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NORTH PACIFIC OCEAN

By WILLIS E. HURD

A considerable change took place in the alinement of average atmospheric pressure over the North Pacific since December. The Aleutian cyclone moved westward [1] out of the Gulf of Alaska early in the month, and to some extent filled in, the center being situated in January over the middle Aleutians and the eastern part of Bering Sea, pressure at Dutch Harbor and St. Paul, 29.50 inches, both of which readings were below the normal. The period of the cyclone's greatest activity was from the 3d to the 8th. At Kodiak the average pressure was nearly 0.70 inch higher than in December, and 0.30 inch above the normal; hence the station this month, instead of being as usual within the cyclone's central area, was far on its eastern border. Low pressure on several occasions extended abnormally far southward in middle longitudes, but such activity was not attended by increased windiness in low latitudes.

The Pacific-California anticyclone was much disturbed on its western side by the incursions of cyclones from the west and north, but on its eastern side—from the coast to several hundred miles at sea—it was generally stable, and high pressures prevailed over most of the Gulf of Alaska and adjacent northeastern waters of the Pacific.

In Asiatic waters high pressure persisted for a good part of the month, and the northeast monsoon was accordingly brisk to strong on the China coast.

Pressure data for several island and mainland coast stations in west longitudes are given in the following table:

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure at sea level at indicated hours, North Pacific Ocean and adjacent waters, January, 1929*

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
Point Barrow [1]	30.40	-------	31.40	28th	29.68	16th.
Dutch Harbor [1]	29.50	−0.14	30.24	19th	28.72	5th.
St. Paul [1 2]	29.50	−0.19	30.10	19th [3]	28.62	4th.
Kodiak [1 2]	29.94	+0.30	30.50	19th	29.16	6th.
Midway Island [1]	29.92	−0.08	30.22	22d	29.42	25th.
Honolulu [4]	29.94	−0.06	30.11	31st	29.77	18th.
Juneau [4]	30.13	+0.25	30.67	27th	29.61	24th.
Tatoosh Island [4 5]	30.06	+0.12	30.50	9th	29.48	18th.
San Francisco [4 5]	30.08	−0.01	30.37	10th	29.66	16th.
San Diego [4 5]	30.03	−0.03	30.23	22d	29.66	16th.

[1] P. m. observations only.
[2] For 30 days.
[3] Also on 20th.
[4] A. m. and p. m. observations.
[5] Corrected to 24-hour mean.

As was said in the previous REVIEW, December, 1928, was the stormiest month in recent years on the North Pacific, dangerous gales blowing until the 31st, or with forces 11 to 12, according to complete reports, on 12 days of the month. Much abatement in storm energy followed in January. Although gales of force 8 or upward were of almost daily occurrence over the ocean as a whole, yet on only two days, according to present information, did they acquire full storm to hurricane severity. These days were the 21st and 29th, and the forces of 12 occurred within the area bounded by parallels 45° and 50° N., meridians 160° and 170° E., in connection with intense cyclones operating between Japan and the western Aleutians. In this general region the lowest pressures of the month, about 28.20 inches, were read on the 1st, 2d, and 29th. Continental cyclones of some severity were active over Japanese waters during early and middle days of the month, and caused strong to whole gales, with snow and sleet, especially on the 1st to 3d, over much of the northern and middle steamer routes west of the one hundred and sixtieth meridian of east longitude. The region of most frequently stormy January weather was bounded by latitudes 25° to 50° N., longitudes 145° to 170° E.; in its northeastern part, the sea was gale swept on fully 25 to 30 per cent of the days. In middle longitudes scattered gales occurred between the thirtieth and fiftieth parallels, being slightly most frequent along the northern route. Over the more settled region of the Pacific-California HIGH, and generally between the one hundred and sixtieth meridian of west longitude and the American coast, gales were rather infrequent and rarely exceeded nine in force.

Northers occurred in or near the Gulf of Tehuantepec on the 1st, 6th, and 29th. Those of the 6th attained the force of a whole gale.

At Honolulu the prevailing direction of the wind was from the northeast, blowing from that direction 40 per cent of the time; from the east, 36 per cent. The maximum velocity for the month was at the rate of 29 miles an hour from the northeast on the 22d. On this date and the 23d fresh to strong gales were encountered along the lower stretch of the California-Hawaiian route.

Fog occurrence changed but little from that of December, except that it was reported in January in east longitudes, where it was absent the previous month. Over a large area east of Japan it was observed in connection with sleet and snow during the prevalence of the cyclone of the 1st to 3d. Fog was reported on the 13th and 14th off the east coast of China, and on the 10th, 18th, and 20th in the Gulf of Tehuantepec. There were scattered occurrences off the California coast, where it was most widespread on the 1st, but the principal fog area lay along the upper steamer route in west longitudes, where it formed on about 20 per cent of the days.

[1] It is preferred to think of this apparent westward movement as being due to rising pressure immediately to the eastward of the usual geographic center of the Aleutian LOW and that the center of the low is thereby displaced to the westward. It is interesting to note that in this month the change to higher mean pressure was apparently world-wide being especially pronounced over northwestern Europe—*Editor.*

TYPHOONS AND DEPRESSIONS—SOUTHERN PART OF THE PHILIPPINES VISITED BY TWO DEPRESSIONS AT THE BEGINNING OF 1929

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It happens very seldom that the Philippines are visited by more than one depression during the month of January. This year we had two, although, while in the Philippines, they were of no great intensity, and no damage was done, except by heavy rains and consequent floods. These floods were rather extraordinary in Butuan, Mindanao, during the second depression on January 23.

Owing to lack of sufficient observations from the Pacific east of Mindanao, we can not ascertain whether these two depressions were real typhoons before they struck the Philippines. The first of them was shown by our weather map of 6 a. m. January 5, about 300 miles to the south of Yap, near 5° latitude N., between 137° and 138° longitude E. It moved practically to W. on the 5th and 6th; to NW. and NNW. on the 7th and 8th; and inclined again westward on the 9th. On the 10th and 11th it was shown as a shallow depression over the southern Visayas moving SW. and WSW. It filled up on the 12th over the Sulu Sea.