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A Quarterly Bulletin of the Pacific El Niño/Southern Oscillation Applications Climate (PEAC) Center
Providing Information on Climate Variability for the U.S.-Affiliated Pacific Islands

http://www.prh.noaa.gov/peac

CURRENT CONDITIONS

In Memory of Mr. David Aranug

PEAC wishes to dedicate this issue of the Pacific ENSO Update newsletter to Mr. David Aranug, the former Meteorologist in Charge of the Yap Weather Service Office. David unexpectedly passed away on 24 July 2013. A frequent attendee to meetings and workshops throughout the Pacific Ocean region, David was well known and a popular, well-liked participant. He was the first person from the freely associated US-affiliated Pacific Islands to obtain a Bachelor of Science degree in meteorology. He was also a great host to many of us who had the good fortune to visit beautiful island of Yap. Mr. David Aranug was a highly respected colleague and a good friend to all of us in this tightly knit Pacific Island community. David will be greatly missed.

The most notable aspect of the Pacific climate system during the 3rd Quarter of 2013 was a surge of tropical cyclone activity in the western North Pacific. The typhoon season had been relatively quiet through mid-September, with most of the activity displaced to the west and north of average. In mid-September, the monsoon trough became well established across the western North Pacific, and a very active period of tropical cyclone formation commenced. As if fed by a conveyor belt, a non-stop sequence of typhoons formed near Guam and tracked north or northwestward; some moving toward China and others passing near Japan. As one storm moved out of the tropics, another would immediately form back near Guam. The six typhoons occurring during October 2013 tied the JTWC record for the number of typhoons during any October for the past 55 years. The count to-date of 28 numbered tropical cyclones, however, is actually normal – the result of relative quiescence through August augmented by the recent surge (see tropical cyclone section for more details). At the printing of this news-letter, typhoons were still developing across central and western Micronesia.

During September 2013, many locations on the island of Guam experienced over 30 inches of rain, with a large portion of that falling over a two-day period. The Weather Service Office experienced its wettest September on record (see the Guam write -up in the Local Variability Summaries). While it was very wet at Guam and at some locations of Yap State, it continued to be relatively dry at islands further to the east (e.g., Pohnpei, Kosrae, Kwajalein and Majuro).

Adequate rainfall occurred at Wotje and Utirik in the northern RMI over the past four months, bringing an end to the severe drought seen on these islands during the first half of the year. At American Samoa, rainfall was above normal, with some monthly totals well above the typical values seen during this dry-season time of year. See the Local Variability Summaries for more details on the climate and weather of each island group.

In Hawaii, conditions were mostly drier than normal. The Hawaiian Islands for July, August, and September saw some Tropical Cyclone activity; with the most eventful being the passage of Tropical Storm (TS) Flossie. The TS produced heavy rainfall, gusty winds, and lightning which accounted for the majority of damage. Damage consisted of downed trees, with the majority occurring in Hawaii and Maui Counties during the afternoon and evening of July 29th. Frequent cloud to ground lightning strikes across Maui and Moloka'i led to numerous power outages, damage to at least one home, and one injury. At various times during the event more than 10,000 homes were without power due to falling trees and/or lightning strikes. Despite the TC activity conditions remained drier then normal.

The following comments from the EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION were posted on the U.S. Climate Prediction Center/NCEP/NWS and the International Research Institute for Climate and Society web site on October 10, 2013:

"ENSO Alert System Status: Not Active"

"Synopsis: ENSO-neutral is expected into the Northern Hemisphere spring 2014."

"ENSO-neutral continued during September 2013, as sea surface temperature (SST) anomalies were near-average across much of the equatorial Pacific Ocean. Except for the Niño-1+2 region, all of the latest weekly Niño index values were between 0°C and -0.5°C. The oceanic heat content (average temperature in the upper 300m of the ocean) weakened, as a consequence of an upwelling oceanic Kelvin wave contributing to below-average temperatures in the east-central Pacific Ocean. The strength of the tropical atmospheric circulation anomalies, as reflected by convection and winds, also weakened over the last month. Slightly enhanced convection remained over parts of Indonesia, with weakly suppressed… **Continued on Page 12**

SEA SURFACE TEMPERATURES

ENSO-neutral conditions continued during the JAS 2013 season. This is represented by near average sea surface temperatures (SSTs) spanning much of the equatorial Pacific, with below average SSTs in the eastern Pacific. September Niño-1+2 region latest index values were between 0°C and -0.5°C. The oceanic heat content lessened as a result of an upwelling oceanic Kelvin wave. Enhanced convection stayed stationary over parts of Indonesia. Low-level winds were roughly average, while anomalous westerly winds were common throughout the upper-levels. These atmospheric and oceanic conditions reflect ENSO-neutral.

SOUTHERN OSCILLATION INDEX

The 3-month average for the Southern Oscillation Index (SOI) for the 3rd Quarter (July, August, and September) of 2012 was 0.0. The current SOI for the 3rd Quarter of 2013 was 0.7.The atmospheric conditions continued to reflect ENSO-Neutral. This was represented by the consistent average low level winds as well as near average SSTs.

Normally, positive SOI values in excess of +1.0 are associated with La Niña conditions, and negative SOI values below -1.0 are associated with El Niño conditions. Low SOI values suggest a weak coupling between the ocean and the atmosphere. The SOI is an index representing the normalized sea-level pressure difference between Darwin, Australia and Tahiti, respectively.

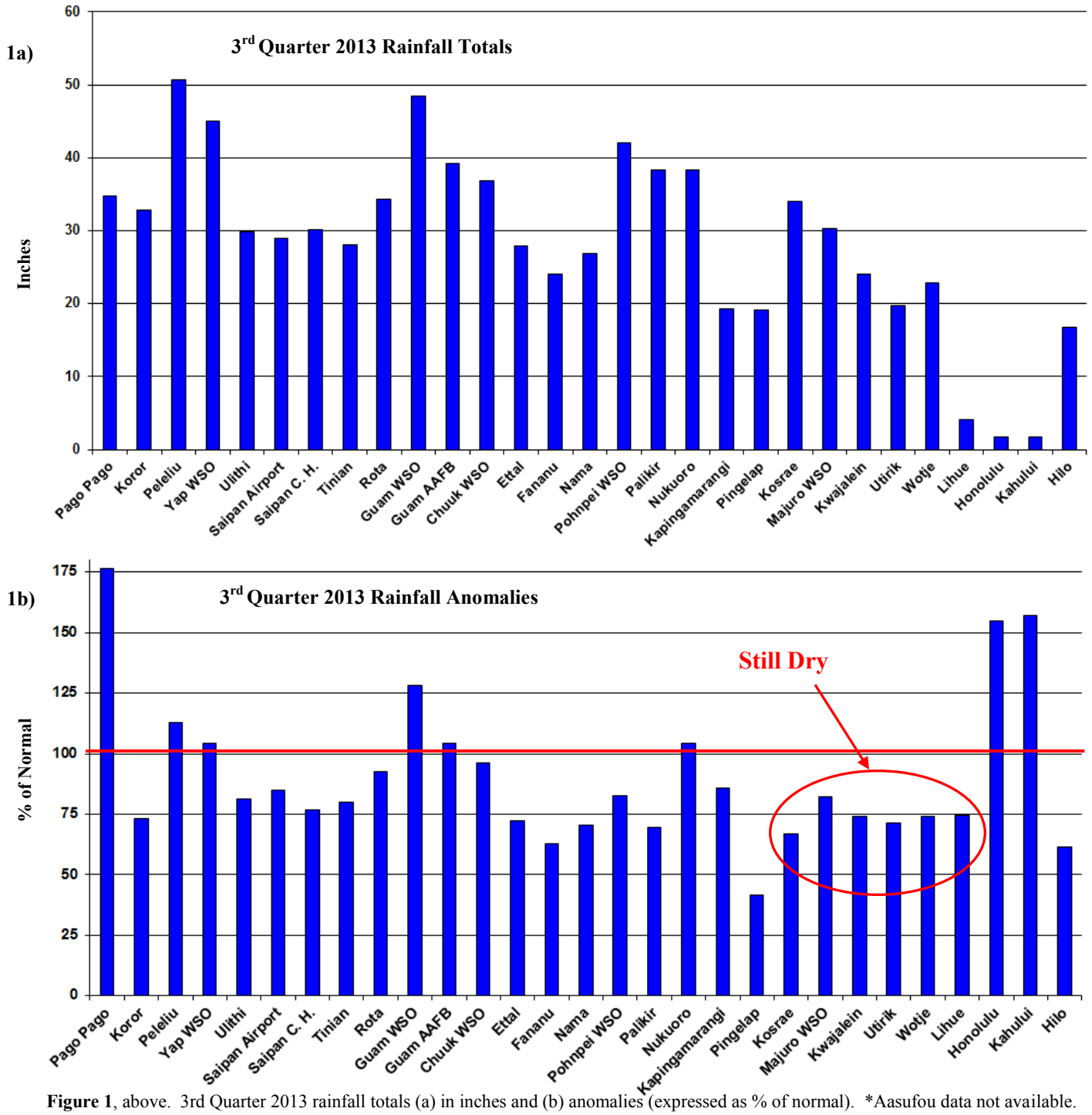

Figure 1, above. 3rd Quarter 2013 rainfall totals (a) in inches and (b) anomalies (expressed as % of normal). *Aasufou data not available.

TROPICAL CYCLONE

The PEAC Center archives western North Pacific tropical cyclone numbers, track coordinates, and 1-minute average maximum sustained wind taken from operational warnings issued by the Joint Typhoon Warning Center (JTWC) of the U. S. Air Force and Navy, located at Pearl Harbor, Hawaii. Western North Pacific tropical cyclone names are obtained from warnings issued by the Japan Meteorological Agency (JMA), which is the World Meteorological Organization's Regional Specialized Meteorological Center (RSMC) for the western North Pacific basin. The PEAC archives South Pacific tropical cyclone names, track coordinates, central pressure, and 10-minute average maximum sustained wind estimates from advisories issued by the Tropical Cyclone Warning Centers at Brisbane, Nadi, and Wellington. The numbering scheme and the 1-minute average maximum sustained wind estimates are taken from warnings issued by the JTWC. There are sometimes differences in the statistics (e.g., storm maximum intensity) for a given tropical cyclone among the agencies that are noted in this summary.

Tropical Cyclone Summary

From January through October 2013, the JTWC numbered 28 significant tropical cyclones. The intensity distribution of these included 12 typhoons, 13 tropical storms and 3 tropical depressions. Of the 12 typhoons, four of them became super typhoons. The normal distribution of tropical cyclones in the western North Pacific through October is 28 numbered cyclones with a distribution of 16 typhoons, 9 tropical storms and 3 tropical depressions. Most of the damage and loss of life from these tropical cyclones was in south-eastern China, the Philippines, Vietnam, Taiwan and Japan. Micronesia has been spared major damage so far because of the formation and tracks of these typhoons within the north and west of the region.

From the Eastern Pacific, Tropical Storm (TS) Flossie crossed into the Central Pacific Hurricane Center's area of responsibility in the early morning of July 27th. This TS was the first storm to trigger tropical cyclone related warnings for the state of Hawaii since 2007. Flossie weekend from a TS to a tropical depression as it passed westward across the state. Flossie generated heavy rainfall, gusty winds, and intense thunderstorms, with some flooding events throughout the Hawaiian Islands. During the weekend of August 9-11, remnant moisture from Tropical Cyclone Gil impacted the islands and produced some showers over the state.

During mid-August 2013, three tropical cyclones, isolated far at sea, formed in quick succession in the central North Pacific and were numbered and named by the Central Pacific Hurricane Center in Honolulu: Pewa (01C), Unala (02C) and Tropical Depression 03C. Whereas the timing of these three tropical cyclones overlapped, they were also within close proximity so that interactions were noted among them. All three of these systems crossed the International Date Line, with Pewa becoming a typhoon for a short time. The other two systems also moved into the western North Pacific but then dissipated. It appears that the dissipation of Unala and of TD 03C was mediated by binary interaction with Pewa.

Three organizations produce seasonal outlooks for tropical cyclone activity in the western North Pacific that are routinely used by the PEAC Center for guidance on the upcoming typhoon season: (1) The Guam Weather Forecast Office (WFO), (2) The City University of Hong Kong Laboratory for Atmospheric Research, and (3) The Benfield Hazard Research Centre Tropical Storm Risk (TSR) research group 1. On August 6th the TSR group issued an update to its outlook for western North Pacific Typhoon Activity in 2013. It produced nearly a 20% decrease in typhoon activity. Earlier in the year, the WFO Guam released a forecast calling for tropical cyclone activity to be slightly below normal during 2013 for most aggregate statistics.

Despite the recent surge in western North Pacific tropical cyclone activity, the year-to-date statistics are near-normal in storm counts, but below normal in a statistic known as the Accumulated Cyclone Energy, or "ACE"; which takes into account each cyclone's wind energy and the cyclone's duration. As of 23 October, 2013 the ACE for the western North Pacific stood at 202.8 versus a normal year-to-date value of 240 (this information can be found at http://policlimate.com/tropical/).

In a typical year there are 4 or 5 additional tropical cyclones in the western North Pacific basin during November and December, and one further cyclone once every other January (on average). For most of the last decade, the final quarter of the year has been quiet in Micronesia, except for Super Typhoon Bopha early last December. It is not known whether the current surge in activity will carry over into enhanced activity for the next three months. Since late season activity is often focused in Micronesia, it would be prudent to plan for at least one typhoon to affect some of the region. Local risk is described in each island group's variability summary.

The Southern Hemisphere cyclone season of 2013-2014 will soon start. The season's first cyclone often occurs in late October or early November in the south Indian Ocean or Southwest Pacific. Last year, the first cyclone (Anais) formed east of Madagascar in mid-October, while the first South Pacific cyclone (Evan) formed in mid-December. Both the New Zealand National Institute of Water and Atmospheric Research (http://www.niwa.co.nz/our-science/climate/news) and the Australian Bureau of Meteorology (http://www.bom.gov.au/climate/ahead/tc.shtml) are calling for near average cyclone activity in all Australia sub-regions and in the South Pacific for the 2013-2014 cyclone season.

PEAC Center Tropical Cyclone Assessment

Based on available guidance1 and the forecast behavior of ENSO, the PEAC tropical cyclone outlook for the upcoming western North Pacific typhoon season of 2013 is for near normal activity; that is, five or six additional numbered cyclones in the basin through January, with two or three of these occurring within the bounds of Micronesia. Tropical cyclone activity is anticipated to be near normal for American Samoa. Please see the local variability summaries for the anticipated typhoon risk for each island group.

1The PEAC Center tropical cyclone forecasts for 2013 are based on forecasts of the status of ENSO and input from three seasonal outlooks for tropical cyclone activity in the western North Pacific basin: (1) A statistical outlook prepared by Paul Stanko (a lead forecaster at the Guam WFO), (2) The City University of Hong Kong Laboratory for Atmospheric Research, under the direction of Dr. J. C-L. Chan, and (3) The Benfield Hazard Research Centre, University College London, Tropical Storm Risk (TSR) research group, UK, led by Dr Adam Lea and Professor Mark Saunders. The PEAC tropical cyclone forecasts for American Samoa incorporate the outlooks issued by the Australian Bureau of Meteorology, which are considered to be the state-of-the-art for that region.

LOCAL SUMMARY AND FORECAST

American Samoa: The 3rd Quarter of the calendar year is typically the heart of the Dry Season in American Samoa, with the average rainfall in each of the months of July, August and September just under 7 inches. The 2013 3rd Quarter total of 34.76 inches was well above average, and was the third wettest 3rd Quarter rainfall total in the 48-year climate record at Pago Pago. The cause of the very wet conditions during the 3rd Quarter was likely a result of the persistence of the South Pacific Convergence Zone around American Samoa.

American Samoa Rainfall Summary 3rd Qtr 2013						
Station		**Jul.**	**Aug.**	**Sep.**	**3rd Qtr**	**Predicted[1]**
Pago Pago WSO	**Inches**	8.48	18.14	8.14	**34.76**	**19.64**
	% Norm	135%	270%	190%	**177%**	**100%**

Climate Outlook: American Samoa is about to enter its 2013-2014 rainy season. Normal monthly rainfall at Pago Pago typically exceeds 10 inches per month during each month in the period of October through May; with a peak of approximately 14 inches of rainfall per a month in December and January. Computer forecasts and a consensus of outlooks from several regional meteorological centers indicate that rainfall in American Samoa is likely to continue to be above normal for the next few months. The climate system is anticipated to remain in ENSO-neutral for the next few months; any move of the ENSO indexes toward El Niño during the rainy season generally accentuates the penetration of the Australian Northwest Monsoon into the American Samoa region (which is consistent with enhanced rainfall and perhaps a slight increase in the risk of a tropical cyclone formation). The PEAC Center concurs with the Australia Bureau of Meteorology, that there will be near average cyclone activity in the South Pacific, but would advise to closely monitor the evolution of the ENSO indices and watch for any unusual eastward penetration of the monsoon.

Predicted rainfall for American Samoa from October 2013 through September 2014 is:

Inclusive Period	% of long-term average / Forecast rainfall (inches) [2]
Oct - Dec 2013 (Onset of Rainy Season)	**120% (41.51in)**
January - March 2014 (Heart of Next Rainy Season)	**120%**
April - June 2014 (Onset of Next Dry Season)	**110%**
June - October 2014 (Heart of Next Dry Season)	**110%**

[2] Forecast rainfall quantities represent BEST ESTIMATES given the probabilistic forecast for each particular season and station.

Guam/CNMI: Continuing a decade-long trend, the weather during July and August was very quiet on Guam and in the CNMI. Rainfall was below normal. The monsoon trough was absent, and the islands were not affected by tropical cyclones. Rainfall during July and August was only about 50-70% of average at most locations. A recreational hiking group on Guam reported that some popular waterfalls and rivers had completely dried.

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A dramatic shift in weather took place during September, and continuing into October. The monsoon set-in across Guam and the CNMI, and a near-record surge of typhoon activity commenced. On the 19th and 20th of September, Guam experienced an extreme rain event, with 24-hour totals on both days nearing 10 inches. This extreme rainfall occurred as Typhoon Pabuk was forming to the northeast of Guam, and the southwest monsoon was drawn across the southern Mariana Islands. The central axis of the monsoon cloud band setup just to the south of Guam. Feeding into this cloud band from north-to-south across Guam, a steady train of convective cells passed over the island. The September total of 32.25 inches of rainfall at the Guam Weather Forecast Office was a record.

During October, a record-tying six typhoons formed in the western North Pacific! One of these, Super Typhoon Francisco, stalled near Guam, and then moved north with its eye within range of Guam's NEXRAD Doppler weather radar. Another 7 inches of rain piled onto Guam during Francisco's passage, contributing to an October total that now stands over 20 inches of rain. Late in October, Super Typhoon Lekima passed to the north of Guam and the CNMI.

Guam/CNMI Rainfall Summary 3rd Qtr 2013						
Station		**Jul.**	**Aug.**	**Sep.**	**3rd Qtr**	**Predicted[1]**
GUAM						
GIA (WFO)	**Inches**	5.39	10.84	32.25	**48.48**	**35.98**
	% Norm	51%	79%	239%	**128%**	**95%**
AAFB	**Inches**	4.61	9.60	25.02	**39.23**	**35.84**
	% Norm	42%	72%	188%	**104%**	**95%**
University Of Guam	**Inches**	6.75	8.18	32.14	**47.07**	**36.06**
	% Norm	64%	60%	238%	**125%**	**95%**
Ugum Watershed	**Inches**	6.60	8.50	35.43	**50.53**	**35.82**
	% Norm	60%	63%	266%	**134%**	**95%**
Ypapao (Dededo)	**Inches**	7.17	11.53	32.92	**51.62**	**35.79**
	% Norm	66%	86%	247%	**137%**	**95%**
Sinajaña	**Inches**	9.24	9.73	31.35	**50.32**	**35.94**
	% Norm	88%	71%	232%	**133%**	**95%**
CNMI						
Saipan Intl. Airport	**Inches**	6.02	6.02	16.87	**28.91**	**30.61**
	% Norm	74%	48%	125%	**85%**	**90%**
Capital Hill	**Inches**	4.59	8.40	17.14	**30.13**	**35.22**
	% Norm	51%	67%	127%	**77%**	**90%**
Tinian Airport	**Inches**	3.97	11.33	12.74	**28.04**	**31.55**
	% Norm	44%	91%	94%	**80%**	**90%**
Rota Airport	**Inches**	6.73	6.42	21.11	**34.26**	**33.15**
	% Norm	64%	49%	158%	**93%**	**90%**

[1] Predictions made in 2nd Quarter 2013 newsletter.

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Climate Outlook: Through August the weather patterns were somewhat more La Niña-like than the indexes would have suggested with persistent trade winds, elevated sea level, and tropical cyclone activity west and north of Micronesia. In September there was a dramatic change to a very active monsoonal regime with persistent southwest winds, heavy rainfall, and a continual presence of tropical cyclones. The Pacific climate is anticipated to remain ENSO-neutral throughout the Northern Hemisphere spring, one would not anticipate a eastward extension of the monsoon or a continuation of high typhoon activity. However, since the unusual surge of tropical cyclones during September and October was not anticipated, we would urge all Micronesian islands from the Marshall Islands to Palau to maintain a careful watch on weather patterns. There is unusual persistent convective activity east of the International Date Line. It would be prudent to expect at least one additional major typhoon through Micronesia in January.

Predicted rainfall for the Mariana Islands from October 2013 through September 2014 is:

Inclusive Period	% of long-term average / Forecast rainfall (inches) [2]	
	Guam/Rota	Saipan/Tinian
Oct – Dec 2013 (End of Rainy Season)	120%(30.76in)	110% (24.27in)
Jan – March 2014 (Onset of Next Dry Season)	100%	100%
Apr – June 2014 (2nd half of Next Dry Season)	120%*	100%
July - September 2014 (Next Rainy Season)	100%	100%

[2] Forecast rainfall quantities represent BEST ESTIMATES given the probabilistic forecast for each particular season and station.
* Spring rainfall is wetter when the Pacific climate system is transitioning in the direction of El Niño.

Federated States of Micronesia

Yap State: It was relatively dry throughout Yap State during most of the months from January through August 2013. During June, the monsoon trough began its seasonal push into the western North Pacific. Around the 5th and 15th of June two large monsoon depressions formed to the west of Yap Island. These two large slow-moving monsoon depressions became named tropical cyclones: the first: Yagi, and the second: Leepi. Both of these cyclones moved slowly to the north, keeping Yap and Palau in envelopes of heavy showers. During July and August, the monsoon trough became reverse-oriented. This induced a weak ridge to form south of the monsoon trough which helped to keep Palau, Yap Island, and the atolls of Yap State relatively dry during both July and August. During September, the monsoon trough became very active, and pushed eastward. The western North Pacific basin then commenced a surge of tropical cyclone activity. Lying continually within the monsoon cloud band, very high rainfall totals approaching 30 inches in some locations were over twice the average value. It was so dry during earlier months, however, that the year-to-date rainfall was still shy (~90%) of average for the 9-month (Jan-Sep) sum. Ulithi, an atoll located 103nm to the northeast of Yap

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Island, was not nearly as wet during September as it was on Yap Island. This is likely a result of the squally nature of deep convective rainfall along the monsoonal wind maximum and the narrow-band structure of rainfall and dry slots of tropical cyclones passing to the north. Impacts of the active monsoon during September included gusty southwest winds that generated high surf. There were some reports of coastal flooding in the southern parts of Yap Island.

Yap State Rainfall Summary 3rd Qtr 2013						
Station		Jul.	Aug.	Sep.	3rd Qtr	Predicted[1]
Yap Island						
Yap WSO	Inches	8.01	12.69	24.39	**45.09**	**47.69**
	% Norm	55%	83%	181%	**104%**	**110%**
Dugor	Inches	10.97	12.69	28.65	**52.31**	**47.55**
	% WSO	75%	83%	212%	**121%**	**110%**
Gilman	Inches	4.08	6.53	24.39**	**35.00**	**47.53**
	% WSO	28%	43%	181%	**81%**	**110%**
Luweech	Inches	6.15	9.11	29.60	**44.86**	**47.45**
	% WSO	42%	60%	219%	**104%**	**110%**
Maap	Inches	5.49	5.81	24.71**	**36.01**	**47.72**
	% WSO	38%	38%	183%	**83%**	**110%**
North Fanif	Inches	10.45	11.22	22.44	**44.11**	**47.57**
	% WSO	72%	74%	166%	**102%**	**110%**
Rumung	Inches	9.90	10.90	26.97	**47.77**	**47.77**
	% WSO	68%	72%	200%	**110%**	**110%**
Tamil	Inches	9.02	13.31	25.55**	**47.88**	**47.45**
	% WSO	62%	88%	189%	**111%**	**110%**
Outer Islands						
Ulithi	Inches	7.75	8.95	13.12	**29.82**	**40.50**
	% Norm	63%	69%	114%	**81%**	**110%**
Woleai	Inches	16.77	5.62	12.43*	**34.82**	**38.46**
	% Norm	120%	38%	106%	**86%**	**95%**

[1] Predictions made in 2nd Quarter 2013 newsletter.
*Estimated

Climate Outlook: Long-range outlooks for rainfall in Yap State have been calling for average to above average rainfall for several quarters, however, it remained dry through August. The strength of the monsoon during September, and the recent big surge in western North Pacific typhoon activity came as a surprise. It is anticipated that average to above average rainfall will occur across Yap State for at least the next two to three months. If there is any movement toward an El Niño in early 2014, then the spring months could also be wet.

While there is little correlation noted in month-to-month tropical cyclone activity, the near record surge in western North Pacific tropical cyclone activity during October should be viewed with some caution on Yap Island and the atolls. The normal risk of a damaging tropical cyclone on these islands is

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roughly 10% -15%, once every 7 to 10 years. The PEAC Center would urge a heightened level of preparedness for the effects of a typhoon.

Predicted rainfall for Yap State from October 2013 through September 2014 is as follows:

Inclusive Period	% of long-term average / Forecast rainfall (inches) [2]	
	Yap and Ulithi	Woleai
October – December 2013 (End of Rainy Season)	**120% (36.49in)**	**100% (36.36in)**
January – March 2014 (Heart of Next Dry Season)	**110%**	**100%**
April – June 2014 (Onset of Next Rainy Season)	**120%**	**110%**
July – September 2014 (Heart of Next Rainy Season)	**100%**	**100%**

[2] Forecast rainfall quantities represent BEST ESTIMATES given the probabilistic forecast for each particular season and station.

Chuuk State: July and August were quite dry across Chuuk State. Nearly half the recording sites spread across all portions of the State had less than 50% of average rainfall during July and less than 70% of average rainfall during August. Then in September the monsoon trough and its associated tropical disturbances began to push eastward into the longitudes of Chuuk State, bringing an increase of rainfall to most locations. Nearly at least one island within each major subgroup of Chuuk State recorded over 15. It was so dry during July and August that the increased amount of rainfall during September did not erase the rainfall deficits of July and August. Only the Chuuk Weather Service Office (WSO), Namoluk and Losap recovered to near normal rainfall for the 3rd quarter. During early October, an episode of gusty southwest monsoonal wind caused some minor inundation. All Chuuk locations remained below average for their respective year-to-date rainfall.

Chuuk State Rainfall Summary 3rd Qtr 2013						
Station		**Jul.**	**Aug.**	**Sep.**	**3rd Qtr**	**Predicted[1]**
Chuuk Lagoon						
Chuuk WSO	**Inches**	10.04	10.25	16.49	**36.78**	**42.14**
	% Norm	83%	70%	143%	**96%**	**110%**
Piis Panew	**Inches**	7.11	7.46	8.14	**22.71**	**42.34**
	% WSO	59%	51%	71%	**59%**	**110%**
Northern Atolls						
Fananu	**Inches**	7.44	5.66	10.92	**24.02**	**38.13**
	% WSO	61%	39%	95%	**63%**	**100%**
Onoun	**Inches**	7.67	9.99	9.08	**26.74**	**38.20**
	% WSO	63%	69%	79%	**70%**	**100%**
Western Atolls						
Polowat	**Inches**	4.12	9.88	10.22	**24.22**	**40.37**
	% Norm	29%	66%	77%	**57%**	**95%**

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Chuuk State Rainfall Summary 3rd Qtr 2013						
Station		**Jul.**	**Aug.**	**Sep.**	**3rd Qtr**	**Predicted[1]**
Northern Mortlocks						
Losap	**Inches**	11.06	7.07	20.09	**38.22**	**38.22**
	% WSO	91%	49%	174%	**100%**	**100%**
Nama	**Inches**	3.82	6.63	16.43	**26.88**	**38.40**
	% WSO	32%	45%	142%	**70%**	**100%**
Southern Mortlocks						
Lukunoch	**Inches**	5.88	8.64	11.92	**26.44**	**38.32**
	% Norm	38%	66%	117%	**69%**	**100%**
Ettal	**Inches**	7.07	10.66	10.16	**27.89**	**38.74**
		46%	82%	100%	**72%***	**100%**
Ta	**Inches**	4.90	14.51	12.08	**28.49**	**38.50**
		32%	88%	119%	**74%***	**100%**
Namoluk	**Inches**	10.05	10.13	18.03	**38.21**	**38.60**
		66%	78%	177%	**99%***	**100%**

[1] Predictions made in 2nd Quarter 2013 newsletter.
* Compared to the average at Lukunoch

Climate Outlook: Long-range computer forecasts indicate above-average rainfall across Chuuk State for the next three months. Predictions earlier in the year for above-average rainfall were too high, so the PEAC Center rainfall outlook over the next three months for Chuuk State has been lowered slightly from above average to average-above, which weights the odds for the "average" and "above-average" terciles equally at 35%. The monsoon trough is likely to extend into Chuuk State over much of the next two months, bringing showery weather associated with tropical disturbances. One or two of these disturbances is likely to move away from Chuuk State to become a tropical storm. The risk for a tropical disturbance to become a tropical storm or typhoon within the boundaries of Chuuk State will be near normal (~10%).

Predictions for Chuuk State from October 2013 through September 2014 are as follows:

Inclusive Period	% of long-term average / Forecast rainfall (inches) [2]			
	Chuuk Lagoon, and Nama	Polowat	Northern Atolls	Mort-locks
Oct – Dec 2013	**110% (39.11in)**	**100% (35.55in)**	**110% (39.10in)**	**120% (42.67in)**
Jan – Mar 2014	**110%**	**95%**	**100%**	**110%**
Apr – June 2014	**120%**	**95%**	**110%**	**110%**
Jul – Sep 2014	**110%**	**95%**	**100%**	**100%**

[2] Forecast rainfall quantities represent BEST ESTIMATES given the probabilistic forecast for each particular season and station.

LOCAL SUMMARY AND FORECAST

Pohnpei State: In general, the eastern half of Micronesia has seen persistent dryness for most of 2013. During the 3rd Quarter, July and August were very dry for Pohnpei Island. This dry period was followed by a wet September. The higher rainfall during September caused some mudslides. The distribution of rainfall on Pohnpei Island during the 3rd Quarter was unusual in that rainfall at the airport was higher than that of the Weather Service Office (WSO) over all three months. Moreover, its total for the 3rd Quarter was even higher than that of Palikir, which usually tops the list of rainfall amounts followed by the WSO. After a long string of very wet months, Kapingamarangi at position 1.1N 154.9E, has now had below average rainfall during five of the past six months. Nukuoro at position 3.8N 155.0E lies between Kapingamarangi and Pohnpei and was the only area to experience above normal rainfall amounts. At the eastern atolls of Pingelap and Mwoakilloa, rainfall was well below normal during all months of the 3rd Quarter.

Pohnpei State Rainfall Summary 3rd Qtr 2013

Station		Jul.	Aug.	Sep.	3rd Qtr	Predicted[1]
Pohnpei Island						
Pohnpei WSO	**Inches**	9.42	5.41	15.20	**30.03**	**48.35**
	% Norm	51%	33%	95%	**59%**	**95%**
Palikir	**Inches**	10.17	8.47	19.64	**38.28**	**52.70**
	% Norm	51%	47%	113%	**69%**	**95%**
Kolonia Airport	**Inches**	15.78	8.54	17.75	**42.07**	**39.97**
	% Norm	104%	63%	135%	**100%**	**95%**
Atolls of Pohnpei State						
Nukuoro	**Inches**	14.48	12.36	11.45	**38.29**	**36.82**
	% Norm	101%	109%	104%	**104%**	**100%**
Pingelap	**Inches**	7.63	4.05	7.47	**19.15**	**45.60**
	% Norm	48%	27%	50%	**42%**	**100%**
Mwoakilloa	**Inches**	5.62	8.90	9.25	**23.77**	**41.70**
	% WSO	37%	66%	70%	**57%**	**100%**
Kapinga-marangi	**Inches**	7.11	6.72	5.42	**19.25**	**22.38**
	% Norm	68%	109%	92%	**86%**	**110%**

[1] Predictions made in 2nd Quarter 2013 newsletter.

Climate Outlook: Nearly all statistical and computer forecast guidance calls for "above-average" rainfall on Pohnpei Island during the next three months. This was tempered in the recent PEAC Center conference call to a forecast of "average-above". Rainfall at other atolls of Pohnpei State should be close to average.

A direct strike of any Pohnpei State location by a tropical storm or typhoon is not anticipated for the foreseeable future. However, the recent surge in typhoon activity in the western North Pacific (with genesis of typhoons seen at the longitudes of Pohnpei State) is a sign that the atmospheric conditions that were present for the past decade have changed. It is possible over the next two months (November and December) that one or two tropical depressions or storms could develop north or west of Pohnpei Island. These potential depressions or storms could develop within range to contribute heavy rainfall and gusty winds to Pohnpei Island and the northern and eastern atolls.

Predicted rainfall for Pohnpei State from October 2013 through September 2014 is as follows:

Inclusive Period	% of long-term average / Forecast rainfall (inches) [2]		
	Pohnpei Island	Atolls	Kapinga-marangi
Oct - Dec 2013	**110% (52.45in)**	**100% (47.68in)**	**90% (19.59in)**
Jan - Mar 2014	**100%**	**95%**	**100%**
Apr - Jun 2014	**110%**	**100%**	**100%**
Jul - Sep 2014	**100%**	**100%**	**100%**

[2] Forecast rainfall quantities represent BEST ESTIMATES given the probabilistic forecast for each particular season and station.

Kosrae State: During the 3rd Quarter, all the sites had below normal rainfall. Kosrae typically has high rainfall year-round with the wettest month, April, receiving almost 22 inches. The two driest months, December and January, each receiving about 14.50 inches. All other months received between 16 and 19 inches. There can be three or four months of very dry conditions (i.e., less than 5 inches per month) in the first few months of the year following a strong El Niño (e.g., early 1998). 1.9 months per year see less than 10 inches of rain, while some years there are no such months. Three of Kosrae's four rain gauge sites had less than 10 inches of rainfall during August 2013. The 3rd Quarter of 2013, and likely the whole year, look to continue with the drying trend.

Kosrae State Rainfall Summary 3rd Qtr 2013

Station		Jul.	Aug.	Sep.	3rd Qtr	Predicted[1]
Airport (SAWRS)	**Inches**	10.33	8.80	14.82	**33.95**	**50.67**
	% Norm	61%	53%	86%	**67%**	**100%**
Utwa	**Inches**	12.22	13.19	11.58	**36.99**	**50.67**
	% Norm	72%	80%	67%	**73%**	**100%**
Nautilus Hotel	**Inches**	13.82	8.41	11.59	**33.82**	**50.48**
	% Norm	81%	51%	67%	**67%**	**100%**
Tofol	**Inches**	13.30	9.61	11.59*	**34.50**	**50.74**
	% Norm	78%	58%	67%	**68%**	**100%**

[1] Predictions made in 2nd Quarter 2013 newsletter.
* Estimated as (Utwa + Nautilus Hotel)/2

LOCAL SUMMARY AND FORECAST

Climate Outlook: Computer forecasts indicate wetter than average rainfall across Kosrae over the next three months. Persistence of current dry conditions and a consideration of the long-term (50-year) trend toward lower rainfall, leads us to temper the wet outlook to a forecast of near average rainfall for at least the next three months.

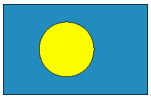
A direct strike on Kosrae State by a tropical storm or typhoon is not anticipated for the foreseeable future. In the most recent decade, with weather patterns dominated by La Niña, there have been no tropical cyclones anywhere near Kosrae. If the recent western North Pacific surge in typhoon activity continues over the next two months, Kosrae could experience remote effects, such as high surf, from a tropical cyclone forming to its northwest or north.

Predicted rainfall for Kosrae State from October 2013 through September 2014 is as follows:

Inclusive Period	% of long-term average / Forecast rainfall (inches) [2]
October – December 2013	**105% (48.93in)**
January – March 2014	**95%***
April – June 2014	**90%***
July - September 2014	**95%***

[2] Forecast rainfall quantities represent BEST ESTIMATES given the probabilistic forecast for each particular season and station.

* Based on the observed long-term trend and no clear signal yet of the impending occurrence of El Niño or La Niña.



Republic of Palau: At the Weather Service Office (WSO) in Koror, eight of the past 9 months have had below average rainfall. Only May 2013 was wetter than normal. Over the past 6 months at Palau International Airport (which has been recording rainfall since 2004) it has nearly always topped the WSO by an average of 4.51 inches per month; with a 6-month excess of 27.08 inches. Further south at Peleliu, it is usually slightly drier than at the WSO. This year, however, it has been wetter at Peleliu 7 of the past 9 months. During the 3rd Quarter, Peleliu was even wetter than at the airport. All of the islands of Micronesia with substantial land area (e.g., Guam, Pohnpei, Saipan and Palau) or elevated terrain have large rainfall gradients over small distances. Gradients of seasonal and annual rainfall are fairly well known on Guam and on Saipan, but to a lesser extent across the main islands of the Republic of Palau.

The southwest monsoon is more persistent in the Republic of Palau than at other island groups of Micronesia due to its more western and southern location. During September, the axis of the western North Pacific monsoon trough reaches its most northward position. This causes Palau to have a "mini" dry season in September, as the heavy showers and tropical cyclones associated with the monsoon trough are furthest north of Palau. Hazy dry days with gusty southwest winds are common on Palau at this time of year. Rainfall amounts across the region fell substantially from their August values. Gusty southwest winds generated notable high surf. The relatively higher rainfall at

LOCAL SUMMARY AND FORECAST

Peleliu during September may have been an artifact of unusually strong southwest wind.

Republic of Palau Rainfall Summary 3rd Qtr 2013						
Station		**Jul.**	**Aug.**	**Sep.**	**3rd Qtr**	**Predicted[1]**
Koror WSO	**Inches**	11.94	13.35	7.53	**32.82**	**49.45**
	% Norm	66%	89%	63%	**73%**	**110%**
Nekken	**Inches**	14.71*	15.44*	9.08*	**39.23**	**49.60**
	%WSO	82%	103%	77%	**87%**	**110%**
Intl. Airport	**Inches**	17.48	17.52	10.62	**45.62**	**49.20**
	% WSO	97%	117%	90%	**102%**	**110%**
Peleliu	**Inches**	19.30	16.81	14.63	**50.74**	**49.39**
	% WSO	107%	112%	123%	**113%**	**110%**

[1] Predictions made in 2nd Quarter 2013 newsletter.
* Estimated (Koror + Airport)/2

Climate Outlook: With the monsoon trough now migrating back to the south, and a continuation of the ENSO-neutral climate state; it is most likely that the next few months will have near average to above average rainfall across the Republic of Palau. Considering the recent surge of western North Pacific typhoon activity, it would be prudent for those on Palau to anticipate at least one more typhoon to pass to the north or northeast of Palau at a close-enough distance to bring a few days of gusty westerly winds, high surf on the western shores, and some heavy showers. A low-latitude intense typhoon like last December's Super Typhoon Bopha is not anticipated, but the late fall time period is when this rare occurrence is most likely.

Predicted rainfall for Palau from October 2013 through September 2014 is as follows:

Inclusive Period	% of long-term average / Forecast rainfall (inches) [2]
October – December 2013	**100% (37.36in)**
January – March 2014	**100%**
April – June 2014	**100%**
July – October 2014	**90%***

[2] Forecast rainfall quantities represent BEST ESTIMATES given the probabilistic forecast for each particular season and station.

*Reduced rainfall for Micronesia is first noted in Palau if the climate system trends toward El Niño

Republic of the Marshall Islands (RMI): Monthly rainfall totals have been below average at a majority of RMI locations for most of the first 9 months of 2013 (e.g., for 7 of 9 months at Majuro and for 8 of 9 months at Kwajalein). Earlier in the year, many of the atolls and small islands of the northern RMI experienced an extraordinarily severe drought. Drought conditions were alleviated in June 2013, with adequate, but still below normal rainfall. The 3rd

LOCAL SUMMARY AND FORECAST

Quarter rainfall totals at Wotje and Utirik were 74% and 71% of average, respectively. The western islands of the central RMI, Ailingalaplap, Jaluit, and Namu, were also much drier than normal. It is now the rainy season across the central and northern RMI, although 3rd Quarter totals are running a bit below normal. The totals have been adequate to maintain municipal and personal water supplies. The reservoir near the Majuro International Airport was reported to be nearly at its capacity of 33 million gallons. The major source of water for this reservoir is collected from the airport runway (1 inch of rainfall equates to 3 million gallons of fresh water).

The drought of 2013 in the northern RMI was so severe that it became an international emergency. The causes of this drought are still being researched, and are the focus of several studies and climate-related meetings. With the western North Pacific showing a more active distribution of typhoons and more active monsoon and convective systems, it would suggest that the Pacific climate system has returned to a more typical state. The Pacific climate has, perhaps temporarily, departed from its state of unusually persistent and strong low-latitude easterly winds seen over the past decade. With this new weather pattern in place, it is very likely that the extremely low levels of rainfall seen in the northern RMI during early 2013 will not reoccur during the upcoming dry season of 2014.

RMI Rainfall Summary 3rd Qtr 2013

Station		Jul.	Aug.	Sep.	3rd Qtr	Predicted[1]
RMI Central and Southern Atolls						
Majuro WSO	**Inches**	13.03	7.62	9.70	**30.35**	**37.01**
	% Norm	100%	66%	78%	**82%**	**100%**
Laura	**Inches**	13.48	8.85	15.50	**37.83**	**37.09**
	% Norm	104%	77%	125%	**102%**	**100%**
Aling-laplap	**Inches**	5.73	5.45	4.82	**16.00**	**34.78**
	% Norm	49%	50%	40%	**46%**	**100%**
Arno	**Inches**	10.58	8.03	14.91	**33.52**	**36.84**
	% Norm	81%	70%	120%	**91%**	**100%**
Jaluit	**Inches**	2.48	6.39	8.75	**17.62**	**36.71**
	% Norm	19%	55%	70%	**48%**	**100%**
Mili	**Inches**	6.81	13.17	13.75	**33.73**	**37.07**
	% Norm	52%	114%	111%	**91%**	**100%**
RMI Northern Atolls						
Kwajalein	**Inches**	9.71	5.51	8.81	**24.03**	**27.60**
	% Norm	93%	55%	74%	**74%**	**85%**
Wotje	**Inches**	9.01	2.85	10.93	**22.79**	**26.18**
	% Norm	91%	30%	97%	**74%**	**85%**
Utirik	**Inches**	6.42	3.38	9.87	**19.67**	**23.55**
	% Norm	72%	39%	98%	**71%**	**85%**

[1] Predictions made in 2nd Quarter 2013 newsletter.

LOCAL SUMMARY AND FORECAST

Climate Outlook: Computer rainfall guidance suggests that at least the central and southern atolls of the RMI will have above average rainfall over the next 3 months. Because there recently has been near average to slightly below average rainfall across the RMI, and considering the long-term drying trend in the RMI, these objective forecasts have been tempered to reduce the odds of above average anywhere in the RMI over the next few months. By balancing the long-term trend with a notable shift to a more active monsoon in the western North Pacific, the forecast rainfall for the upcoming dry season is for slightly below average (especially for the northern atolls).

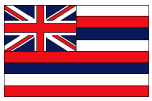
There is only a very small chance (~5%, or 1-in-20 odds) that a tropical cyclone in its depression stage or early tropical storm stage could form at the longitudes of the RMI; most likely late in November or December of 2013.

Predicted rainfall for the RMI from October 2013 through September 2014 is as follows:

Inclusive Period	% of long-term average / Forecast rainfall (inches) [2]		
	Jaluit and Mili	Majuro	Northern Atolls
October – December 2013 (End of Rainy Season)	**105% (39.95in)**	**105% (39.95in)**	**90%* (27.13in)**
January – March 2014 (Dry Season)	**95%**	**95%**	**85%***
April – June 2014 (End of Dry Season)	**95%**	**95%**	**85%***
July – September 2014 (Onset of Rainy Season)	**100%**	**100%**	**90%***

[2] Forecast rainfall quantities represent BEST ESTIMATES given the probabilistic forecast for each particular season and station.

* A cautiously optimistic forecast based on a very recent shift of the Pacific climate away from a decade of unusually persistent and strong easterly winds at low latitudes.



Hawaii: The July August September (JAS) season has been drier than normal with rainfall being below normal for all three months. During July, the passage of TS Flossie prevented a worsening drought status across the islands, but did little to improve overall drought conditions. Record-Breaking low rainfall occurred during August over Oahu and Kauai (both of which had achieved a drought free status in late May). This resulted in the reinstitution of moderate drought (D1) over areas within both Islands.

Maui, Molokai, and the Big Island have been mostly covered in some level of drought conditions throughout the entire JAS season, with persistent Extreme Drought (D3) conditions in the leeward areas of Haleakala (Maui) and leeward areas of the Big Island. Impacts from these drought conditions include USDA reports that citrus tree crops in some areas of the Big Island have begun to show signs of drought stress, stricter cutbacks in irrigation water usage from the Kualapuu Reservoir on Molokai as well as affected reservoir supply levels for public use in Maui.

According to the U.S. Drought Monitor website, as of September 24, 90% of the state of Hawaii was affected by some level of drought (D0-D4) and 20% of the state was covered by severe drought (D2) condition or worse. **Continued on Page 12**

Seasonal Sea-Level Outlook for the US-Affiliated Pacific Islands

The following sections describe: (i) the *Canonical Correlation Analysis (CCA)* forecasts for seasonal mean and maxima sea-level anomalies. For the forthcoming seasons October-November-December (OND), November-December-January (NDJ), and December-January-February (DJF) of 2013 return values at 20 and 100-yr period, (ii) the observed monthly mean and maximum sea-level anomalies for the previous season July-August-September (JAS) 2013, and (iii) seasonal sea level variability comparison of SST and SST-Wind (U)-based forecasts. Note that seasonal cycles have been removed for the data anomalies that are defined as 'deviations or departures from the normal' using the 1983 through 2001 mean sea level value computed at each station. Also note that CCA-forecasting technique adopted here does not account for sea-level deviations created by other atmospheric or geological factors such as tropical cyclones, storm surges or tsunamis.

(i) Seasonal sea level forecast anomalies with respect to climatology for OND, NDJ, and DJF of 2013

Forecasts of the sea-level anomalies in the USAPI (see http://www.prh.noaa.gov/peac/map.php for location of stations) are presented using CCA statistical model. Based on the independent SST and zonal wind (SST-U) (Note that this is the first time SST-U-based CCA forecasts have been utilized) values in JAS 2013, the resulting CCA model has been used to forecast the sea-level of three consecutive seasons: OND, NDJ, and DJF [Table 1: left panel shows values for seasonal mean while the right panel shows the seasonal maxima. All the tide gauge stations (at 0 to 2-months lead time) show skillful forecasts for these three consecutive seasons (Table 1: bottom panel).] As compared to our previous SST-based forecasts, the current SST-U-based forecasts are found to be more efficient (Fig. 1).

Table 1: **Forecasts of sea-level anomalies in inches (OND, NDJ, and DJF)**

	Seasonal Mean Deviations [1]				Seasonal Max Deviations [2]					
Tide Gauge Station	**OND**	**NDJ**	**DJF**	**Forecast Quality [3]**	**OND**	**NDJ**	**DJF**	**Forecast Quality [3]**	***Return Period [4] for OND Season***	
Lead Time [5]	*0*	*1M*	*2M*		*0*	*1M*	*2M*		*20 Year*	*100 Year*
Marianas, Guam	+5	+6	+6	V. Good	**+20**	+21	+21	V. Good	6.5	9.1
Malakal, Palau	+4	+4	+4	V. Good	**+40**	+40	+40	V. Good	6.1	6.4
Yap, FSM	+5	+5	+5	V. Good	**+32**	+32	+32	V. Good	8.2	11.0
Chuuk, FSM**	+5	+5	+5	NA	**+32**	+32	+32	N/A	N/A	N/A
Pohnpei, FSM	+4	+5	+5	V. Good	**+35**	+36	+36	V. Good	9.1	11.8
Majuro, RMI	+3	+4	+4	V. Good	**+44**	+44	+45	V. Good	5.7	6.4
Kwajalein, RMI	+4	+5	+5	V. Good	**+42**	+43	+43	V. Good	6.6	8.4
Pago Pago, Am. Samoa	+4	+4	+4	Good	**+28**	+28	+29	Fair	4.9	6.1
Honolulu, Hawaii	+1	+1	+1	Poor	**+21**	+22	+22	Poor	3.0	3.7
Hilo, Hawaii	+1	+1	+1	Poor	**+24**	+25	+25	Poor	3.2	5.2

Note: (-) indicates negative anomalies (fall of sea level from the mean), and (+) indicate positive anomalies (rise of sea level from the mean), N/A indicates data not available. Anomalies from -1 to +1 inches are considered negligible and anomalies from -2 to +2 inches are unlikely to cause any adverse climatic impact. Forecasts for Chuuk (**) are estimated subjectively based on information from WSO Chuuk and observations from neighboring stations of Pohnpei and Yap. See http://www.prh.noaa.gov/peac/peu/2012_4th/sea_level.php#footnote for explanations of notes.

Remarks: The forecast values of sea level for OND, NDJ, and DJF seasons (Table 1, above) indicate that most of the stations in the north Pacific Region are likely to be higher (e.g., 4-6 inches) than normal in the forthcoming seasons. In Hawaii, both Honolulu and Hilo are likely to be closer to normal during the same time period. The SST anomalies are near average across much of the equatorial Pacific Ocean. Low-level winds were near average, while anomalous westerly winds prevailed at upper-levels. The overall conditions indicate the continuation of an ENSO-neutral stage; sea level is likely to fall as the season advances, while levels will remain slightly elevated during the forthcoming seasons.

(ii) Observed monthly sea level anomalies in JAS, 2013

The monthly time series (July to September) for sea level anomalies have been taken from the UH Sea Level Center. The full time series (in mm) for monthly mean is available at: ftp://ilikai.soest.hawaii.edu/islp/slpp.anomaliess. Locations of all these stations can be found at http://www.prh.noaa.gov/peac/map.php.

Seasonal Sea-Level Outlook for the US-Affiliated Pacific Islands

Table 2: Monthly observed mean/maximum sea-level anomalies in inches (JAS)

Tide Gauge Station	Monthly Mean Deviations[1]				Monthly Max Deviations[2]			
	July	Aug.	Sept.	Standard Deviations	July	Aug.	Sept.	Standard Deviations
Marianas, Guam	+7.4	3.4	+6.7	3.5	+24	+23	+22	3.4
Malakal, Palau	*	4.6	+6.8	4.4	*	*	+43	4.6
Yap, FSM	+7.3	4.2	+6.6	4.2	+34	+35	+33	4.2
Chuuk, FSM*	*	*	*	*	*	*	*	*
Pohnpei, FSM	+5.1	3.3	*	3.3	+36	+33	*	3.3
Majuro, RMI	+2.5	3.2	*	2.5	+46	+46	*	3.2
Kwajalein, RMI	+5.4	3.5	+6.7	2.8	+46	+43	+42	3.5
Pago Pago, American Samoa	+8.0	3.6	+8.2	3.1	+34	+32	+31	3.6
Honolulu, Hawaii	***	2.3	+1.5	1.8	+22	+18	+17	2.3
Hilo, Hawaii	***	2.4	+1.4	1.8	+22	+21	+18	2.4

* Data currently unavailable; 1: Difference between the mean sea level for the given month and the 1983 through 2001 mean sea level value at each station, 2: Same as 1 except for maxima. *** Denotes any changes from - 1 to +1 inch and is considered to be negligible.

Remarks: As compared to August 2013, the monthly mean sea level anomaly in September 2013 shows a fall for most of the USAPI stations, except Kwajalein and Pago Pago; where sea level registered a slight rise. Honolulu and Hilo also displayed slight rise over the same time period. Currently, all north Pacific stations are 4-7 inches higher than normal; the lone south Pacific station is 8 inches higher than normal, and Honolulu and Hilo are close to normal.

(iii) Seasonal Sea Level Variability: Comparison of SST and SST-U-based forecasts

PEAC has recently started to generate SST-Wind-based forecast. Our initial findings (see Table 1) have revealed that the combined SST and zonal wind (U) based forecasts are more skillful than the SST-based forecasts alone (Fig. 1). Other than Pago Pago, forecasts for all north Pacific stations improved with an average skill score greater than 0.75. It is particularly more efficient on longer time scales for most of the stations. The improvements of these forecasts will enable the capability of our clients in the USAPI region to develop a more efficient long-term response plan for hazard management.

Figure 1: Comparison of SST and SST-Wind based forecasts

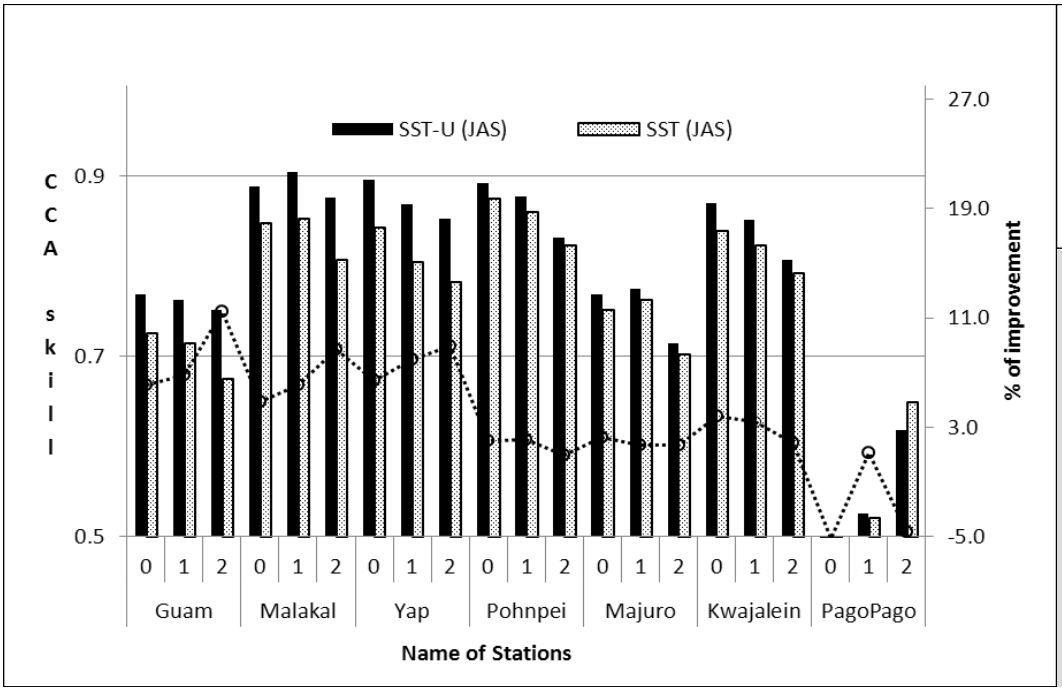


Figure 1: Comparison of SST and SST-Wind (U)-based forecasts. Here the JAS seasonal SST and SST-U are used as predictors to generate forecasts for the seasons OND (0-month lead), NDJ (1-month lead), and DJF (2-month lead) seasons.

***Pacific ENSO Update* is Now Available Online:**
Visit http://www.prh.noaa.gov/peac/update.php
to receive notification when the newsletter is available online.

LOCAL SUMMARY AND FORECAST

Continued from Page 9.

State of Hawaii Rainfall Summary 3rd Qtr 2013					
Station		**July**	**Aug.**	**Sep.**	**3rd Qtr**
Lihue Airport	**Inches**	0.96	0.75	2.36	**4.07**
	% Norm	57%	41%	123%	**75%**
Honolulu Airport	**Inches**	0.35	0.10	1.35	**1.78**
	% Norm	97%	53%	228%	**155%**
Kahului Airport	**Inches**	0.86	0.54	0.25	**1.65**
	% Norm	227%	114%	131%	**158%**
Hilo Airport	**Inches**	4.29	8.85	3.64	**16.78**
	% Norm	45%	105%	39%	**62%**

Climate Outlook: The U.S. Climate Prediction Center's Hawaiian Seasonal Outlook Discussion, posted on October 17, 2013, can be obtained from the following webiste: http:www.cpc.ncep.noaa.gov/products/predictions/90day/fxhw40.html.

CURRENT CONDITIONS

Continued from Page 1 *...convection evident near the Date Line. Low-level winds were near average, while anomalous westerly winds prevailed at upper-levels. Collectively, these atmospheric and oceanic conditions reflect ENSO-neutral.*

The majority of model forecasts indicate that ENSO-neutral (Niño-3.4 index between -0.5°C and 0.5°C) will persist into the Northern Hemisphere spring 2014. Though the forecast favors near-average conditions, many models predict a gradual increase from slightly cooler than average to warmer conditions as the spring approaches. Overall, the consensus forecast is for ENSO-neutral to continue into the Northern Hemisphere spring 2014 (see CPC/IRI consensus forecast).

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). Forecasts for the evolution of El Niño/La Niña are updated monthly in the Forecast Forum section of CPC's Climate Diagnostics Bulletin. The next ENSO Diagnostics Discussion is scheduled for 7 November 2013. To receive an e-mail notification when the monthly ENSO Diagnostic Discussions are released, please send an e-mail message to: ncep.list.enso-update@noaa.gov."

ACKNOWLEDGEMENTS AND FURTHER INFORMATION

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LTJG G. Carl Noblitt IV, PEAC Outreach Officer, at 808-956-2324 for information on PEAC, the Pacific ENSO Update and ENSO-related climate data for the Pacific Islands.
Dr. Rashed Chowdhury, Principal Research Scientist, at 808-956-2324 for information on ENSO and sea-level variability in the USAPI.
Alejandro Ludert, Graduate Research Assistant and Webmaster, at 808-956-2324 for information related to the PEAC website.

University of Hawai'i - Joint Institute of Marine and Atmospheric Research (JIMAR), School of Ocean and Earth Science and Technology (SOEST), Department of Oceanography:
MSB #317, 1000 Pope Road, Honolulu, Hawai'i 96822
Dr. Mark Merrifield, PEAC Principal Investigator at 808-956-6161 for more information on sea level and climate in Hawai'i.

NOAA National Weather Service
Weather Forecast Office (WFO) Honolulu:
HIG #250, 2525 Correa Rd., Honolulu, HI, 96822
Tom Evans, PEAC Director, at 808-973-5270

NOAA National Weather Service
Weather Forecast Office (WFO) Guam:
3232 Hueneme Road, Barrigada, Guam, 96913
Chip Guard, Warning Coordination Meteorologist, at 671-472-0900 for information on tropical cyclones and climate in the USAPI.

University of Guam - Water and Environmental Research Institute (WERI):
UOG Station, Mangilao, Guam 96913
Dr. Mark Lander, PEAC Meteorologist, at 671-735-2685 for information on tropical cyclones and climate in the USAPI.

The Pacific ENSO Update is a bulletin of the Pacific El Niño-Southern Oscillation (ENSO) Applications Climate (PEAC) Center. PEAC conducts research & produces information products on climate variability related to the ENSO climate cycle in the U.S. Affiliated Pacific Islands (USAPI). This bulletin is intended to supply information for the benefit of those involved in such climate-sensitive sectors as civil defense, resource management, and developmental planning in the various jurisdictions of the USAPI.

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