OCEAN GALES AND STORMS, JUNE 1941

Vessel	Voyage		Position at time of lowest barometer		Gale began, June	Time of lowest barometer, June	Gale ended, June	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN			° ′	° ′				*Millibars*					
Tampa, U. S. C. G.	On station No. 1		39 06 N.	57 48 W.	2	8a, 3	4	997.0	S	SW, 8	NW	S, 11	SSW-WNW.
Hamilton, U. S. S.	On station No. 2		39 36 N.	45 54 W.	3	9a, 4	4	999.7	S	W, 7	WNW	SSE, 8	S-W.
Esso Bolivar, Pan. M. S.	Aruba	New York	36 30 N.	72 40 W.	6	2a, 6	6	1,002.0	NW	NW, 7	N	N, 9	NW-NNW.
A vessel	Georgetown, British Guiana.	Quebec	33 52 N.	69 01 W.	6	12m, 6	7	1,002.4	WSW	WSW, 8	NNE	NNW, 9	WSW-WNW.
Excambion, Am. S. S.	Lisbon	Bermuda	32 24 N.	64 12 W.	7	2a, 7	7	1,010.2	NNW	WSW, 7	NNW	NNW, 9	WSW-NNW.
Mormacrey, Am. S. S.	Bahia	New York	33 21 N.	64 44 W.	6	2a, 7	7	1,017.3	WSW	WSW, 7	NNW	NW, 8	WSW-W.
Tampa, U. S. C. G.	Station No. 1	Norfolk	38 36 N.	62 42 W.	7	4a, 7	7	997.6	N	NW, 4	N	N, 11	W-N.
Bibb, U. S. C. G.	On station No. 1		38 12 N.	59 06 W.	7	8a, 7	8	999.0	N	WSW, 4	N	NNE, 8	SSW-WSW-SW.
West Humhaw, Am. S. S.	Freetown	Boston	37 32 N.	56 40 W.	7	12m, 7	8	1,002.0	N	SSW, 6	N	N, 9	SSW-NNW.
Illinois, Am. S. S.	Capetown	do	35 54 N.	59 00 W.	7	4p, 7	8	998.3	SW	WSW, 7	N	SW, 8	SW-WNW.
Hamilton, U. S. S.	Station No. 2	Norfolk	39 00 N.	54 06 W.	8	2a, 8	8	1,002.0	N	SW, 5	N	N, 8	SSW-WSW-N.
Do	do	do	38 24 N.	64 18 W.	9	8a, 9	9	1,007.5	WSW	WSW, 8	WSW	WSW, 8	
Excello, Am. S. S.	Capetown	Boston	34 54 N.	53 18 W.	11	8a, 11	11	1,009.8	WSW	WSW, 9	WSW	WSW, 9	SSW-W.
Duane, U. S. C. G.	On station No. 2		38 18 N.	46 18 W.	12	3p, 12	13	1,009.5	W	SW, 6	WNW	WNW, 9	SW-W.
Shickshinny, Am. S. S.	Cristobal	New York	13 03 N.	78 06 W.	14	4a, 14	15	1,009.5	NE	NE, 6	E	E, 7	NE-E.
Bibb, U. S. C. G.	On station No. 1		38 36 N.	59 42 W.	24	8p, 24	25	1,010.8	SW	SW, 9	WSW	SW, 10	
NORTH PACIFIC OCEAN													
Discoverer, U. S. C. & G. S.	Surveying near Alaska Peninsula.		55 06 N.	162 24 W.	1	11p, 2	3	1,010.8	E	ENE, 8	ENE	ENE, 10	None.
Associated, Am. S. S.	Cebu, P. I.	Los Angeles	35 41 N.	171 42 E.	4	4p, 5	5	988.5	W	WSW, 9	NNW	WSW, 9	W-WSW-WNW.
Admiral Cole, Am. S. S.	do	do	34 24 N.	179 00 E.	5	2a, 6	6	998.6	SW	WSW, 8	NW	WSW, 8	SW-WSW.
Susan V. Luckenbach, Am. S. S.	Makassar, N. E. I.	San Francisco	36 36 N.	177 06 E.	4	2a, 6	5	991.5	SW	SW, 4	NNW	NW, 8	S-WNW.
Cape Alava, Am. M. S.	Hong Kong	Vancouver, B. C.	40 30 N.	155 06 E.	7	4p, 7	7	998.0	SE	SE, 10	SE	SE, 10	None.
Paul Shoup, Am. S. S.	Honolulu	San Francisco	37 06 N.	125 36 W.	9	4a, 9	9	1,019.0		N, 8		N, 8	
Tosan Maru, Jap. M. S.	Yokohama	Los Angeles	46 00 N.	175 48 E.	15	12m, 15	15	979.2		S, 8	SW	SW, 8	
Pioneer, U. S. C. & G. S.	On survey near Aleutian Islands.		53 00 N.	168 00 W.	15	5p, 15	15	[1]1,009.4	SE	SE, 9	SE	SE, 9	None.
Kaizyo Maru, Jap. M. S.	Los Angeles	Yokohama	46 48 N.	177 54 E.	15	10p, 15	16	972.2	S	SW, 8	W	SSW, 9	SSW-WSW.
Collingsworth, Am. S. S.	Hong Kong	Vancouver, B. C.	40 00 N.	154 30 E.	21	6a, 22	22	1,008.5	SE	SE, 8	SE	SE, 8	None.
Charles L. Wheeler, Jr., Am. S. S.	Seattle	Honolulu	[2]43 18 N.	133 55 W.	21	12p, 21	23	993.6	NE	N, 8	NW	NW, 8	N-NW.

[1] Barometer uncorrected.
[2] Position approximate.

WEATHER ON THE NORTH PACIFIC OCEAN

By WILLIS E. HURD

Atmospheric pressure.—The average pressure for the North Pacific Ocean, June 1941, showed the usual summer features, namely, a long shallow LOW stretching across the Aleutian region; a HIGH over middle latitudes from about the 160th meridian of east longitude, covering the entire Hawaiian Group and stretching northeastward toward the coast of Washington; and a LOW over the tropical waters of the Far East.

No great pressure changes were observed, except that at most northern coastal stations the mean barometer was slightly below the normal of the month. The lowest barometer reported from higher latitudes was 972.2 millibars (28.71 inches), read aboard a Japanese vessel on the 15th near 47° N., 178° E. In the Philippine Islands, during the passage of the typhoon of the 28th, Palanan reported a minimum of 948.2 millibars (28.00 inches).

Extratropical cyclones and gales.—June weather was for the most part quiet in northern waters of the Pacific, but a few cyclones occurred, one of which was of considerable depth and extent. This storm was of pronounced intensity on the 15th, with gales of force 8–9 occurring south of the Aleutians, and pressures well below 982 millibars (29 inches) within the region 45° to 48° N., 175° E. to 180°.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Pacific Ocean and its shores, June 1941*

Station	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Millibars	*Millibars*	*Millibars*		*Millibars*	
Barrow	1,013.8	−1.8	1,035	3	994	12
Dutch Harbor	1,009.8	−2.7	1,024	30	999	17
St. Paul	1,011.9	+0.7	1,025	30	1,000	21, 23
Kodiak	1,011.9	−1.0	1,026	30	1,002	23, 25
Juneau	1,013.9	−2.6	1,023	3	1,005	18
Tatoosh Island	1,017.3	+0.7	1,026	9	1,010	17
San Francisco	1,014.6	0.0	1,019	2	1,009	4
Mazatlan	1,011.6	+1.4	1,013	10, 23	1,008	28
Honolulu	1,017.3	0.0	1,020	7	1,014	17
Midway Island	1,019.0	+1.4	1,025	9	1,009	2
Guam	1,010.7	−0.8	1,014	10	1,008	23
Manila	1,007.4	−0.1	1,012	18	1,001	27
Hong Kong	1,003.1	−2.7	1,007	1	980	30
Naha	1,008.9	+1.4	1,019	21	1,000	5
Titijima	(1)	(1)	(1)	(1)	(1)	(1)
Petropavlovsk	1,010.5	−0.7	1,026	5	1,002	23, 24

[1] Insufficient data.

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 from best available normals related to time of observations.

The second most important cyclone of the extratropics originated near 30° N., 160° E., on the 3d. It moved northeastward and by the 9th had entered the Gulf of Alaska. Its principal gale area was embraced within

latitudes 34° to 37° N., longitudes 170° E. to 180°. Here westerly gales of force 8 to 9 occurred on the 5th and 6th. The lowest pressure, 988.5 millibars (29.19 inches) was read on the American S. S. *Associated,* near 36° N., 172° E., on the 5th.

Scattered gales were reported east of Japan on the 7th and 22d, west of the California coast on the eastern slope of a strongly developed HIGH on the 9th, and west of Washington on the 22d. The U. S. Coast and Geodetic Survey vessel *Discoverer,* while near the extremity of the Alaska Peninsula on the 2d, had an east-northeast gale of force 10, with little depression of the barometer.

Typhoons.—Subjoined is a report by the Rev. Bernard F. Doucette, of the Manila Observatory, on two Far Eastern typhoons of June. One formed in the China Sea on the 3d, passed over eastern Japan during the 5th to 6th, and was last observed east of the Kuril Islands on the 8th. Related to this storm's activities east of Japan was a southeast gale of force 10, lowest barometer 998 millibars (29.47 inches) reported by the American M. S. *Cape Alava,* near 40° N., 155° E., on the 7th.

The second typhoon originated among the Caroline Islands about the 23d, and was last observed near northern Japan on July 4. On June 28 it crossed northern Luzon, where it resulted in several deaths and caused much damage to communications and crops. On the 30th it struck Hong Kong as it passed inland and inflicted some destruction. According to press reports the wind at Hong Kong attained a maximum velocity of 92 miles.

Fog.—Doubtless owing to the reduced number of ships' reports, fog appeared abnormally infrequent for June along the western half of the steamship routes where, between Japan and the western Aleutians, it usually forms in abundance during early and middle summer. This month there were few 5° east-longitude ocean areas in which fog was reported on as many as 2 or 3 days. In middle latitudes of west longitudes fog was somewhat more frequent, and in the area 35° to 40° N., 160° to 165° W., it was observed on 4 days. Along the strip 32° to 41° N., 140° to 145° W., it was noted on 6 days between the 2d and 9th. Close along the coasts, it was reported on 1 day off Oregon, 3 days off California, and on 2 days in Lower California waters.

TYPHOONS AND DEPRESSIONS OVER THE FAR EAST

BERNARD F. DOUCETTE, S. J.
(Weather Bureau, Manila, P. I.)

Typhoon, June 3–7, 1941.—On the morning weather map, June 3, a depression appeared over the China Sea about 250 miles west of northern Luzon. This disturbance moved in a northeasterly direction across Balintang and Bashi Channels, close to and east of Formosa, along the Nansei Islands, across Japan and passed beyond the region of observation June 7 and 8.

As this storm moved along the Nansei Islands, the pressure values reported were below 750 mm. (999.9 mb.) generally, the lowest being that from Naha, June 5, morning report, namely 745.0 mm. (993.3 mb.) with south-southwest winds, force 6. Over Japan, June 6, there were a few stations reporting values between 741.0 and 745.0 mm. (987.9 and 993.3 mb.) as the center rapidly progressed toward the ocean. The storm entered the Pacific Ocean during the morning hours of June 7, and Nemuro had 729.0 mm. (971.9 mb.) with east-southeast winds, force 5 on the morning weather map. This storm was called a typhoon because of these pressure values and the squally, rainy weather which prevailed over the Philippines up to June 6. It may have had more of the characteristics of a severe extratropical depression rather than the vortex of a typhoon, but for forecasting purposes, it was called a typhoon to insure that proper precautions were taken. No reports of casualties were printed in the newspapers.

The southwest monsoon current had been slowly advancing toward the Philippines during the latter part of May, the winds at Manila changing to the southwest quadrant on May 25. The result of this change of wind system was a trough of low pressure over the northern part of the China Sea, the Balintang Channel, and adjacent Pacific Ocean regions. Over the western portion of this trough, the depression formed because of the activity of the southwesterly current. It seems that this current of air was the strongest of all the air currents moving toward the disturbance center. For about 9 days before any center appeared, the few reports of the upper winds received from stations of Indochina and Thailand indicated that the southwesterly air stream had velocities over 50 km./hr. at various levels during this whole period and it is assumed by the writer that this air was forced toward the northern part of the China Sea before the disturbance formed. After the center had moved in a northeasterly direction for 1 day, the Philippines felt the strength of this current, intensified by the deepening center then northeast of Formosa. Velocities between 30 km./hr. and 70 km./hr. persisted over the Philippines until the storm had crossed Japan.

Typhoon, June 23–July 4, 1941.—A depression formed about 300 miles east-southeast of Yap during the morning hours of June 23. It moved in a northwesterly direction, gradually inclining to the west-northwest and then west, intensifying to typhoon strength near latitude 13°, longitude 134° during the afternoon hours of June 24. June 26, afternoon and evening, the typhoon was moving westerly along the 14th parallel of latitude and threatening the northern part of Catanduanes Island. When about 50 miles from this island, it changed its course to the northwest, avoiding southern Luzon and threatening northern Luzon. During the late night hours of June 27, the center moved across the island, passing close to and north of Palanan, Isabela Province, then between Aparri and Tuguegarao, Cagayan Province, and finally moved into the China Sea over a course close to and north of Laoag, Ilocos Notre, during the forenoon hours of June 28. A change from the northwesterly to the westerly direction occurred a short distance east-southeast of Hong Kong, and thus the center passed close to and south of the city, June 30, afternoon and evening. July 1 and the following days showed the center, very much weaker, recurving to the northeast over the Continent, and crossing the Yellow Sea, and the Sea of Japan into Japan.

According to available newspaper reports on July 2, the total loss of life during the progress of this typhoon was 19. Ten of these persons were killed in the Philippines and the rest were residents of Hong Kong. Considerable damage to crops resulted over the Philippines because of this typhoon.

The barometric minima reported from Philippine stations are as follows: Virac, Catanduanes Island, had 743.45 mm. (991.2 mb.) as the lowest value, June 27, 1:05 a. m. Palanan, Isabela Province, reported 711.23 mm. (948.2 mb.) occurring at 9:30 p. m., June 27. Tuguegarao, Cagayan Province, had its minimum at 1:50 a. m. June 28, namely 728.8 mm. (971.6 mb.). Aparri, Cagayan Province, experienced its minimum a short time after Tuguegarao, namely 3:15 a. m., 739.92 mm. (986.5 mb.) being the value. Laoag, Ilocos Norte, is the last of the stations, the minimum occurring just before the center entered the China Sea, and amounting to 738.5 mm.