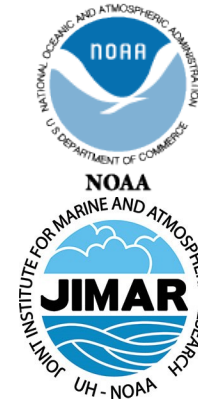




# NWS Climate Services

## February PEAC Audio Conference Call Summary

### 8 February, 1430 HST (9 February 2018, 0030 GMT)



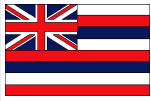
University of  
**Hawai'i**  
M Ā N O A  
UH/SOEST



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

	<b>Y YII</b>	<b>K k</b>	<b>K k YI</b>	<b>Y</b>	<b>4 k</b>
	Inches	January	Inches	inches	NDJ
Koror	8.38	82	10.18	<b>-1.80</b>	35.82
Yap	11.64	<b>182</b>	6.39	<b>5.25</b>	32.31
Chuuk	10.01	99	10.10	<b>-0.09</b>	34.68
Pohnpei	22.03	<b>167</b>	13.18	<b>8.85</b>	57.02
Kosrae	16.62	100	16.67	<b>-0.05</b>	59.68
Kwajalein	14.46	<b>458</b>	3.16	<b>11.30</b>	28.58
Majuro	15.76	<b>204</b>	7.74	<b>8.02</b>	45.62
Guam NAS	0.94	<b>23</b>	4.01	<b>-3.07</b>	9.66
Saipan	2.97	117	2.53	<b>0.44</b>	8.76
Pago Pago	15.37	115	13.34	<b>2.03</b>	40.32
Lihue	0.44	<b>20</b>	2.22	<b>-1.78</b>	2.68
Honolulu	0.06	<b>5</b>	1.15	<b>-1.09</b>	3.91
Kahului	0.27	<b>12</b>	2.30	<b>-2.03</b>	9.13
Hilo	14.63	<b>165</b>	8.87	<b>5.76</b>	45.06

k y fl



y y (Kevin)

Kauai

Very dry conditions during the first half of January resulted in below average monthly totals at most of the rain gages on Kauai. Wetter conditions during the second half of the month were not enough to overcome the initial rainfall deficits and more than half of the gages ended up with monthly totals below 50 percent of the January average. The USGS' gage on Mount Waialeale had the highest monthly total of 25.17 inches (102 percent of average) and the highest daily total of 6.46 inches on January 24. The gages at Anahola and Kokee posted their lowest January totals since 1995 and 2001, respectively.

Oahu

Like Kauai, dry conditions on Oahu quickly built up significant rainfall deficits during the first half of the month. Rainfall during the second half of the month provided some recovery but was not enough to prevent more than half of the sites ending the month with rainfall totals at less than 50 percent of average. The USGS' Poamoho Rain Gage No. 1 had the highest monthly total of 11.54 inches (63 percent of average). The highest daily total was 3.65 inches at Manoa Lyon Arboretum on January 20.

Maui

Most of the gages across Maui County reported below average totals for the month of January with several totals at less than 10 percent of average. The USGS' gage on Puu Kukui had the highest monthly total of 16.76 inches (54 percent of average) and the highest daily total of 5.52 inches on January 23. Ulupalakua Ranch had its lowest January total since 1945. Significant, though less extreme, Waikapu Country Club and Kahului Airport had their lowest January totals since 1993 and 2001, respectively.

Big Island

While many sites across the state were experiencing dry conditions, the windward slopes of the Big Island were drenched during the second half of the month. Near to above average rainfall totals were recorded from Laupahoehoe in the North Hilo District to Keaumo in the Puna District. The USGS' Saddle Road Quarry gage had the highest monthly total of 30.92 inches (296 percent of average) and the highest daily total of 5.74 inches on January 21. Hilo Airport and Pahoa had their highest January totals since 2002, and Mountain View has not recorded this much rain since 2004. The rest of the Big Island paints a different picture with nearly all remaining sites posting below average monthly totals. Driest conditions were in the North and South Kona Districts where all of the gages posted totals at less than 20 percent of average.



k y yk y (Mark, Chip):

American Samoa is keeping a close eye on a tropical depression closing in on the territory as it expected to intensify. "There's a tropical depression ... and it's located about halfway between American Samoa and Fiji.

American Samoa was particularly dry during July-August, and started to return to normal back in September with normal rainfall in Pago Pago. This is the rainy season in American Samoa, so there is plenty of rainfall there now. January recorded 127% of normal k y y y k i fl yll →Sea level stays elevated but there is no report of any inundations. Model-based PEAC's seasonal climate outlook is now indicating above-average rainfall with moderate confidence. The sea level will stay elevated over the next three months (FMA).

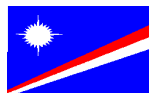


Y YI (Jason):

The month of January with 458% of normal rainfall seems to be one of the wettest months in the history of Kwajalein. As anticipated by PEAC and the PacIOOS wave run-up model forecasts for Kwajalein, tides have been very high with high waves, and there was some minor inundation (Pic 1). Event was associated with northerly swell from northern Pacific storm. However, there was no severe damage reported, so far. PEAC-model forecasts have trended to show above average rainfall and elevated sea level over the next 3 months, and there is no active TC warning now.



Picture. 1: Tides and Inundation pictures in Kwajalein (Pictures attached are day after evening high tide 4 Feb). The site is located north of runway on Roi Namur, near 9 24' 4.75"N, 167 28' 30.96E. Event is associated with northerly swell from northern Pacific storm. (Photo Credit: Mr. Eugene Bell, Kwajalein Atoll, RMI).



Y Samson):

Majuro had good rainfall in December (172%) and January (204%) that is helping them to keep their water reservoirs around 31 million gallons. Majuro is having high sea level and high tides since October 2017. As anticipated by PEAC and the PacIOOS wave run-up model forecasts for Majuro, tides have been very high with high waves causing some inundation (Pic 2). Event was associated with northerly swell from northern Pacific storm. PEAC-model forecasts have trended above average rainfall and elevated sea level over the next 3 months, and there is no active TC warning now.



Picture. 2: Tides and Inundation pictures in Majuro during February 3-4 high tides (top: inundated roads, bottom: inundated houses). Event is associated with northerly swell from northern Pacific storm. (Photo Credit: Mr. Charles C Guard).



\_\_\_\_\_ (Chip):

Pohnpei remains sustainable without any major problem as the Island and most of the atolls of Pohnpei have lately been, “Plenty wet”. It also received 167% of normal rainfall in January. The sea level has been high and there were high waves that inundated several places in Pohnpei, but there was no damage. PEAC forecasts have trended above-average rainfall and continuation of elevated sea level for the next three months.



\_\_\_\_\_ y (Mark/Chip):

Kosrae received 123% and 100% of rainfall in December and January. After prolonged dry periods, the situation has improved in Kosrae. There were some high tides that inundated low-lying areas, but no damage reported, so far. Currently, the island is wet. PEAC forecasts have trended to show average-above rainfall for the next three months.



\_\_\_\_\_ (Sanchez/Rashed):

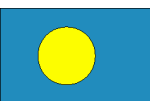
Chuuk has had good rainfall in November (105%), December (12%), and January (99%). The 10 inches rainfall during the first 8-days of February made Chuuk very wet. There were large high-tides with waves, which inundated some low-lying atolls. PEAC forecasts are favoring above average rainfall and high sea level in FMA season. *The rise may even go up to 8-10 inches above normal. In addition to La Niña, the wind-forced equatorial Rossby wave is partly responsible for this rise.*



\_\_\_\_\_ y (Mark/Rashed):

Yap has been wet for the last couple of months. It received 132% and 182% rainfall in December and January. Everything looks normal in Yap—reservoirs are full and streams are flowing well. Sea level has been relatively high (9 inches above normal), which is partly an impact of the Rossby wave. The island is relatively high and the south-west part of the island is protected by mangrove forest. Therefore, the island is relatively safe from any severe inundation problems. PEAC forecasts are favoring average rainfall and high sea level in FMA season.

*High sea levels have likely peaked for most of the tropical northwestern Pacific. For islands in the northwestern Pacific (i.e., Micronesia and Marshalls Islands) between the equator and 10°N, the CFSv2 and POAMA-2 models predict above-normal sea levels during the next three months in association with a wind-forced equatorial Rossby wave that is not simulated by the statistical models (See <https://uhslc.soest.hawaii.edu/sea-level-forecasts/> for more details)*



\_\_\_\_\_ yiy (Mark, Chip, Rashed):

Palau has been wet for the last couple of months with the monsoon trough providing good rainfall. It received 160% normal rainfall in December, but the rainfall in January is only 82% normal. The Freshwater Jelly fish are also coming back. The rainfall at Palau tracks ENSO so well that it makes a good ENSO index in its own right! During La Niña, the ONI is cold and Palau’s rainfall is high. Currently, the state of ENSO is leaning towards La Niña, so slightly above normal rainfall is expected in the forthcoming months. PEAC forecast favoring above average rainfall in JFM. Sea level is gradually coming back to normal.



yk y K F(Mark, Chip):



Guam has been dry for the last two weeks with some spotty showers here and there. A delay in the onset of the western North Pacific monsoon has been responsible for a prolonged period of unremarkable weather extending into January 2018 on Guam and in the CNMI. The rainfall recorded in January was only 23% of normal and the rainfall in November and December was significantly lower than the average (57- and 88%). While the climate model output largely indicates a wetter Guam in OND, Guam has been found to be dry during the same time period. While the rainfall in Saipan was 62% and 60% in November and December, it received 117% of normal rainfall in January. Both Guam and Saipan are dry now! Reasons for this persistent dryness include a weak and largely absent monsoon and a lack of tropical cyclone activity. PEAC forecasts are now indicating average rainfall for both Guam and Saipan over the next three months. The climate is now in a state of La Niña, and La Niña (0) correlates well with average-to-above average rainfall in Guam.

yi i —(Mark, Rashed)

A particular characteristic of the 2017 typhoon season was a clustering of activity across the South China Sea.

The westward and northward displacement of the 2017 TCs is consistent with the development of La Niña. The PEAC anticipates that TC activity numbers will be near average during the beginning of 2018, but still with a westward displacement (Philippine Sea and South China Sea to remain the focus). The 2016-17 South Pacific cyclone season ended on June 30, 2017, with record low activity across several categories (cyclone numbers, major cyclone numbers and the quantity known as the Accumulated Cyclone Energy<sup>1</sup> (ACE)). The end-of-season total of 101.4 ACE units was only 48% of the average (see: <http://models.weatherbell.com/tropical.php>).

The Australia's Bureau of Meteorology (BoM) and the New Zealand National Institute of Water and Atmospheric research (NIWA) have issued seasonal outlooks for the upcoming 2017-18 Southern Hemisphere TC activity. The BoM is calling for near-average to slightly above average activity in each of the Australian TC regions. NIWA is calling for a slightly above average risk for a TC to move into New Zealand waters. With due consideration of these local agency forecasts, the PEAC foresees a near average to slightly below average TC season for American Samoa.

Y I k Y (Rashed) All values are in inches (1 inch=25.4 mm); Seasonal cycle removed.

Tide Gauge stations	Seasonal Forecasts DJF (mean') (ano)	SD of OND (mean)	Monthly mean <sup>1</sup> anomaly			Current State/Trend	Seasonal Forecasts DJF (max <sup>2</sup> ) (ano.)	SD of OND (max)	Monthly max <sup>2</sup> anomaly		
			Observed rise/fall						Observed rise/fall		
			Nov/2017	Dec/2017	Jan/2018				DJF 2017/18	Nov/2017	Dec/2017
Marianas, Guam	+5	4.4	+6.6	+7	+8	Above/Stable	+22	3.9	+22(0)	+22(0)	+25(3)
Malakal, Palau	+5	4.8	**	+4	+3	Above/Stable	+41	4.8	+42(6)	+44(8)	+39(3)
Yap, FSM	+6	4.8	+7.4	+9	+9.5	Above/Stable	+34	5.3	+34(7)	51 24—	4 0—
Chuuk, FSM***	+6	**	+8	+9		Above/Stable	+34	**	**	**	
Pohnpei, FSM	+7	4.8	)	)	)	Above/Stable	+36	4.8	**	**	**
Kapingamarangi	+6	**	+5.1	**	**	Above/Stable	**	**	+31(4)	**	+38
Majuro, RMI	+7	3.6	)	)	)	Above/Stable	+45	3.8	**	**	**
Kwajalein, RMI	+6	3.8	+7	+6	+9	Above/Stable	+44	3.9	+43(6)	5 21—	5 21—
Pago Pago*	+6 (0)	2.8	+11.2 [+6]	+11.5 [+6.5]	+11.5 [+6.5]	Above/Stable	+32 (+27)	3.1	+34(1) [29]	+38(5) [33]	+38(5) [33]
Honolulu	+4	1.7	+4	+4.7	+4.7	Above/Stable	+23	2.4	+24(4)	+26(6)	+27(7)
Hilo	+5	1.9	+5.5	+5.5	+3.5	Above/Falling	+26	2.4	+26(3)	+28(5)	+31(8)

+/- indicate positive anomaly (rise) and negative anomaly (fall) respectively. Note that any changes between (0~ ±1) inch is considered to be negligible. Also note that changes within the range of (+/-) 2 inches are unlikely to cause any adverse climatic impact. \*\*\* (Experimental) Satellite Aviso Altimetry data, \*\* Data currently unavailable; Figures in parenthesis for monthly-max anomaly indicates difference between the maximum anomaly for the given month and the long-term monthly average anomaly.

1: Difference between the mean sea level for the given month and the 1983 through 2001 monthly mean sea level value at each station (seasonal cycle removed); 2: Same as 1 except for maxima; SD stands for standard deviations.

\* In Pago Pago, There was a level shift (approximately 5 inches) in American Samoa at the time of September 2009 earthquake. So, -5 inches has been adjusted (shown in parenthesis) to the current tide-gauge values of Pago Pago.

Statistical model is predicting 5-7 inches above normal sea levels with reasonably high skill for the whole USAPI region. complementary to PEAC forecasts, some dynamical models are also predicted high sea levels. At two months lead (Feb-March), sea levels are likely to stay above-normal (5-8 inches) for Majuro, Pohnpei, and Chuuk. High sea levels may propagate as far west as Yap and Malakal.

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Current forecasts indicate that the highest tides of the year ("king tides") occurred again in the early mornings on January 2. There was no inundation or damage reported.

y k y st (Luke He) K I k Y YK Y

y st k yK y K yi k i i fl K k fl y  
K yi fl Y Y Y —

During January 2018, La Niña was evident in the pattern of below-average sea surface temperatures (SSTs) across the central and eastern equatorial Pacific Ocean. The latest weekly index values were close to -1.0°C in the Niño-1+2, Niño-3, and Niño-3.4 regions, while the western-most Niño-4 region was -0.5°C. While negative anomalies were maintained near the surface, the sub-surface temperatures in the eastern Pacific Ocean returned to near average during the last month. This was due to the eastward propagation of above-average temperatures in association with a downwelling equatorial oceanic Kelvin wave, which undercut the below-average temperatures near the surface. The atmospheric conditions over the tropical Pacific Ocean also reflected La Niña, with suppressed convection near and east of the International Date Line and enhanced convection around Indonesia. Also, the low-level trade winds remained stronger than average over the western and central Pacific, while upper-level winds were anomalously westerly. Overall, the ocean and atmosphere system remained consistent with La Niña.

Most models in the IRI/CPC plume predict La Niña will decay and return to ENSO-Neutral during the Northern Hemisphere spring 2018. The forecast consensus also favors a transition during the spring with a continuation of ENSO-neutral conditions thereafter. In summary, a transition from La Niña to ENSO-neutral is most likely during the Northern Hemisphere spring (~55% chance of ENSO-neutral during the March-May season).

La Niña is anticipated to continue affecting temperature and precipitation across the United States during the next few months (the 3-month seasonal temperature and precipitation outlooks will be updated on Thursday February 15th). The outlooks generally favor above-average temperatures and below-median precipitation across the southern tier of the United States, and below-average temperatures and above-median precipitation across the northern tier of the United States.

According to NIWA 'The Island Climate Update Bulletin', a weak La Niña conditions remain present in the Pacific Ocean, despite weakened oceanic signals during January 2018. The international consensus is that La Niña conditions are now equally likely to persist (50% chance) or decay to ENSO-neutral (50% chance) over the next 3 month period (February – April 2018). The chance for ENSO neutral conditions to occur then increases to 65% during the May –July 2018 period.

**50%** chance for **La Niña** conditions to continue over **February – April 2018**.

Chance for **ENSO-neutral** conditions returning in **May – July 2018** **65%**



**Forecast**

Source: NIWA , The Island Climate Update Bulletin

The verification result of NDJ rainfall forecasts has been found to be encouraging with 8 hit and 6 miss (Heidke score: 0.377). The stations that hit the forecasts are: Yap, Pohnpei, Kosrae, Kwajalein, Majuro, Honolulu, Kahului, and Hilo. Among the 6 missed stations, (Koror, Chuuk, and Lihue were barely missed) Guam and Saipan provided the most discouraging results. While the forecasts for NDJ were above rainfall for Guam and Saipan, the observed rainfall was below. PEAC forecasts are based on six GCMs and two statistical models. The forecast problems for Guam and Saipan are partly because of the limitations of GCMs. Because in GCMs, many small-scale features, such as a temporary but significant shift in the prevailing trade winds or unusually dry surface conditions due to increased evaporation cannot be represented even though they may significantly impact the local, regional, or even global climate. Therefore, direct model-based interpretation is sometimes difficult for the small island countries. PEAC is carefully monitoring the forecast quality and would emphasize more on statistical downscaling and local-experience-based interpretation.

K  
 Interpretation of tercile probability: The 41 4 4 probability forecasts in FMA season means there is a 4 chance (probability) for occurrence of excess rainfall during the FMA season, 4 chance for occurrence of rainfall within a pattern considered normal during the FMA season, and 41 chance for occurrence of deficit rainfall during the FMA season. Also note that excess and deficit limit for each of the stations are different

Location	Rainfall Outlook	Final Probabilities
<b>YIY</b>		
Koror	Avg-above	41 4 4
Yap		31 41 1
Chuuk		3 41 5
Pohnpei		3 41 5
Kosrae	Avg-above	3 4 51
<b>F</b>		
Kwajalein	Avg-above	41 4 4
Majuro		3 41 5
<b>Yk Y K F</b>		
Guam	Avg.	41 51 41
Saipan	Avg.	41 51 41
<b>k Y Yk Y</b>		
Pago Pago		3 41 5
<b>Y Y Y</b>		
Lihue	Avg-above	41 4 4
Honolulu	Avg-above	41 4 4
Kahului	Avg-above	41 4 4
Hilo		3 41 5



fl k fl y Richard Heim—

End-of-January Monthly Drought Assessment:

- i. With WxCoder III data, we have 23 stations in the monthly analysis.
- ii. January was dry (less than the monthly minimum required to meet most water needs) in the Marianas (all stations) & northern Marshalls (Utirik & Wotje); it was wet elsewhere in Micronesia and in American Samoa. Pingelap totaled 2.60 inches, which is dry, but 3 days were missing and on either side of them, Pohnpei (22.03”) & Kosrae (16.62”) were wet, so I’m not sure of the data at Pingelap. The January monthly analysis (January 31) is consistent with the weekly analyses for January 30 and February 6 and, in fact, matches both of these analyses. Compared to the end-of-December analysis, drought conditions at the end of January worsened in the Marianas (Rota & Guam) and northern Marshalls (Wotje & Utirik), and stayed the same at the rest of the stations:
  - a. D-Nothing worsened to D1-SL at Wotje.
  - b.D0-S worsened to D1-S at Rota.
  - c. D-Nothing worsened to D1-S at Guam.
  - d.Utirik was missing at the end of December, but was D0-L on December 12, and worsened to D1-SL.
  - e.All other stations continued at a D-Nothing classification (no drought or abnormal dryness).
- iii. mwokil (Mwoakilloa ??) – use Mwoakilloa in place of Pingelap, since Mwoakilloa is located close to Pingelap.

Current (Weekly) Drought Conditions: The discussion above is the monthly (end of January) analysis. The latest weekly USAPI USDM assessment may show different USDM classifications. The latest weekly USAPI USDM assessment is for February 6 but is the same as January 31.

January NCEI State of the Climate Drought Report: I will include a discussion of USAPI drought conditions in my January 2018 NCEI SotC Drought reports (which will go online next week).

- i. The web page url is:
  - a. <https://www.ncdc.noaa.gov/sotc/drought/201801#det-reg-pacis-usapi>

Jury Duty: I have Jury Duty next Tuesday; this may delay my response to emails.

Automated Ingest of Daily Rainfall Data: We are working with NWS, WRCC, and HPRCC personnel to have the WxCoder III daily data transmitted near-real time every day so we can incorporate it into our GHCN-Daily data base here at NCEI. This will enable us to automate the processing, which is a required step before we can make the USAPI USDM weekly analyses official and release them publicly (they are considered experimental now).

Y	Y	fl	k	fl Y	21	Y	k	Fk	fl	st	fl	Y	Y	k	Y	fl	Y	fl
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Weekly USAPI Drought Assessment:

- i. I assessed drought conditions for each week from December 9, 2014 through February 6, 2018.
- ii. Stations that don’t have data (or enough data) for the week in question are designated as having No Data for that weekly assessment.
- iii. Source of the daily data for the weekly assessments: Guam and Pago Pago NWS web sites; Kwajalein PLCD web site; WRCC web sites for the automated stations; WxCoder III for most of the stations.
- iv. I will continue this on a weekly basis (Monday afternoons EST).
- v. Preferred process: I can do the weekly rainfall analysis, send my drought classification recommendation to the USAPI folks (either just Guam or Guam and all WSOs) for confirmation and local impacts, then send it after any modification to the USDM author.

Discussion: Chip: We could fine tune the 8-inch threshold to 6 inches for certain locations where populations are low. Richard: I’m open to doing that; let’s decide when we want to determine the specifics.

**Participants:**

**NWS Climate Services Program Managers (CSPMs):** Joe Brinkley

**WSO Climate Service Focal Points (CSFPs):**

Samson (Majuro)  
(Kosrae)  
(Palau)

Sanchez (Chuuk)  
Katherine (Yap)  
Jason (Kwajalein)

(Pohnpei)  
(Pago Pago)  
Mark/Chip (Guam & CNMI)

**PEAC Principal Research Scientist:** Rashed Chowdhury

**WERI Scientist:** Mark Lander

**CPC Forecaster:** Luke He, Matt

**WFO Guam :** Chip Guard, Clint Simpson

**NWS MIC, Honolulu:** Christopher Brenchley

**NCEI:** Richard Heim

**Pacific RISA:** Krista Jaspers

**NWS Hydrologist:** Kevin Kodama

**Additional Attendees:** John Marra

***\*\* Next Call– 8 March 2018, 1430 HST (9 March 2018, 0030 GMT)\*\****