LATE REPORT: TYPHOONS AND DEPRESSIONS OVER THE FAR EAST, SEPTEMBER 1938

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Depression, August 23 to September 2, 1938.—This depression appeared over the distant ocean regions near latitude 32° N., longitude 162° E., and moved in a generally westerly direction for 7 days. On August 30, when about 250 miles north-northeast of the Bonins, it changed its direction to the northwest, crossed Japan and inclined to the north when over the Sea of Japan. On September 2, it shifted to the east-northeast and apparently weakened as it passed beyond the region of observation.

The observatory staff is indebted to the officers of the S. S. *Gertrude Kellogg* and the S. S. *Silverwalnut* for detailed observations made during the progress of this storm, which were made available when the ships arrived in Manila. Both ships were following the storm center, the S. S. *Silverwalnut* moving along a southwesterly course and crossing the depression track to the east of the center, the S. S. *Gertrude Kellogg*, however, traveling along a course parallel to and south of the depression center. Both ships had winds of force 7 and 8 with rough seas, rainy and squally weather. The minimum pressure reported by the S. S. *Silverwalnut* was 29.67 inches, in latitude 28°40′ N., longitude 151°50′ E., on August 26 at 0600 Greenwich civil time. The S. S. *Gertrude Kellogg* reported 29.76 inches as the lowest pressure, observed in latitude 28°26′ N., longitude 154°36′ E., on August 25 at 0000 Greenwich civil time.

This disturbance appeared to be only a depression as it crossed Japan, but, in news dispatches reaching Manila some days later, it was referred to as a typhoon, which caused the loss of 175 lives on September 1st.

Depression, August 31 to September 5, 1938.—This depression, apparently of minor importance, appeared about 200 miles east-northeast of Guam, moved northwest, then west-northwest and finally west, disappearing about 450 miles east of Basco, Batanes Islands. It is possible that this center recurved and intensified (becoming the typhoon of September 4 to 7), but the available data do not indicate that this happened.

At Guam, the upper winds were from the southwest quadrant until September 5, when they changed to the east and southeast quadrants, the velocities always less than 45 k. p. h. Over the Philippines during the same period there was a rather shallow southwesterly current beneath an easterly air stream. The observations at Aparri, Manila, and Zamboanga showed that the southwest winds extended aloft to approximately the altitude of 4,000 meters, increasing in velocity to about 50 k. p. h. on September 5 and then decreasing. The velocity of the easterly current was always below 40 k. p. h.

Typhoon, September 4 to 7, 1938.—This storm appeared about half way between Naha, Nansei (Loochoo) Islands and the Bonins, the morning of September 4, and seemed to be intense. It moved rapidly northward, crossed Kiu-siu Island and southern Japan, and then inclined to the northeast and east-northeast when it was over the Sea of Japan. It passed over Yezo Island on its course toward the Aleutian Islands.

News dispatches from Japan placed the unofficial total of deaths due to this typhoon at "more than 40", together with great damage due to floods.

Depression, September 7 to 10, 1938.—A weak depression formed about 500 miles east of northern Luzon, moved northwest and then recurved to the northeast and east-northeast, disappearing September 10 near latitude 23° N., longitude 135° E.

The upper air currents over the Philippines were about the same as those described above (depression, August 31 to September 5) except that there was a front extending across northern Luzon. Aparri had north-quadrant winds with velocities never over 40 k. p. h., and changing to the southeast quadrant on September 9. It seems to the writer that intensification was impossible because of the east quadrant airstream above the shallow southwesterly current.

Depression, September 13 to 14, 1938.—A depression formed close to and east of Hainan Island, moved west and then northwest across the Gulf of Tong King into Indochina where it filled up.

Before, during, and after this depression, there was a front over Indochina. Upper winds reported from Phulien, Hanoi, and Vinh were from the northeast and east quadrants, velocities under 45 k. p. h. Southwesterly winds blew over Saigon and Tourane, velocities under 40 k. p. h. Siam stations were similar to Saigon and Tourane. Hong Kong winds showed a persistent easterly air stream.

On September 13 and 14, pressure was lowest and there was definite circulation as shown by the surface winds, but intensification did not take place, very likely because the velocities of the upper winds were not strong enough, as well as for other reasons not known.

Typhoon, September 16 to 29, 1938.—A depression formed over the northern part of the Mariana Islands, moved west by north, was stationary for 2 days near latitude 19° N., longitude 140° E., and then changed its course to the southwest (September 20) thus reaching the ocean regions about 200 miles east of San Bernardino Strait. There it changed its course to the west-northwest, preliminary to recurvature to the northeast, which took place about 250 miles east-northeast of Manila (September 24). On September 26, it intensified to typhoon strength, and then inclined to the north for a short time. During the forenoon hours of September 27, it was moving west-northwest, a course which took it across southern Formosa and the Formosa Channel. It entered China about 60 miles northeast of Swatow and quickly filled up.

The upper winds over Guam on September 15 and the following days were from the southwest quadrant, changing to the west on September 17. The velocities were under 40 k. p. h. before September 17 but increased to values as high as 70 k. p. h. on the 18th (the period when the storm center was stationary). On September 20, the velocities were decreasing. Over the Philippines there was a front extending northeast to southwest and passing over the locality of San Bernardino Strait. On September 25 this front moved northward and was located over the Balintang Channel on September 27. Southwest quadrant winds were reported from Cebu and Zamboanga during this whole period, velocities reaching values of 60 and 70 k. p. h. on September 25 and 27. Aparri and Manila had east quadrant winds until September 25 and 26 with velocities as high as 60 k. p. h. (September 23). Then the directions became southwest quadrant, but with an easterly air stream above, shown by the movement of the high clouds almost every day and sometimes by the balloons which indicated that the southwest winds extended to, about 4,000 meters aloft. The U. S. S. *Ramapo* passed about 200 miles north of the storm center, on her course to America, after crossing the Balintang Channel. On September 26 to 28, when she was almost directly north of the center, the upper winds were from the northeast and east directions under 40 k. p. h.

Depression, September 17 to 19, 1938.—Over the ocean regions far to the east-southeast of the Bonins, a depression formed, moved west-northwest for 2 days and weakened, September 19 as it recurved to the northeast after which no trace of it could be found.

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Depression, September 20 to 25, 1938.—A depression appeared about 500 miles northeast of Guam, moved in a northwesterly direction and disappeared about 400 miles east of Naha, Nansei (Loochoo) Islands.

The southwest quadrant current which was flowing over Guam and which had weakened after September 18, now increased in strength, September 20 and following days, reaching velocities as high as 66 k. p. h. (September 21) and then weakening. Observations from the S. S. *Thurland Castle*, traveling along a westerly course and passing some 300 miles north of Guam about this time showed pressure values above 751.0 mm (29.567 inches) and winds from the east or the north quadrants, never over force 3. After September 22, the velocities reported from Guam gradually became weaker, while the directions remained from the southwest quadrant.

Typhoon, September 25 to 28, 1938.—Forming quickly about 300 miles east of southern Indochina, near latitude 12°30′ N., longitude 114° E., a depression moved along a west-northwesterly direction, intensified September 26, and passed close to and south of Tourane as it entered Indochina. It filled up during the afternoon hours of September 28 over the regions southwest of the Gulf of Tong King.

The lowest pressure reported from Indochina stations as this disturbance formed and moved into the continent, was 747.0 mm (29.410 inches) from Hue, and 747.1 mm (29.414 inches) from Quangngai, September 27, 2 p. m. (Manila time). Winds were of force 3 and 7, respectively, from the northeast quadrant, but other stations reported force 9 at various times during the course of the typhoon.

There was a front extending across the southern part of Indochina during this period. A northeasterly air stream flowed over Phulien, Hanoi, at times tending to back to the northwest quadrant. Saigon consistently reported southwest-quadrant winds, but did not report every day. Velocities on both sides of the front were not strong, scarcely ever exceeding 45 k. p. h. Siam stations during these days had southwest and west quadrant winds, which were not very strong, but an unbroken series of ascents is not available. Likewise, insufficient reports from Malaya stations prevent any discussion of the air streams over that locality during this storm's existence.

SEA-SURFACE TEMPERATURE SUMMARY FOR AN AREA NORTHEAST OF THE BAHAMA ISLANDS, 1912–31

By GILES SLOCUM

The area embraced in this summary comprises five 1° squares, namely; from 25° N. to 30° N., and 74° W. to 75° W. This area is in the latitude of the Florida Peninsula, and its southern part is directly east of the northernmost Bahama Islands. It is just north of the northern margin of the Bahama, or Antillean Current as it approaches the Gulf Stream. This trans-Bahama strip is therefore one nearly isolated from continental weather influences and is, in addition, outside the main sea currents supplying warm water to the North Atlantic Drift.

There are several points of difference and several of similarity between surface water temperature conditions in this eastward area and those in the parallel [3] 5° by 1° strip, traversed by the Gulf Stream, within the same latitude range, immediately east of the Florida Peninsula. Some of these similarities and differences are as follows:

In the Florida Strait-Gulf Stream waters, the surface temperature shows no significant gradient with latitude. In the trans-Bahama strip, the water is about a degree cooler in summer at latitude 30° than at 25°. In winter, this temperature difference becomes several degrees. As a consequence, while in winter [4] the surface water in the latter area is as warm in its southern part as that in the strait, it is at least 3° cooler at the 30th parallel during this season. In summer, the trans-Bahama water surface is cooler throughout its latitudinal extent than is the Florida Strait water. The Gulf Stream water surface fluctuates in temperature about its seasonal normal more than does the surface water in the trans-Bahama area, and departures from normal are more persistently of the same sign in the latter, showing much less tendency to change with fluctuations of air temperature over the Southeastern States.

Temperatures are given to tenths of a Fahrenheit degree in the table, except for 1918. For this year only 41 observations are available, so the temperatures are given to whole degrees. No data could be found for September and October, 1918. In computing means, the interpolated temperatures, 82.0° for September 1918, and 80.1° for October 1918, were used.

This is the twelfth of a series of temperature-history tabulations of this character, showing sea-surface temperatures for small areas in American and western North Atlantic waters. The first of the series appeared in the November 1934 MONTHLY WEATHER REVIEW, and the last previous tabulation appeared in the June 1938 issue.

[3] Slocum, Giles: Sea-Surface Temperature Summary for the Outer Florida Strait, 1912-33; MONTHLY WEATHER REVIEW, vol. 64, Aug. 1936, p. 279.
[4] Ibid: The Normal Temperature Distribution of the Surface Water of the Western North Atlantic Ocean; MONTHLY WEATHER REVIEW, Vol. 66, Feb. 1938, pp. 39-43.

Monthly and annual mean sea-surface temperatures northeast of the Bahama Islands, 1912–31

Year	Total number of observations	January	February	March	April	May	June	July	August	September	October	November	December	Annual
1912	251	74.3	72.1	74.0	75.0	77.3	80.6	80.7	81.9	82.2	81.4	76.8	76.5	77.7
1913	234	74.7	74.3	74.6	73.1	75.1	77.3	80.7	80.9	80.2	78.4	76.6	72.8	76.6
1914	199	71.4	72.1	71.6	73.4	74.1	80.2	82.1	83.1	81.5	79.5	77.1	75.9	76.8
1915	266	73.7	72.6	68.9	70.7	76.0	79.3	81.8	83.0	83.0	81.0	77.3	73.2	76.7
1916	192	72.1	72.6	71.5	71.6	75.3	78.4	80.9	82.3	81.6	78.8	75.8	72.1	76.0
1917	154	72.5	71.6	72.2	72.1	74.6	78.0	80.6	81.8	81.5	80.5	74.9	71.7	76.0
1918	41	70	72	72	73	75	74	87	82	(2)	(2)	77.0	76.5	[1] 76.8
1919	124	72.5	72.3	72.3	71.4	75.4	79.2	81.9	82.2	82.2	81.7	77.3	75.0	77.0
1920	227	72.5	71.5	70.9	73.7	75.1	78.2	80.9	82.1	81.7	79.5	76.5	75.4	76.5
1921	255	74.1	72.5	74.2	74.2	74.8	78.2	81.2	81.9	81.9	80.8	77.5	74.9	77.2
1922	371	72.7	71.9	72.2	73.8	75.6	79.6	80.8	81.6	81.8	80.4	78.0	75.5	77.0
1923	585	72.8	71.9	72.3	73.8	75.6	78.7	80.7	82.0	82.5	79.3	75.2	73.7	76.5
1924	653	73.3	70.5	70.8	72.1	77.9	80.2	81.6	82.5	81.1	79.2	76.4	74.0	76.6
1925	709	73.2	72.5	72.8	73.7	75.9	79.3	81.0	82.5	82.6	80.6	77.4	74.9	77.2
1926	825	73.6	72.5	72.2	74.2	76.2	79.7	82.2	83.3	83.1	80.8	78.1	75.8	77.6
1927	908	72.0	74.6	72.2	72.9	76.5	80.4	81.7	82.3	82.0	79.7	76.8	73.7	77.1
1928	1,011	72.4	72.7	72.8	73.0	74.3	78.9	81.4	82.7	82.4	80.5	77.4	74.6	76.9
1929	912	73.1	73.1	73.4	74.8	77.0	78.5	80.7	81.8	81.8	79.5	77.4	75.3	77.2
1930	838	74.6	72.2	72.3	73.3	76.0	77.9	81.1	82.2	82.3	79.7	76.8	74.2	76.9
1931	824	71.6	70.8	69.8	72.9	74.9	78.5	82.0	83.4	83.0	79.9	75.7	75.3	76.5
Number of years of record		20	20	20	20	20	20	20	20	19	19	20	20	20
Mean, 1912-31		72.8	72.3	72.1	73.1	75.7	78.8	81.5	82.3	82.0	80.1	76.8	74.5	76.8

[1] Means were computed, using interpolated values for missing months. All monthly means were carried to one decimal place when computing annual and period means, which latter are, therefore, not exact means of figures given in the body of the table.
[2] No data.