

## NORTH PACIFIC OCEAN, APRIL 1938

By WILLIS E. HURD

*Atmospheric pressure.*—As in March, the average pressure over the Aleutian Islands and vicinity for April 1938 was extraordinarily low. At Dutch Harbor the mean pressure, 29.48, was the lowest of record for the month in the past 23 years. At St. Paul the average 29.49 was the lowest in the April record of 13 years. At both stations the averages had a departure of  $-0.30$  inch from the normal. The lowest known pressure reading of the month in the North Pacific area was 28.20, recorded at Dutch Harbor on the 27th.

Coincident with this strong development of the Aleutian low was an almost equally great development of the North Pacific high in south central midocean, as shown by the Midway Island average pressure, 30.23 inches, which is 0.11 inch above the normal.

Elsewhere, near normal pressures prevailed.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure at sea level, North Pacific Ocean, April 1938, at selected stations

Station	Average pressure	Departure from normal	High-est	Date	Low-est	Date
	Inches	Inch	Inches		Inches	
Point Barrow	30.06	$-0.03$	30.60	5	29.72	29
Dutch Harbor	29.48	$-0.30$	30.20	9	28.20	27
St. Paul	29.49	$-0.30$	30.10	5	28.40	27
Kodiak	29.63	$-0.12$	30.08	23	28.84	28
Juneau	29.88	$-0.08$	30.31	19	29.32	17
Tatoosh Island	30.06	$+0.06$	30.39	18	29.74	16
San Francisco	30.06	$+0.01$	30.27	1	29.73	4
Mazatlan	29.90	$+0.01$	29.98	11	29.84	6, 27
Honolulu	30.04	$-0.02$	30.17	12	29.94	16
Midway Island	30.23	$+0.11$	30.45	5	30.06	22
Guam	29.85	$-0.04$	29.92	13	29.77	6, 7
Manila	29.79	$-0.03$	29.89	1	29.62	9
Hong Kong	29.86	$-0.02$	30.12	1	29.65	22
Naha	29.94	$+0.02$	30.24	1	29.77	20, 21, 22

NOTE.—Data based on 1 daily observation only, except those for Juneau, Tatoosh Island, San Francisco, and Honolulu, which are based on 2 observations. Departures are computed on best available normals related to time of observation.

*Cyclones and gales of the extratropics.*—Despite the strong barometric developments over middle longitudes of the ocean, only moderately stormy weather conditions were reported for the month by ships traversing the central part of the steamer routes. For the entire area lying between longitudes  $170^{\circ}$  E. and  $160^{\circ}$  W., the heaviest gales thus far indicated in weather reports did not exceed force 8, and those on only 4 or 5 days between the 8th and 18th of the month.

To the westward of the  $170^{\circ}$  meridian of east longitude, as far as the Japanese coast and to the northward of the 30th parallel, somewhat stormier conditions prevailed but for the most part were confined to the early half of April.

From the 3d to 5th a cyclone center advanced from extreme northern Japanese waters across the Kuril Islands to Kamchatka. By the 4th it had so expanded as to affect a large region, with the result that south to southwest gales of force 8 were experienced as far south as the waters southeast of Honshu and as far east along the northern steamship route as longitude  $165^{\circ}$  E., at latitude  $45^{\circ}$  N. On the 5th the storm region had gone northward, but the wind had increased somewhat in strength, as shown by a report from the American steamer *President Jefferson* of a south gale of force 9 near  $46\frac{1}{2}^{\circ}$  N.,  $166\frac{1}{2}^{\circ}$  E.

During the 12th to 18th several cyclones disturbed the waters both west and east of Japan and then moved northward toward Kamchatka or northeastward toward the Aleutians. The earlier of these caused fresh gales between Honshu and longitude  $150^{\circ}$  E. on the 12th, and

gales of higher force somewhat farther to the eastward in middle latitudes on the 13th. The most important of these, a southwest wind of local hurricane intensity, lowest barometer 29.03, was encountered in the morning by the American steamer *President Taft* near  $34\frac{1}{2}^{\circ}$  N.,  $157\frac{1}{2}^{\circ}$  E. Decreasing gales continued thereafter until late in the afternoon of the 13th, during this vessel's voyage toward Yokohama.

A further gale of importance in this vicinity ( $34^{\circ}59'$  N.,  $146^{\circ}17'$  E.) was of force 11 from west, encountered by the British steamship *Empress of Canada* on the 15th. About a day's journey out from Yokohama on the 16th the steamer *President McKinley* met a west gale of force 10. On the 18th a fresh gale was experienced by another ship southeast of the Kuril Islands. Thereafter, the waters in the neighborhood of Japan were practically free from storminess until the end of April.

Between  $160^{\circ}$  west longitude and the American coast the weather of the month was for the most part moderate. Gales of force 8–9 occurred on only about 5 days north of the 30th parallel, scattered between the 5th and 24th.

*Typhoon.*—Subjoined is an account by the Rev. Bernard F. Doucette, S. J., Weather Bureau, Manila, P. I., of a typhoon which occurred in the Far East during April 6–13. In addition to the data presented by Fr. Doucette, the following observations received at the Weather Bureau by radio from the U. S. S. *Carite* may be mentioned. On April 10 this vessel, in about  $16^{\circ}$  N.,  $131^{\circ}$  E., had a north-northeast wind, force 8, barometer 29.40. On the 11th, as shown on our p. m. map, this vessel, while near  $22\frac{1}{2}^{\circ}$  N.,  $131^{\circ}$  E., had a south wind of force 12, barometer 29.21.

*Minor gales of the Tropics.*—Aside from the typhoon in the Far East already mentioned, there was a minor disturbance east of the Philippines on the 1st and 2d. In this low the strongest wind thus far indicated was of force 7, met on the 2d by the British motorship *Silvermaple*, in  $14^{\circ}52'$  N.,  $128^{\circ}31'$  E. On the 7th, close to the eastward of the Hawaiian Islands, the northeast tradewind, according to one observation, was intensified to force 7. South of the Gulf of Tehuantepec a norther-type wind of like force was observed on the 9th.

*Fog.*—A general increase in fog was observed this month over the northern and central steamer routes. While fog did not occur in any one locality, except along the American coast, on more than 1 or 2 days, yet it was widely distributed locally. It was most frequent between latitudes  $30^{\circ}$ – $40^{\circ}$  N., longitudes  $125^{\circ}$ – $135^{\circ}$  W., where it was observed on the 15th to 18th. Off the California coast it was observed on the 17th, 18th, and 22d. It was reported on the 17th and 19th off Lower California, and on the 17th south of Costa Rica.

## TYPHOONS AND DEPRESSIONS OVER THE FAR EAST, APRIL 1938

BERNARD F. DOUCETTE, S. J.

[Weather Bureau, Manila, P. I.]

*Typhoon.*—April 6–13, 1938.—The first indications of the formation of this storm appeared when the pressure at Yap began to fall on April 6. The afternoon weather map had definite signs of the presence of a low-pressure area, perhaps a depression about 250 miles east-southeast of Yap. This disturbance moved west-by-north and intensified into a typhoon, April 7, 6 a. m., and continued moving in the same direction for the next 2 days. Late in the afternoon of April 9, it began to incline to the west-northwest, a change which continued through the night, so much so that the typhoon had a northerly course