Current (Weekly) Drought Conditions: The discussion above is the monthly (end of December) analysis. The latest weekly USAPI USDM assessment may show different USDM classifications. The latest weekly USAPI USDM assessment is for January 10.

I. The January 10 analysis has D2 at Kapingamarangi & D0 at Ulithi, but D-Nothing everywhere else except No Data for Pingelap & Utirik.

C. November 2022 NCEI State of the Climate Drought Report: The December 2022 NCEI SotC Drought report will go online next week.

I. The web page url for the December report will be:

a. https://www.ncei.noaa.gov/access/monitoring/monthly-report/drought/202212#regional-usapi

II. The Annual 2022 NCEI State of the Climate Drought report is online now:

a. https://www.ncei.noaa.gov/access/monitoring/monthly-report/drought/202213