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Providing Information on Climate Variability for the U.S.-Affiliated Pacific Islands

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CURRENT CONDITIONS

During the first half of 2008, the climate of the tropical Pacific Ocean evolved from La Niña to ENSO-neutral conditions. While this transition was completed during the month of June, the atmosphere, however, still continues to exhibit some behavior more typical of La Niña: enhanced trade winds across Micronesia and a westward displacement of tropical cyclone activity. Few climatic extremes, wet or dry, have been noted.

The total rainfall during the first half of 2008 was within the range of 80% to 120% of normal at most locations within the U.S.-Affiliated Pacific Islands (USAPI) (see Figures 1a and 1b). Six-month rainfall totals were less than 80% of normal at some locations in the northern RMI and Yap State. The lowest 2008 1st half rainfall totals of 19.42 inches, 21.66 inches and 21.95 inches occurred at Saipan, Andersen AFB (Guam) and Wotje, respectively. Six-month rainfall totals in excess of 120% of normal were seen at in American Samoa and at several locations on Pohnpei Island and its outer atolls. The 122.09 inches recorded at the Kosrae airport was the highest recorded total rainfall in the USAPI during the first half of 2008, followed by the 116.97 inches of rain at Palikir on Pohnpei Island. The highest departure from normal occurred at Nukuoro, with 115.57 inches of rain (148% of normal) for the first half of 2008.

Most of the Hawaiian Islands have been extremely dry for the first half of 2008 (see Figures 1a and 1b), with drought conditions reported across the state. Windward areas of the Big Island have been placed under moderate drought. Degraded pasture conditions are severely affecting livestock, and brush fire danger is also very high. Drought conditions across Maui range from moderate to severe, and sugar planting in central Maui has been suspended due to lack of water. In west Molokai, users of irrigation water from the Kualapu'u Reservoir remain under a mandatory 20% reduction on water use. On east Oahu, extreme drought conditions have developed. Irrigation water levels continue to drop in the Waimanalo Reservoir, where officials have placed a 30% mandatory restriction on irrigation water use. The latest long-lead Hawaiian Outlook issued by the NOAA Climate Prediction Center continued to project below-normal rainfall in the Hawaiian Islands through December 2008, which is deep into the islands' normal wet season.

No typhoons directly affected any island in the western North Pacific basin during the first half of 2008. Several of the year's typhoons, however, evolved through their tropical disturbance and depression stages in portions of Micronesia, contributing to rainfall totals at some locations from Chuuk westward to Palau. Extreme daily rainfall amounts of 3 to 4 inches occurred at some locations, but these values are not considered that unusual. Excessive rain rates of 6 inches or more in 24 hours are typically associated with tropical cyclones, which have been notably absent in Micronesia since 2007.

Sea level variation in the USAPI is sensitive to the ENSO-cycle, with low sea level observed during El Niño years and high sea level during La Niña years. Sea levels have been above normal since early 2007. Current forecasts indicate that sea levels will remain slightly elevated at all USAPI stations for another 1 to 3 months, although sea-level at all locations should begin slowly receding toward normal levels. This trend is consistent with the recent transition from La Niña to ENSO-neutral conditions.

The following comments from the EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION were posted on the U.S. Climate Prediction Center web site on July 10, 2008:

Synopsis: ENSO-neutral conditions are expected to continue into Northern Hemisphere Fall 2008.

"A transition from La Niña to ENSO-neutral conditions occurred during June 2008, as sea surface temperatures (SSTs) returned to near-average across the central and east-central equatorial Pacific Ocean...

Similar to past transitions, La Niña continues to linger in the atmospheric circulation, but with diminishing strength. Enhanced low-level easterly winds and upper-level westerly winds remain across the central equatorial Pacific, while convection continues to be suppressed in the central equatorial Pacific and slightly enhanced over the far western Pacific. Collectively, these atmospheric and oceanic anomalies are consistent with a return from La Niña to ENSO-neutral conditions.

Most forecast models indicate ENSO-neutral conditions will continue through the Northern Hemisphere Winter 2008-09. Despite this model consensus, the possible development of El Niño or La Niña cannot be ruled out due to uncertainty in model forecasts and because ENSO events often form during the second half of the year. Based on current atmospheric and oceanic conditions, recent trends, and model forecasts, ENSO-neutral conditions are expected to continue into Northern Hemisphere Fall 2008."

SEA SURFACE TEMPERATURES SOUTHERN OSCILLATION INDEX

Sea Surface Temperatures (SST)

Sea surface temperatures (SSTs) returned to near-average across the central and east-central equatorial Pacific in June 2008, marking a shift from La Niña to ENSO-neutral conditions. Since February 2008, negative SST anomalies have weakened in the central equatorial Pacific. From June to early July 2008, an area of positive anomalies increased in the eastern equatorial Pacific and expanded westward. Over the last month, the change in SST departures was positive across much of the central and east-central equatorial Pacific. The latest weekly SST index was -0.3°C in the Niño-4 region, 0.1°C in the Niño-3.4 region, 0.5°C in the Niño-3 region and +0.6°C in the Niño 1+2 region. The subsurface oceanic heat content (average temperatures in the upper 300m of the ocean), and patterns of subsurface temperature anomalies also reflect the transition to ENSO-neutral conditions. Similar to past transitions, La Niña continues to linger in the atmospheric circulation pattern, but with diminishing strength.

Southern Oscillation Index (SOI)

The 3-month average of the Southern Oscillation Index for the 2nd Quarter of 2008 was +0.3, with monthly values of +0.9, -0.5 and +0.5 for the months of April, May and June 2008, respectively. After reaching a high value of +4.4 in March, the SOI weakened considerably. May marked the first time in 11 months that the SOI value has been negative. The SOI is expected to hover between +0.5 and –0.5 as ENSO-neutral conditions continue. 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. The SOI is an index representing the normalized sea level pressure difference between Darwin, Australia and Tahiti, respectively.

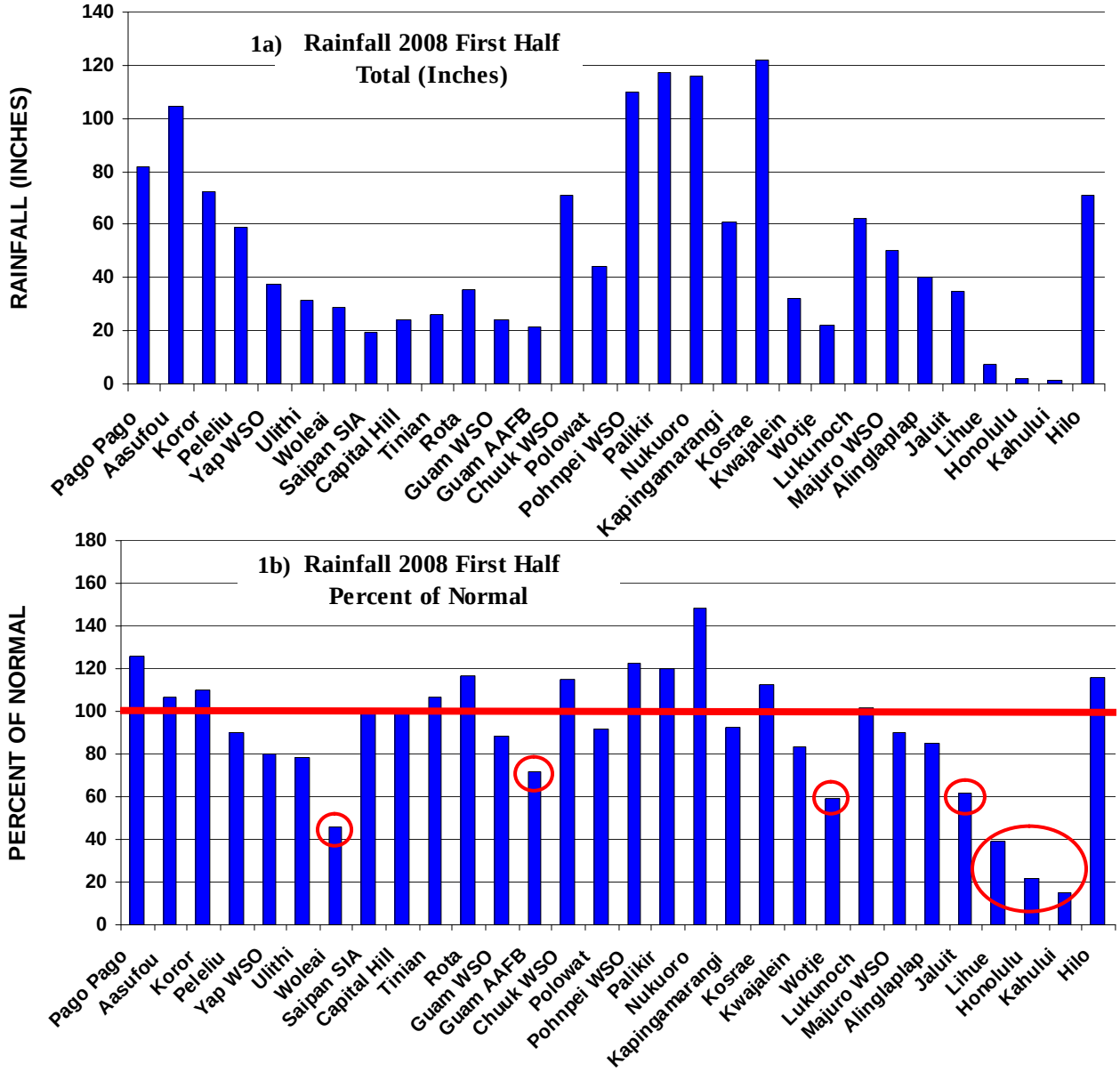

Figure 1, above. 1st Half 2008 rainfall totals (a) in inches and (b) anomalies (expressed as % of normal). In 1b, solid line indicates normal rainfall (100%) and circles indicate rainfall less than 75% of normal.

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 Meteorology 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 (TCWC) at Brisbane, the RSMC Nadi, and the New Zealand Meteorological Center at 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

Tropical cyclone activity in the western North Pacific basin was above normal during the first half of 2008. Most of this activity, however, occurred to the west of Micronesia, with the Philippines being particularly hard-hit. The JTWC numbered 7 tropical cyclones in the western North Pacific basin during the first half of 2008, 3 more tropical cyclones than average. Of these 7 cyclones, 5 were typhoons and 2 were tropical storms. One of the typhoons (Rammasun: TC03W) was a super typhoon. The JMA named 6 of the 7 cyclones that JTWC numbered. The westward shift of the tropical cyclone activity is typical during La Niña. No area of Micronesia was severely impacted by a tropical cyclone during the first half of 2008.

The Central North Pacific hurricane season is off to a slow start, with no tropical cyclone activity occurring in the month of June. Hurricane Boris formed in the Eastern Pacific on July 1 but weakened to a tropical depression by July 4. Tropical Storm Elida developed in the East Pacific in July 12 and intensified to hurricane strength by July 14, becoming the second hurricane of the Eastern Pacific season. Upon reaching cooler waters of the Central Pacific, Hurricane Elida weakened briefly to a tropical storm on July 18 before dissipating into a disturbance well to the southeast of the Hawaiian Islands.

PEAC Center Tropical Cyclone Outlook

The PEAC tropical cyclone outlook[1] for the remainder of the typhoon season of 2008 is for more activity in the western North Pacific basin than occurred there in 2007, which was a very quiet year. Through August, the geographical distribution of western North Pacific tropical cyclones should still reflect a pattern that is typical of La Niña: a shift of activity to the north and west of normal. In the Fall of 2008, the typhoon distribution should return to near normal, placing the islands from Chuuk and westward into a near normal risk for a typhoon. Islands from Pohnpei and eastward into the RMI experience tropical storms and typhoons primarily during El Niño. The risk of a damaging tropical cyclone in these locations is considered low during the remainder of 2008 (but not so extraordinarily low as it was in 2007).

On 24 June 2008, The City University of Hong Kong Laboratory for Atmospheric Research issued an updated forecast for western North Pacific tropical cyclone activity. Their forecast for 2008 is for basin-wide cyclone activity to be normal to slightly above-normal, which is consistent with their forecast made earlier in the year. The PEAC concurs with this forecast, but with the added comment that much of this activity will be located to the north and west of most of the islands of Micronesia.

The PEAC forecast considered input from two seasonal outlooks for tropical cyclone activity in the western North Pacific basin: (1) The City University of Hong Kong Laboratory for Atmospheric Research, under the direction of J. C-L. Chan (http://aposf02.cityu.edu.hk/tc_forecast/2008_forecast_APR.htm), and, (2) The Benfield Hazard Research Centre, University College London, Tropical Storm Risk (TSR) research group, UK, led by Dr Adam Lea and Professor Mark Saunders (http://tsr.mssl.ucl.ac.uk/).

The previous forecast from the Hong Kong Center called for slightly above normal tropical cyclone activity in the western North Pacific basin for 2008; specifically: 2 more named cyclones than average and one more typhoon than average. Their forecast is a balance of ENSO factors that suggest near normal activity with some recent regional weather patterns in February and March that suggest above average activity. The TSR consortium anticipates that the 2008 Northwest Pacific typhoon season will see below average activity. The TSR group is expecting a fairly large (20%) reduction in most categories: annual number of tropical cyclones, annual number of intense typhoons, and the accumulated cyclone energy (ACE). ACE is a measure of the total energy expended by a tropical cyclone during its life, and is therefore dependent on the intensity of a storm as well as its total lifetime. These forecasts span the full Northwest Pacific season from January to December. The activity so far in 2008 has been below normal and displaced to the west.

LOCAL SUMMARY AND FORECAST

American Samoa: The average rainfall at American Samoa typically begins to decrease during May and June as the dry season gets underway. However, these two months were substantially wetter than normal this year, and both A'asufou and Pago Pago ended the first half of the year with an abundance of rainfall. The 2008 first half total rainfall of 81.87 inches at Pago Pago was 124% of its normal value (17.03 inches above normal). In terms of percent of normal, this was among the highest rainfall at any of the USAPI stations for the first half of 2008.

American Samoa Rainfall Summary 2nd Qtr 2008

Station		Apr.	May	Jun.	2nd Qtr	1st Half
Pago Pago WSO	Inches	12.89	19.83	12.00	44.72	**81.87**
	% Norm	116 %	190%	202%	162%	**126%**
A'asufou	Inches	13.87	23.56	19.21	56.64	**104.83**
	% Norm	76%	153%	170%	126%	**107%**

Climate Outlook: American Samoa is now within the heart of its dry season (May through November). Nearly all climate models favor near normal to slightly above normal rainfall over the next few months, and there has certainly been abundant rainfall to-date as the dry season commences. With ENSO-neutral conditions expected to continue through the Northern Hemisphere fall months (Southern Hemisphere spring months), American Samoa should receive normal to above normal rainfall through December 2008. However, rainfall amounts may vary greatly from month to month depending on the establishment of the South Pacific Convergence Zone (SPCZ) and the continued establishment and placement of the monsoonal trough originating out of Australia.

The PEAC Center remains cautiously optimistic that the focus of South Pacific tropical cyclone activity will remain west of the International Date Line from northeastern Australia eastward to Fiji in the upcoming 2008-09 cyclone season, and that the risk of a damaging impact by a hurricane or strong tropical storm in American Samoa will be near normal (roughly 10% probability).

Predicted rainfall from July 2008 through June 2009 is as follows:

Inclusive Period	% of long-term average / Forecast rainfall (inches) [2]
July - Sept 2008 (Heart of Next Dry Season)	**120% (23.46 - Pago Pago)**
Oct - Dec 2008 (Onset of Next Rainy Season)	**100%**
January - March 2008 (Heart of Next Rainy Season)	**100%**
April—June 2009 (Onset of Next Dry Season)	**100%**

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

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Guam/CNMI: Rainfall on Guam during the 2nd Quarter and 1st half of 2008 was drier than normal. Persistent trade winds accompanied especially dry conditions (50-75% of normal) during the 2nd Quarter months. The rainfall totals during the first half of 2008 were approximately 25-30 inches at all recording locations, ranging from 21.66 inches at Andersen AFB to 29.67 inches at the head of the Ugum watershed in the southern mountains. The weather on Guam during the first half of 2008 continued to be tranquil, with no unusually heavy rains or strong winds.

The 2nd Quarter 2008 and 1st half of 2008 rainfall totals in the CNMI were generally near normal, with six-month totals near 25 inches, similar to Guam. The island of Rota had a particularly wet May, with 11.49 inches recorded at the Rota Airport. This contributed to the highest six-month accumulation in the region of 35.74 inches (116%

Guam and CNMI Rainfall Summary 2nd Qtr 2008

Station		Apr.	May	Jun.	2nd Qtr	1st Half
Guam						
GIA (WFO)	Inches	3.08	2.79	5.39	11.26	**24.34**
	% Norm	79%	46%	83%	69%	**88%**
AAFB	Inches	1.33	2.66	4.93	8.92	**21.66**
	% Norm	27%	40%	78%	50%	**66%**
Dededo (Ypapao)*	Inches	2.93	4.36	6.02	13.31	**27.39**
	% AAFB	60%	66%	95%	75%	**83%**
Ugum Watershed **	Inches	3.69	5.48	7.09	16.26	**29.67**
	% WSMO	78%	77%	109%	89%	**89%**
Sinajaña ***	Inches	2.08	3.56	5.68	11.32	**24.17**
	% WFO	53%	59%	88%	69%	**90%**
CNMI						
Saipan Intl. Airport	Inches	2.65	3.26	4.06	9.97	**19.42**
	% Norm	95%	74%	87%	84%	**100%**
Capitol Hill	Inches	1.89	2.71	7.67	12.27	**24.17**
	% Norm	54%	49%	132%	83%	**99%**
Tinian Airport	Inches	2.32	3.11	9.16	14.59	**25.94**
	% Norm	66%	57%	160 %	99%	**107%**
Rota Airport	Inches	3.50	11.49	8.34	23.33	**35.74**
	% Norm	77%	182%	134%	137%	**116%**

* % of normal with respect to Andersen AFB.
** % of normal with respect to WSMO Finigayan (now closed), on the northwest side of Guam.
*** % of normal for Sinajaña is with respect to WFO Guam.

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of normal). The weather was otherwise very tranquil throughout the CNMI during the first half of 2008, with no unusually heavy rains or strong winds.

Climate Outlook: The rainy season on Guam and in the CNMI is off to a slow start with persistent trade winds accompanying hot and dry weather. There has been one episode of the southwest monsoon in early July, but it was weak and trade winds returned after the monsoonal clouds shifted to the west. All computer models available to PEAC Center indicate that the rainfall will be near normal in Guam and in the CNMI for the next three months, with no unusually heavy rains or strong winds expected. Although the basin climate has shifted to ENSO-neutral, the atmosphere is still behaving in a manner typical of La Niña. The persistent trade winds and ocean sub-surface heating in the western North Pacific will keep sea levels above normal. Tropical cyclone activity is anticipated to remain below normal in Micronesia through September, then return to near-normal levels during October, November and December. **From August through December 2008, Guam and the CNMI can expect to be threatened by 2 or 3 tropical cyclones that will produces gales and hazardous seas in the island waters. The odds of destructive winds (60 mph or higher) from a typhoon on Guam and for each island of the CNMI will be approximately 10 to 15% for the remainder of 2008, which is the normal level of risk for a non-El Niño year.**

Predicted rainfall for Guam and the Mariana Islands from July 2008 through June 2009 is as follows:

Inclusive Period	% of long-term average / Forecast rainfall (inches) [2]	
	Guam/Rota	Saipan/Tinian
Jul – Sept 2008 (Heart of Next Rainy Season)	**100% (37.75 inches)**	**100% (28.85 inches)**
Oct – Dec 2008 (End of Next Rainy Season)	**110%**	**110%**
Jan – March 2009 (1st Half of Next Dry Season)	**110%***	**110%***
Apr – June 2009 (End of Next Dry Season)	**120%***	**120%***

[2] Forecast rainfall quantities represent BEST ESTIMATES given the probabilistic forecast for each particular season and station.
* Forecasts are subject to large error if a typhoon should pass directly over any island!

For more information on Guam's weather and climate go to
http://www.prh.noaa.gov/guam

LOCAL SUMMARY AND FORECAST

Federated States of Micronesia

Yap State: Yap Island and the outer islands of Yap State were among the few locations where rainfall was deficient during the first half of 2008. Six-month rainfall totals at the Yap WSO and at nearly all other Yap State recording locations were 80% or less of their respective normal values. Several tropical disturbances passed through Yap State during the 2nd Quarter of 2008. These systems provided abundant rainfall to locations in the Republic of Palau, but failed to generate any substantial rain within Yap State. June was drier than May at all locations in Yap State, a reversal of the normal month-by-month increase in rainfall that is expected this time of year. Aside from being somewhat dry, the weather in Yap State was otherwise uneventful during the first half of the year. Woleai continued its long string of very dry weather, and was the driest recording station in terms of percent of normal rainfall (Fig. 1b) in Micronesia for January – June 2008.

Yap State Rainfall Summary 2nd Qtr 2008

Station		Apr.	May	Jun.	2nd Qtr	1st Half
Yap Island						
Yap WSO	**Inches**	6.93	9.69	5.23	21.85	**37.61**
	% Norm	124%	119%	39%	80%	**83%**
Dugor*	**Inches**	5.76	14.47	3.37	23.60	**36.36**
	% WSO	103%	178%	25%	86%*	**78%**
Gilman*	**Inches**	4.94	10.66	5.71	21.31	**37.41**
	% WSO	89%	131%	42%	77%*	**80%**
Luweech*	**Inches**	6.13	7.21	5.00	18.34	**33.92**
	% WSO	110%	88%	37%	67%*	**73%**
Maap*	**Inches**	8.36	11.11	3.69	23.16	**38.61**
	% WSO	150%	136%	27%	84%*	**83%**
North Fanif*	**Inches**	6.96	12.13	5.65	24.74	**36.83**
	% WSO	125%	149%	42%	90%*	**79%**
Rumung*	**Inches**	6.33	12.10	7.12	25.55	**37.04**
	% WSO	113	148%	53%	93%*	**79%**
Tamil*	**Inches**	7.18	10.19	5.45	22.82	**35.98**
	% WSO	129%	125%	40%	83%*	**77%**
Outer Islands						
Ulithi	**Inches**	4.41	9.20	6.84	20.45	**31.20**
	% Norm	90%	119%	63%	87%	**78%**
Woleai	**Inches**	6.52	5.76	4.04	16.32	**28.58**
	% Norm	59%	47%	31%	45%	**46%**

* Long term normal is not established for these sites.

Climate Outlook: All of the islands of Yap State should have near normal rainfall for the next three months (the heart of Yap's rainy season), and adequate rainfall is expected through the end of the year. Rainfall at Woleai may remain somewhat below normal from August through September as the monsoon trough is expected to stay mostly well to its north. (A similar period of relative dry-

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ness was seen in Woleai during August – October 2007.) Stronger than normal easterly winds along the equator and sub-surface ocean heating in the western North Pacific will keep sea levels above normal around Yap. Tropical cyclone activity in the western North Pacific is expected to be higher than it was during the quiet 2007 season. **From August to December 2008, two or three typhoons should pass to the north of Yap Island and Ulithi producing gusty westerly winds and hazardous seas in the island waters. The odds of damaging winds from a tropical cyclone on Yap or any of its northern atolls will be approximately 10% for the remainder of 2008, which represents a normal risk.**

Predicted rainfall for Yap State from July 2008 through June 2009 is as follows:

Inclusive Period	% of long-term average / Forecast rainfall (inches) [2]	
	Yap and Ulithi	Woleai
July – September 2008 (Heart of Rainy Season)	**95% (39.13 inches)**	**85% (34.26 inches)**
October – December 2008 (End of Rainy Season)	**100%**	**100%**
January – April 2009 (1st Half of Next Dry Season)	**100%**	**90%**
April – June 2009 (End of Next Dry Season)	**100%**	**100%**

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

Chuuk State: The amount of rainfall during the first half of 2008 was slightly below normal in the northern atolls (Fananu and Onoun), and generally wetter than normal at sites in Chuuk Lagoon and in the Mortlocks. To the west, at Polowat, rainfall totals were slightly below normal for the 2nd Quarter and 1st half of 2008. Nama, in the Northern Mortlocks, recorded the highest totals in Chuuk for both the 2nd Quarter (51.08 inches) and the 1st Half (85.11 inches) of 2008. The two driest Chuuk locations during the first half of 2008 were Fananu in the northern atolls and Polowat in the west, with 55.68 inches and 44.16 inches, respectively. The weather was generally tranquil throughout Chuuk State during the first half of 2008 with no unusually heavy rains or strong wind. One period of relatively heavy rainfall on the island of Weno in Chuuk Lagoon on the last day of June 2008 resulted in 3.28 inches of rainfall within a 24-hour period. This heavy rainfall, while not unusually excessive by Chuuk standards, caused some localized flooding of roadways.

Climate Outlook: Based on the return of ENSO-neutral conditions, rainfall at islands and atolls of Chuuk State should be near normal for most months during the remainder of 2008. Recent dryness in July should be balanced by near normal rainfall for the next two or three months, resulting in near-normal or slightly below-normal overall rainfall for the July – September 2008 season. Because of persistent local atmospheric wind patterns that have continued to linger after the recent La Niña event, **the threat of a direct strike by a strong tropical storm or typhoon on any of the islands of**

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Chuuk State Rainfall Summary 2nd Qtr 2008

Station		Apr.	May	Jun.	2nd Qtr	1st Half
Chuuk Lagoon						
Chuuk WSO	**Inches**	13.96	14.54	12.39	40.89	**70.91**
	% Norm	113%	119%	106%	113%	**115%**
Piis Panew*	**Inches**	14.22	9.99	10.19	34.40	**56.85**
	% WSO	125%	76%	92%	95%	**92%**
Southern Mortlocks						
Lukunoch*	**Inches**	15.74	10.34	5.51	31.59	**62.54**
	% WSO	138%	79%	50%	87%	**102%**
Ettal*	**Inches**	16.64	14.30	9.42	40.36	**67.74**
	% WSO	146%	109%	85%	111%	**110%**
Ta*	**Inches**	14.93	21.79	8.86	45.58	**79.67**
	% WSO	131%	167%	80%	126%	**130%**
Northern Atolls						
Fananu*	**Inches**	7.15	13.04	6.33	26.52	**55.68**
	% WSO	63%	100%	57%	73%	**91%**
Onoun*	**Inches**	9.92	16.23	7.53	33.68	**59.15**
	% WSO	87%	124%	68%	93%	**96%**
Northern Mortlocks						
Losap*	**Inches**	19.36	16.04	10.57	45.97	**76.79**
	% WSO	170%	123%	95%	127%	**125%**
Nama*	**Inches**	18.48	21.97	10.63	51.08	**85.11**
	% WSO	162%	168%	96%	141%	**138%**
Western Atolls						
Polowat	**Inches**	9.36	10.23	4.91	24.50	**44.16**
	% Norm	156%	114%	39%	89%	**92%**

* Long term normal is not established for these sites.

Chuuk State should be slightly below normal for the remainder of 2008; any tropical cyclones that form near Chuuk will likely be in their disturbance or depression state of development, and should only become tropical storms after passing out of Chuuk State. The weather over the next few months should be tranquil (with no unusually excessive rainfall or strong wind), although some relatively heavy rain events (more than 2 inches of rainfall in one day) may occur episodically in association with tropical disturbances in the area.

Predictions for Chuuk State from July 2008 through June 2009 are as follows:

Inclusive Period	% of long-term average / Forecast rainfall (inches) [2]			
	Chuuk Lagoon, Northern Mortlocks	Polowat	Northern Atolls and Islands	Southern Mortlocks
Jul – Sept 2008	**95% (34.38 inches)**	**90% (32.6 in)**	**95% (34.38 in)**	**95% (34.38 in)**
Oct – Dec 2008	**100%**	**100%**	**100%**	**100%**
Jan – Mar 2009	**95%**	**95%**	**90%**	**100%**
Apr – June 2009	**100%**	**100%**	**100%**	**100%**

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

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Pohnpei State: A majority of locations on Pohnpei Island and the atolls of Pohnpei State were very wet (more than 120% of normal) during the first half of 2008, particularly during the 2nd Quarter of the year when some of the April rainfall totals on Pohnpei Island were over 30 inches. The 110.07 inches recorded at the WSO in Kolonia during the first 6 months of 2008 was 122% of its normal. At Palikir, the 116.97 inches for the 1st half of 2008 was the highest value among Pohnpei Island's coastal stations. The 115.57 inches of rain recorded at Nukuoro during the first half of 2008 was substantially wetter (148%) than normal. Contrary to expectations, the rainfall at Kapingamarangi continues to be wetter than normal, although a period of very dry weather there in March and April brought the 2008 1st half total (60.88 inches) into the near normal category.

Rain gages placed on top of Nahna Laud (the highest mountain in Pohnpei's rainforest interior) received 103.47 inches in the 2nd Quarter of 2008. Although the rainfall totals for January and February were missing at this site, it is very likely that Nahna Laud topped all stations for the 1st half totals. Since 2003 when the Nahna Laud gages were installed, this site has received an annual average of 330 inches of rain.

Pohnpei State Rainfall Summary 2nd Qtr 2008

Station		Apr.	May	Jun.	2nd Qtr	1st Half
Pohnpei Island						
Pohnpei WSO	**Inches**	29.33	16.28	20.83	**66.44**	**110.07**
	% Norm	178%	85%	122%	**126%**	**122%**
Palikir	**Inches**	38.55	19.29	15.11	**57.02**	**185.27**
	% Norm	216%	93%	90%	**128%**	**120%**
Kolonia Airport	**Inches**	24.59	17.94	17.84	**60.37**	**94.74**
	% Norm	180%	113%	125%	**138%**	**127%**
Nahna Laud	**Inches**	39.15	33.63	30.69	**103.47**	**N/A**
	% Norm	N/A	N/A	N/A	**N/A**	**N/A**
Atolls of Pohnpei State						
Nukuoro	**Inches**	22.80	14.40	18.77	**55.97**	**115.57**
	% Norm	152%	98%	154%	**133%**	**148%**
Pingelap	**Inches**	24.42	17.04	21.49	**62.95**	**95.33**
	% Norm	142%	100%	132%	**125%**	**106%**
Mwoakilloa	**Inches**	13.48	16.45	19.13	**49.06**	**77.46**
	% Norm	79%	96%	118%	**97%**	**87%**
Kapingamarangi	**Inches**	4.73	12.93	17.37	**35.03**	**60.88**
	% Norm	35%	125%	240%	**112%**	**93%**

Climate Outlook: Light easterly winds should continue to dominate the flow in eastern Micronesia for the next few months. This wind pattern should accompany tranquil weather (no unusual extremes of rainfall or high wind). Light wind speeds during August and September should contribute to a sea breeze pattern that features heavy showers or thunderstorms over the rainforest interior during the heat of mid-day, and cool winds off the mountains after the showers dissipate at night. Recent dryness in July should be balanced by near-normal rainfall for the next two or three months. **No typhoons or tropical storms are anticipated to adversely affect Pohnpei State during 2008**; however, several of the basin's tropical cyclones may begin as depressions near Pohnpei Island and contribute to the expected near-normal rainfall totals.

LOCAL SUMMARY AND FORECAST

Predicted rainfall for Pohnpei State from July 2008 through June 2009 is as follows:

Inclusive Period	% of long-term average / Forecast rainfall (inches) [2]	
	Pohnpei Island and atolls	**Kapingamarangi**
July – Sept 2008	**90% (43.23 inches)**	**100% (22.70 inches)**
Oct - Dec 2008	**100%**	**100%**
Jan - Mar 2009	**100%**	**100%**
Apr - Jun 2009	**110%**	**100%**

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

Kosrae State: Rainfall during the first half of 2008 was near normal to slightly above normal at recording sites around Kosrae. Typically one of Micronesia's wettest locations, the 122.09 inches at the Kosrae Airport during the first half of the year was the highest official value seen throughout the region (beaten only by the experimental readings on Pohnpei's Nahna Laud).

Kosrae State Rainfall Summary 2nd Qtr 2008

Station		Apr.	May	Jun.	2nd Qtr	1st Half
Airport (SAWRS)	**Inches**	23.70	26.72	16.57	**66.99**	**122.09**
	% Norm	109%	142%	87%	**113%**	**112%**
Utwa*	**Inches**	20.48	22.78	15.10	**58.36**	**107.75**
	% WSO	95%	121%	79%	**98%**	**99%**
Nautilus Hotel*	**Inches**	24.36	19.26	19.06	**62.68**	**118.55**
	% WSO	112%	102%	100%	**105%**	**109%**
Tofol*	**Inches**	22.13	23.51	21.04	**66.68**	**121.49****
	% WSO	102%	125%	111%	**112%**	**112%**

* Long term normal is not established for these sites.
** Estimated.

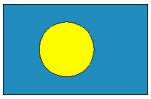
Climate Outlook: Tranquil weather (no unusual extremes of rainfall or high wind) and light easterly winds should continue to dominate the flow in eastern Micronesia for the next few months. Normal monthly rainfall values at Kosrae are typically between 17 and 20 inches for all months of the year, and it is expected that values for the next few months should be near or slightly below this. **No adverse tropical cyclone activity is expected for Kosrae State during 2008.**

Forecast rainfall for Kosrae State from July 2008 through June 2009 is as follows:

Inclusive Period	% of long-term average / Forecast rainfall (inches) [2]
July – September 2008	**95% (48.17 inches)**
October – December 2008	**100%**
January – March 2009	**95%**
April – June 2009	**110%**

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

LOCAL SUMMARY AND FORECAST



Republic of Palau: Rainfall was abundant throughout Palau during the first half of 2008. During May, Palau was in the path of several tropical disturbances that later became tropical cyclones elsewhere in the basin. The May rainfall at several recording sites was heavy; for example, the reading of 18.39 inches at the WSO was 163% of normal. The 78.35 inches of rainfall (115% of normal) at the International Airport was the highest value recorded in Palau for the first half of 2008. The Airport generally receives slightly more rainfall than the WSO in Koror. In contrast, Peleliu is typically drier than the WSO Koror. For the first half of 2008, Peleliu had about 10 inches less rain than at the WSO.

Republic of Palau Rainfall Summary 2nd Qtr 2008

Station		Apr.	May	Jun.	2nd Qtr	1st Half
WSO Koror	Inches	9.07	18.39	18.10	**45.56**	**72.50**
	% Norm	96%	163%	103%	**119%**	**107%**
Nekken	Inches	10.28	19.59	16.40	**46.27**	**67.05**
	% Norm	119%	163%	95%	**122%**	**102%**
Intl. Airport	Inches	7.95	17.27	19.73	**44.95**	**78.35**
	% Norm	92%	144%	114%	**119%**	**119%**
Peleliu	Inches	6.00	14.11	19.71*	**39.82**	**64.91**
	% Norm	69%	118%	81%	**105%**	**98%**

* Estimated

Climate Outlook: Palau has a complex pattern of monthly rainfall, with the highest average rainfall in the months of June and July, and the lowest average rainfall in the months of February, March and April. A secondary rainfall minimum occurs in August and September when the monsoon trough and typhoon tracks move well to the north of the islands, causing rainfall amounts in September to be lower than in June and July. This should be the case this year.

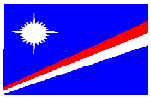
As anticipated in the last PEAC newsletter, the period from April to June was wet. During mid-July, the monsoon trough of the western Pacific became established at an abnormally high latitude. This type of pattern is typical during La Niña events. When the monsoon trough moves back southward later in the year (October to December), Palau could experience two or three episodes of near-gale (25 to 35 mph) westerly winds associated with tropical cyclones passing to the north. **Because of its southerly location, it is not anticipated that Palau will experience a direct strike by a strong tropical storm or a typhoon.**

Predicted rainfall for Palau from July 2008 through June 2009 is as follows:

Inclusive Period	% of long-term average / Forecast rainfall (inches) [2]
July – September 2008	**100% (43.11 inches)**
October – December 2008	**100%**
January – March 2009	**100%**
April – June 2009	**110%**

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

LOCAL SUMMARY AND FORECAST



Republic of the Marshall Islands (RMI): Several locations in the Marshall Islands were among the driest in the USAPI during the first half of 2008, both in terms of observed rainfall amount and percent of normal. Islands in the northern RMI (e.g., Kwajalein and Wotje) were particularly dry, with only about 80% of normal rainfall. Even some islands and atolls further south such as Alinglaplap and Jaluit were quite dry. The 50.45 inches of rainfall at the WSO Majuro during the first half of 2008 was 88% of normal. During the course of the La Niña event of 2007, and now into the first half of 2008, there has been a tendency for some of the atolls of the RMI (particularly in the north) to be dry.

Climate Outlook: There has been a persistent tendency for below normal rainfall in the Marshall Islands for many months, and slightly below normal rainfall is anticipated for most of the atolls of the RMI for the next several months. It is now the rainy season in the RMI, and slightly below normal rainfall should still be adequate to meet fresh-water needs. There is no climatic condition present (or forecast) that would indicate severe dryness at any of the atolls of the RMI during the next dry season of 2008-09. However, due to a high population and limited water storage capacity on Ma-

RMI Rainfall Summary 2nd Qtr 2008

Station		Apr.	May	Jun.	2nd Qtr	1st Half
RMI Central Atolls (6º N - 8º N)						
Majuro WSO	Inches	5.25	12.53	9.29	**27.07**	**50.45**
	% Norm	46%	109%	84%	**80%**	**88%**
Laura*	Inches	N/A	N/A	N/A	N/A	N/A
	% WSO	N/A	N/A	N/A	N/A	N/A
Arno*	Inches	N/A	N/A	N/A	N/A	N/A
	% WSO	N/A	N/A	N/A	N/A	N/A
Aling-laplap*	Inches	11.33	3.58	3.71	**18.62**	**40.44**
	% WSO	127%	34%	35%	**62%**	**85%**
RMI Southern Atolls (South of 6º N)						
Jaluit*	Inches	3.08	8.09	4.71	**15.88**	**34.69**
	% WSO	30%	72%	41%	**48%**	**62%**
RMI Northern Atolls (North of 8º N)						
Kwajal-ein	Inches	5.24	7.63	5.34	**18.21**	**32.38**
	% Norm	69%	76%	56%	**67%**	**83%**
Wotje*	Inches	3.90	3.81	5.07**	**12.78**	**21.95**
	% Norm	54%	40%	55%	**50%**	**59%**
Utirik*	Inches	N/A	N/A	N/A	N/A	N/A
	% Norm	N/A	N/A	N/A	N/A	N/A

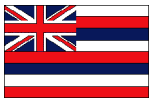
* Normal values are estimated based on WSO Majuro, Kwajalein and satellite-derived precipitation distribution.
** Estimated.

juro, one to two months of dry conditions can lead to stringent water restrictions.

Predicted rainfall for the RMI from July 2008 through June 2009 is as follows:

Inclusive Period	% of long-term average / Forecast rainfall (inches) [2]		
	South of 6ºN	6ºN to 8ºN	North of 8ºN
July – Sept 2008 (Rainy Season)	95% (34.50 inches)	95% (34.50 in)	85% (27.61inches)
Oct – Dec 2008 (Start of Dry Season)	95%	100%	95%
Jan – March 2009 (Dry Season)	100%	90%	85%
April – June 2009 (Onset of Rains)	100%	100%	90%

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



Hawaii: Despite brief interludes of heavy rainfall, the second quarter of 2008 was marked by dry conditions and drought across the almost the entire state. Most of the state has been extremely dry for the entire first half of 2008 (see Figures 1a and 1b). Enhanced shower activity over the island chain on April 9-10 brought minor flooding to windward slopes of the Kauai, Maui, Lanai and the Big Island. Unstable upper level conditions on April 25 and 26 helped support heavy showers and isolated thunderstorms over the islands, with the heaviest rainfall occurring over the Kailua and Waimanalo areas of windward Oahu during the afternoon of April 25.

Dry conditions continued to prevail through May. A breakdown in the trade wind pattern from May 12 - 20 resulted in light winds and stable conditions with little rainfall. On May 21 and 22, low level convergence of winds southeast of a nearby cold front brought showers to Kauai and Oahu. Moderate trade winds resumed on May 24, but stable conditions did not allow for much rainfall to occur during the remainder of the month. The lack of sufficient rainfall aggravated drought conditions across Oahu, Molokai, Maui, and the Big Island in May, with impacts mainly felt by the agriculture sector. Residents in the Upcountry area of Maui were asked to voluntarily cut back on water use by 5 percent.

On June 12, an upper level trough provided sufficient instability to produce heavy rains over windward sections of Oahu. Fortunately, the rains produced only minor flooding problems, although runoff forced the closure of beaches at Bellows Air Force Station due to high levels of bacteria. The rains brought temporary relief to drought conditions over east Oahu where users of Waimanalo irrigation water have been suffering under mandatory 20 per-

LOCAL SUMMARY AND FORECAST

cent restrictions on water use. Most of the rain gages on Kauai recorded near to above normal rain totals for the month of June. While there was a wide range of conditions reported across Maui County and Hawaii County, most locations in there recorded below normal rain totals for the month of June.

Windward areas of the Big Island have seen below normal summer rainfall and have been placed under moderate drought. Degraded pasture conditions are severely affecting livestock, and brush fire danger is also very high. Drought conditions across Maui range from moderate to severe, and sugar planting in central Maui has been suspended due to lack of water. In west Molokai, users of irrigation water from the Kualapu'u Reservoir remain under a mandatory 20% reduction on water use. On east Oahu, extreme drought conditions have developed. Irrigation water levels continue to drop in the Waimanalo Reservoir, where officials have placed a 30% mandatory restriction on irrigation water use. The latest long-lead Hawaiian Outlook issued by the NOAA Climate Prediction Center continued to project below-normal rainfall in the Hawaiian Islands through December 2008, which is deep into the islands' normal wet season.

For up-to-date information about hydrology in Hawaii, please visit: www.prh.noaa.gov/hnl/pages/hydrology.php.

State of Hawaii Rainfall Summary 2nd Qtr 2008

Station		Apr.	May	June	2nd Qtr	1st Half
Lihue Airport	Inches	1.80	1.25	1.68	**4.73**	**7.45**
	% Norm	60%	44%	92%	**62%**	**39%**
Honolulu Airport	Inches	0.20	0.53	0.55	**1.28**	**1.99**
	% Norm	18%	68%	128%	**55%**	**21%**
Kahului Airport	Inches	0.03	0.07	0.06	**0.16**	**1.63**
	% Norm	2%	11%	26%	**6%**	**15%**
Hilo Airport	Inches	5.91	4.12	2.18	**12.21**	**70.70**
	% Norm	47%	51%	30%	**44%**	**116%**

Climate Outlook: The following comments are from the US Climate Prediction Center's Seasonal Outlook Discussion:

"NCEP Models predict a tendency for below normal temperature for Hilo and Kahului from June-July-August through Oct-Nov-Dec 2008… and for Honolulu and Lihue from June-July-Aug to Sept-Oct-Nov 2008. Models also predict below normal rainfall for all Hawaii locations from June-July-Aug to Aug-Sept-Oct 2008."

For more information on weather and climate in Hawaii go to

http://www.prh.noaa.gov/pr/hnl/
or
www.cpc.noaa.gov/products/predictions/long_range

Seasonal Sea Level Outlook for the US-Affiliated Pacific Islands

The following sections describe: (i) the *Canonical Correlation Analysis* (*CCA*)-based forecasts for sea level deviations for the forthcoming seasons JAS, ASO and SON 2008; (ii) the observed monthly mean and maximum sea-level deviations for the season AMJ 2008, and (iii) forecast verifications (observed/forecast values) for the previous season AMJ 2008. All units are in inches. *Note that 'deviation' is defined here as 'the observed or forecast difference between the monthly mean [or maximum] and the climatological monthly mean values (from the period 1975- 1995) computed at each station'. Also, note that the forecasting technique adapted here does not account for sea level deviations created by other atmospheric or geological conditions such as tropical cyclones, storm surges or tsunamis.*

(i) Seasonal Sea Level Forecast *(deviations with respect to climatology*) **for JAS, ASO and SON 2008** (**Table 1**). (See Figure 2 for locations of these stations.)

Table 1: **Forecasts of sea level deviation (in inches) for Jul-Aug-Sep, Aug-Sep-Oct, and Sep-Oct-Nov 2008.**

	Seasonal Mean Deviations [2]				Seasonal Max Deviations [3]					
Tide Gauge Station	**JAS**	**ASO**	**SON**	**Forecast Quality [4]**	**JAS**	**ASO**	**SON**	**Forecast Quality [4]**	***Return Period [5] for JAS Season***	
Lead Time [6]	*0*	*1M*	*2M*		*0*	*1M*	*2M*		*20 Year*	*100 Year*
Marianas, Guam	+6 (5)[1]	+5	+3	Good	+22 (21)[1]	+21	+20	Good	*6.2*	*10.8*
Malakal, Palau	+6 (3)	+6	+4	V. Good	+41 (38)	+41	+41	Good	*8.0*	*10.1*
Yap, FSM	+6 (3)	+5	+3	V. Good	+32 (29)	+32	+32	Good	*8.3*	*11.2*
Chuuk, FSM**	+5 (N/A)	+5	+5	N/A	+31 (N/A)	+31	+31	N/A	*	*
Pohnpei, FSM	+1 (1)	+2	+2	Good	+29 (29)	+30	+32	V. Good	*5.7*	*6.9*
Kapingamarangi, FSM	***	+1	+2	Good	+26 (26)	+26	+29	V. Good	*3.5*	*4.2*
Majuro, RMI	***	+1	+2	Good	+39 (40)	+42	+42	Good	*5.1*	*6.8*
Kwajalein, RMI	+1 (1)	+2	+1	Good	+39 (38)	+40	+40	Good	*4.0*	*5.1*
Pago Pago, Am. Samoa	***	+1	+1	Good	+24 (25)	+25	+26	V. Good	*4.0*	*5.3*
Honolulu, Hawaii [7]	+2 (2)	+2	+1	Fair	+21 (20)	+20	+20	Fair	*3.4*	*5.8*
Hilo, Hawaii [7]	+2 (1)	+2	+2	Good	+24 (24)	+23	+22	Fair	*6.4*	*7.8*

Remarks: The positive sea-level deviations forecast for the JAS, ASO, and SON seasons (Table 1, above) indicate that sea levels will remain slightly elevated at all USAPI and Hawaii stations for another 1 to 3 months. From JAS to SON 2008, mean sea-levels are expected to begin receding back toward normal levels, *consistent with the recent transition from La Niña to ENSO neutral conditions.* Mean and maximum sea-levels are expected to be about 0 to 3 inches above median values (in parentheses) during the JAS season.

Note: (-) indicates negative deviations (fall of sea level from the mean), and (+) indicates positive deviations (rise of sea level from the mean); N/A: data not available. Deviations from -1 to +1 in. are considered negligible (***) and unlikely to cause any adverse climatic impact. Forecasts for Chuuk (**) are estimated subjectively based on information from WSO Chuuk and observations from neighboring stations.

Median values (1) (in parentheses) of seasonal mean and seasonal maximum sea-level deviations for the JAS season. The median is the 50th percentile value in a distribution.

Seasonal Mean Deviations (2) is defined as the difference between the mean sea level for the given month and the 1975-1995 mean sea level value at each station. Likewise, **Seasonal Maximum Deviations (3)** is defined as the difference between the maximum sea level (calculated from hourly data) for the given month and the 1975-1995 mean sea level value at each station.

Forecast Quality (4) is a measure of the expected CCA cross-validation correlation skill. Higher skills correspond to greater expected accuracy of the forecasts. In general terms, these kinds of forecasts are thought to be of useful (but poor) skill if the CCA cross-validation value lies between 0.3~0.4. Skill levels greater than 0.4 and 0.6 are thought to be fair and good skills. Skill level greater than 0.7 is thought to be very good. Refer to **www.soest.hawaii.edu/MET/Enso/peu/2008_3rd/Sea_Level.htm** for cross-validation skills.

Return period (RP) (5) of extreme values are calculated from hourly sea-level data. For example, the predicted rise of 6.2 inches at 20-year RP at Marianas, Guam indicates that this station may experience an extreme tide event once every 20 years that could result in sea level rise of up to 6.2 inches **above the median of seasonal maxima** during the JAS season. Likewise, about once every 100 years we can expect the highest JAS tide at Marianas, Guam to be as high as 10.8 inches above the median of seasonal maxima. During some seasons some stations display alarmingly high values at the 20 and 100 year RP. *These high values are due to large and significant increases in the tidal range caused by the passage of past storm events during that season.*

Lead time (6) is the time interval between the end of the initial period and the beginning of the forecast period. For example, lead-0, lead-1M, and lead-2M means 'sea-level' of target season 0 (JAS), 1 (ASO), and 2 (SON) month leads based on SSTs of AMJ 2008.

Hawaii stations (7) are newly added and should be considered experimental. Any feedback regarding the usefulness of these forecasts will be appreciated.

Seasonal Sea Level Outlook for the US-Affiliated Pacific Islands

(ii) Observed Monthly Sea Level Deviation in April-May-June (AMJ) 2008 Season

The monthly time series (April - June) for sea level deviations have been taken from the UH Sea Level Center. The full time series (in mm) is available at ftp://ilikai.soest.hawaii.edu/islp/slpp.deviations. See **Figure 2** (below) for location of these stations.

Table 2 : Monthly observed max/mean sea level deviations in inches (year to year standard deviation in parentheses)

Tide Gauge Station	Monthly Mean Deviations[1]				Monthly Max Deviations[2]				
	Apr.	May	June	Standard Deviations	Apr.	May	June	Standard Deviations	*AMJ Median*
Marianas, Guam	+9.8	+9.6	+10.8	(+4.1)	+25.6	+26.5	*	(+3.6)	*+17.9*
Malakal, Palau	+2.4	+3.4	+5.4	(+4.5)	+39.6	+40.2	+40.1	(+4.3)	*+36.5*
Yap, FSM	+6.8	+6.8	+7.6	(+3.8)	+35.4	+35.0	+35.6	(+4.3)	*+29.0*
Chuuk, FSM**	*	*	*	(*)	*	*	*	(*)	*
Pohnpei, FSM	+5.3	+6.1	*	(+2.3)	+36.6	+39.5	*	(+3.7)	*+31.4*
Kapingamarangi, FSM	+3.0	+2.3	+1.1	(+2.0)	+29.1	+30.7	+29.9	(+2.7)	*+27.2*
Majuro, RMI	+4.2	+3.9	+3.6	(+2.8)	*	+42.4	*	(+3.1)	*+38.9*
Kwajalein, RMI	+4.2	+3.9	+3.6	(+2.8)	+41.2	+40.7	+39.5	(+2.8)	*+39.8*
Pago Pago, American Samoa	+6.0	+5.9	+5.8	(+3.9)	+28.0	+31.1	+30.4	(+3.4)	*+29.9*
Honolulu, Hawaii	-1.4	+0.1	+1.9	(+1.7)	+17.7	+18.9	+24.4	(+2.1)	*+18.0*
Hilo, Hawaii	+0.9	+1.5	+1.0	(+2.2)	+23.6	+25.6	+24.6	(+2.5)	*+21.5*

Note: - indicate negative deviations (fall from the mean), and + indicate positive deviations (rise from the mean); N/A: data not available; Data for Chuuk (**) is estimated subjectively based on information from WSO Chuuk and observations from neighboring stations. Standard deviations describe how widely spread the values are in the dataset. **See Table 1 for other notes.**

Remarks: The observed values for seasonal mean/maxima displayed positive deviation in all the USAPI stations during April-June 2008; the Hawaiian stations were also slightly elevated during this period. As expected, none of the stations recorded any considerable rise or fall in June for either the mean or maximum values. This trend is consistent with the transition phase from La Niña to ENSO-neutral conditions.

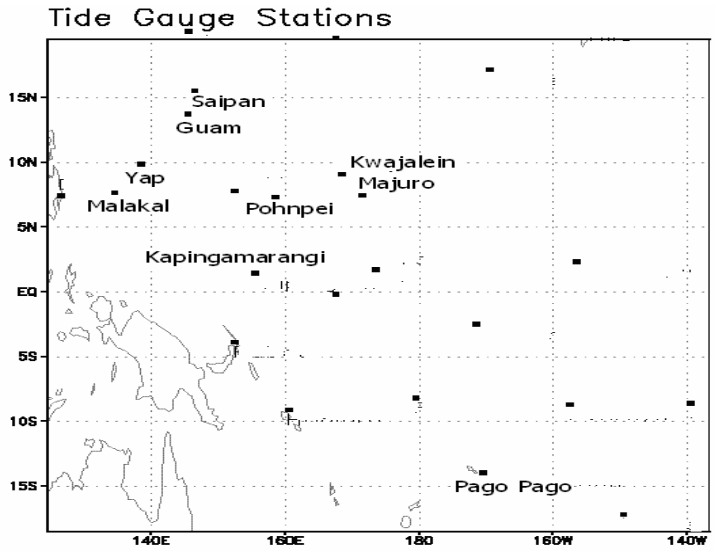


Figure 2, above: Locations of USAPI tide gauge stations.

(iii) Forecast Verification (Seasonal Mean) for AMJ 2008

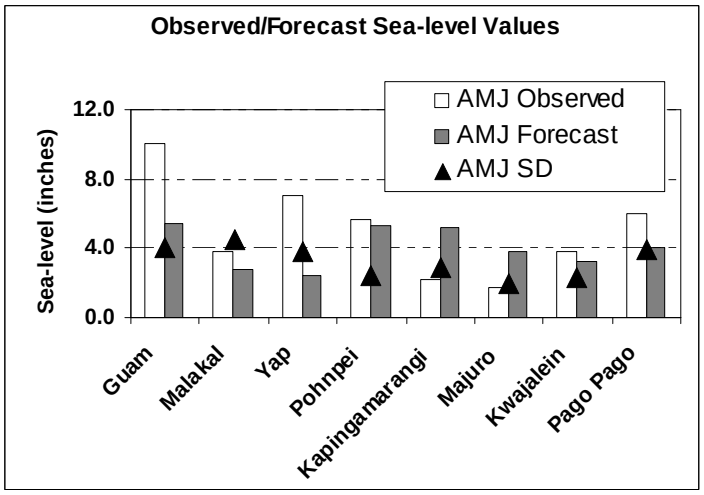


Figure 3: The observed and forecasts values for the previous season AMJ is presented above. Forecasts were in general skillful; however, Guam and Yap were slightly under forecast.

Pacific ENSO Update

MONTHLY PACIFIC ENSO DISCUSSION FOR MICRONESIA AND AMERICAN SAMOA
Excerpts from July Discussion — Issued by NOAA-NWS-Guam WFO
http://www.prh.noaa.gov/guam/ensoPacific.php

Conditions appear to have returned to near normal for American Samoa in terms of rainfall and tropical cyclone activity. Trade winds continued to dominate the flow in Micronesia, but have finally started to weaken in most of the region. Upper level winds have become favorable for producing more persistent rain showers across the Marshall Islands and are also leading to increased rainfall over the Mariana Islands. Yap State is still seeing some periods of dry weather, but near average rainfall should return to Yap State by late July - early August. Monsoon activity will primarily affect western Micronesia for the next month or two, but will move eastward by September. This could increase the risk of tropical cyclones for the Marianas, Chuuk State and Yap State. While the stronger-than-normal trade winds will keep sea levels above normal for the next 2-3 weeks, the risk of coastal inundation has diminished for most locations.

Excerpts from El NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION
Issued by NOAA NWS Climate Prediction Center - 10 July 2008
http://www.cpc.noaa.gov/products/analysis_monitoring/enso_advisory/index.shtml

Synopsis: ENSO-neutral conditions are expected to continue into Northern Hemisphere Fall 2008.

A transition from La Niña to ENSO-neutral conditions occurred during June 2008, as sea surface temperatures (SSTs) returned to near-average across the central and east-central equatorial Pacific Ocean... The subsurface oceanic heat content and patterns of subsurface temperature anomalies also reflected the transition to ENSO-neutral conditions. Positive heat content anomalies were associated with above-average temperatures at thermocline depth across the entire equatorial Pacific, while small negative subsurface temperature anomalies persisted near the Date Line between the surface and 75m depth.

Similar to past transitions, La Niña continues to linger in the atmospheric circulation, but with diminishing strength. Enhanced low-level easterly winds and upper-level westerly winds remain across the central equatorial Pacific, while convection continues to be suppressed in the central equatorial Pacific and slightly enhanced over the far western Pacific. Collectively, these atmospheric and oceanic anomalies are consistent with a return from La Niña to ENSO-neutral conditions.

Most of the recent dynamical and statistical forecasts indicate ENSO-neutral conditions will continue through the Northern Hemisphere Winter 2008-09. Despite this model consensus, the possible development of El Niño or La Niña cannot be ruled out due to uncertainty in model forecasts and because ENSO events often form during the second half of the year. Based on current atmospheric and oceanic conditions, trends and model forecasts, ENSO-neutral conditions are expected to continue into Northern Hemisphere Fall 2008.

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.

The Pacific ENSO Update is produced quarterly both online and in hard copy, with additional special reports on important changes in ENSO conditions as needed. For more information about this issue please contact the editor, LTJG Sarah Jones, at peac@noaa.gov or at the address listed below.

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