

NORTH PACIFIC OCEAN

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Another remarkable change in atmospheric pressure since a preceding month this year took place over the North Pacific Ocean during February. In January we saw the Aleutian cyclone extending abnormally low in latitude, being central well to the southward of the Aleutian chain and influencing pressure in an unusual degree as far south as Midway Island. The Gulf of Alaska at the same time was covered for the most part by the southern extension of an anticyclone of great magnitude from the north. In February a violent fluctuation back toward normal occurred in upper northeastern waters, with the result that the great plus departures of pressure in January gave place to the considerable negative departures of February, Juneau's abnormality dropping from +0.45 to -0.36 inch, and Kodiak's from +0.56 to -0.31 inch, a truly extraordinary reversal. Actually, there was a fall of close to nine-tenths of an inch in pressure over the upper waters of the Gulf of Alaska. Here in February lay the average center of the Aleutian cyclone, though its lower extension, as in the previous month, overran Midway Island, thus covering as a whole an unusually large northeast-southwest section of the sea.

The California-Pacific anticyclone, though at times spreading to normal area, was for the greater part of the month displaced on the northwest by cyclonic conditions, and continued stable only from the California coast southwestward to the Hawaiian Islands.

In Asiatic waters the overrunning continental anticyclone normal to winter was frequently displaced this month by numerous depressions of both land and oceanic origin.

Barometric data for several island and coast stations in west longitudes, including Point Barrow on the Arctic Ocean, 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, February, 1930

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	<i>Inches</i>	<i>Inch</i>	<i>Inches</i>		<i>Inches</i>	
Point Barrow ^{1 2}	29.94		30.44	25th.....	29.54	4th.
Dutch Harbor ¹	29.74	+0.12	30.52	11th.....	29.12	28th.
St. Paul ¹	29.84	+0.18	30.54	10th.....	28.70	28th.
Kodiak ¹	29.39	-0.31	30.24	11th.....	28.66	22d.
Midway Island ¹	29.92	-0.11	30.30	25th.....	29.40	14th.
Honolulu ³	30.04	0.00	30.19	23d.....	29.79	13th.
Juneau ²	29.56	-0.36	30.49	26th.....	28.89	7th.
Tatoosh Island ^{3 4}	29.94	-0.04	30.42	8th.....	29.03	20th.
San Francisco ^{3 4}	30.09	+0.02	30.33	28th.....	29.61	22d.
San Diego ^{3 4}	30.06	+0.02	30.27	28th.....	29.84	3d.

¹ P. m. observations only.
² For 27 days.

³ A. m. and p. m. observations.
⁴ Corrected to 24-hour mean.

Although February, so far as now indicated by reports, seems not to have produced weather of quite the severity of January, it was nevertheless a stormy month, especially over that part of the ocean lying west of the one hundred and seventieth meridian of west longitude, between latitudes 25° and 50° N. Within this region full storm to hurricane velocities were reported on at least nine days, namely, the 7th, 8th, 10th, 11th, 19th, 22d, 24th,

27th, and 28th. Those of the 7th to 11th, occurring between longitude 155° E. and the lower Japanese coast, were associated with a violent typhoon which, coming up from the southward, where it was strongly developed near the Ogasawara Islands on the 8th, affected southern and eastern Hondo on the 9th and 10th, respectively, and proceeding northeastward, caused fresh to strong gales east of the Kuril Islands as late as the 13th.

The region of quietest weather for all that part of the ocean north of the twenty-fifth parallel lay between longitudes 150° and 170° W. Here gales were local and scattered, mostly of no higher force than fresh to strong and occurring on five or six days only. For more than half of this area not a single gale was reported.

Farther eastward storminess increased in frequency and to some degree in severity to the American continent although not attaining to the rigorousness experienced in east longitudes. From near San Francisco northward to Vancouver Island an unusual amount of rough weather for the locality occurred, shifting gales of force 8 to 10 being encountered by vessels at various places along the coast from the 19th to the 24th. The earlier of these gales was due to the presence of a secondary to the great ocean cyclone then centered to the northwestward. This storm threatened the coastal region for hundreds of miles, but finally, with central pressure about 29 inches or lower, entered the mainland near Prince Rupert on the 20th. The succeeding coastal gales until the 24th resulted from active pressure gradients along the eastern edge of the huge Aleutian storm.

On the 4th, from the 18th to the 22d, and on the 28th, fresh westerly to northwesterly gales were experienced by vessels on the California-Hawaiian routes at varying distances of one or more days' steaming from the coast. The severest weather reported in west longitudes occurred during the night of the 10th-11th near 50° N., 140° W., where the steamship *President Pierce* encountered westerly gales of force 11. Along the Alaskan coast fresh to whole gales occurred on several dates—on the 7th and 8th south of Sitka, and on the 21st, 22d, and 28th north of Kodiak.

Northers of force 8 to 9 were encountered in the Gulf of Tehuantepec on the 8th, 9th, 16th, 17th, and 18th. Maximum wind velocities exceeding 50 miles an hour from a northerly direction were reported as follows from Santa Cruz at the head of the gulf: On the 17th, 56; 18th, 64; 19th, 64 miles.

The prevailing wind direction at Honolulu was from northeast, with the maximum velocity at the rate of 31 miles an hour from the east on the 27th. The average wind velocity at this station was the second lowest for the month since 1905.

Few and isolated instances of fog occurred in east longitudes. Along that part of the upper steamship routes south of the eastern Aleutians and the lower western half of the Gulf of Alaska fog was rather widespread in formation on the 10th to 16th and the 26th to 28th. Along the American coast between 25° and 50° N. and for some distance west of California fog showed greatest frequency, approximating 40 per cent of the days. It occurred on at least four days off Lower California and on the 16th off the Guatemalan coast.