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DISTRIBUTION OF ATMOSPHERIC SOURCES AROUND JAPAN FOR A FEW DAYS IN SUMMER 1969

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The observations made, with a direction-finding network adopting the loop antenna system, from one to two weeks every month were begun from the spring 1969. This paper describes the results of spherics-fixing that was carried out Aug. 7-14,

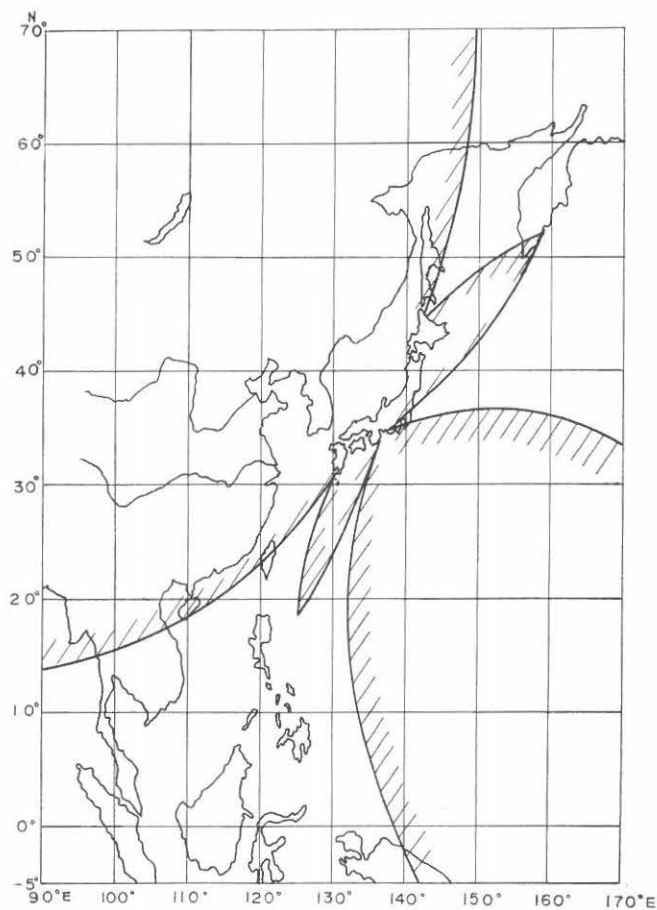


Fig. 1. The hatched area is the domain in which the position of atmospheric sources can be determined by means of the triangulation method with a computer,

1969. Observation time was from 10m to 13m at 09h, 12h, 15h, 18h and 21h J. S. T., respectively.

The author displays the correlation between atmospheric activity and meteorological phenomena in the synoptic chart supplied by the Japan-Meteorological Agency.

The hatched area in Fig. 1 shows the domain in which the position of atmospheric sources can be made by means of the triangulation method with a computer. The chart obtained is shown below.

Fig. 2a shows the positions of atmospheric sources during 0910-0913, 1210-1213, and 1510-1513 J. S. T. 8th Aug., 1969: where symbol [○] indicates the positions of

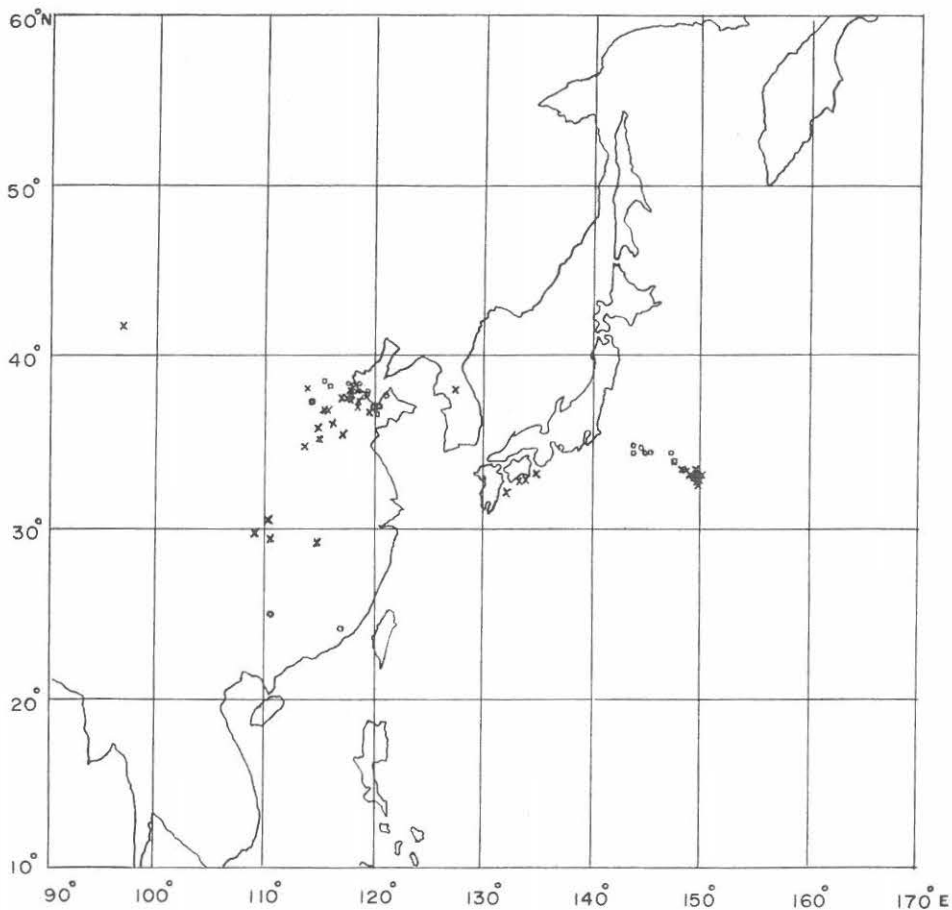


Fig. 2a. The position of atmospheric sources during 0910-0913, 1210-1213 and 1510-1513 J. S. T. 8th Aug., 1969.

- indicates atmospheric sources during 0910-0913
- during 1210-1213
- × during 1510-1513

atmospheric sources observed during 0910-0913; symbol $[\square]$ during 1210-1213; and symbol $[\times]$ during 1510-1513 J. S. T., respectively. Fig. 2b shows the positions of atmospheric sources observed during 1510-1513, 1810-1813 and 2110-2113 J. S. T. 8th Aug. 1969; where symbol $[\times]$ indicates them during 1510-1513; symbol $[\square]$ during 1810-1813; and symbol $[\circ]$ during 2110-2113 J. S. T., respectively.

Fig. 3a and Fig. 3b show synoptic charts at 0900 and 2100 J. S. T. 8th Aug., 1969, respectively. From the correlation of Fig. 2a and Fig. 2b with Fig. 3a and Fig. 3b, it is seen that a group of the atmospheric sources was observed around the point of long. 145°E and lat. 34°N at 09h, and thereafter this group moved gradually eastwards,

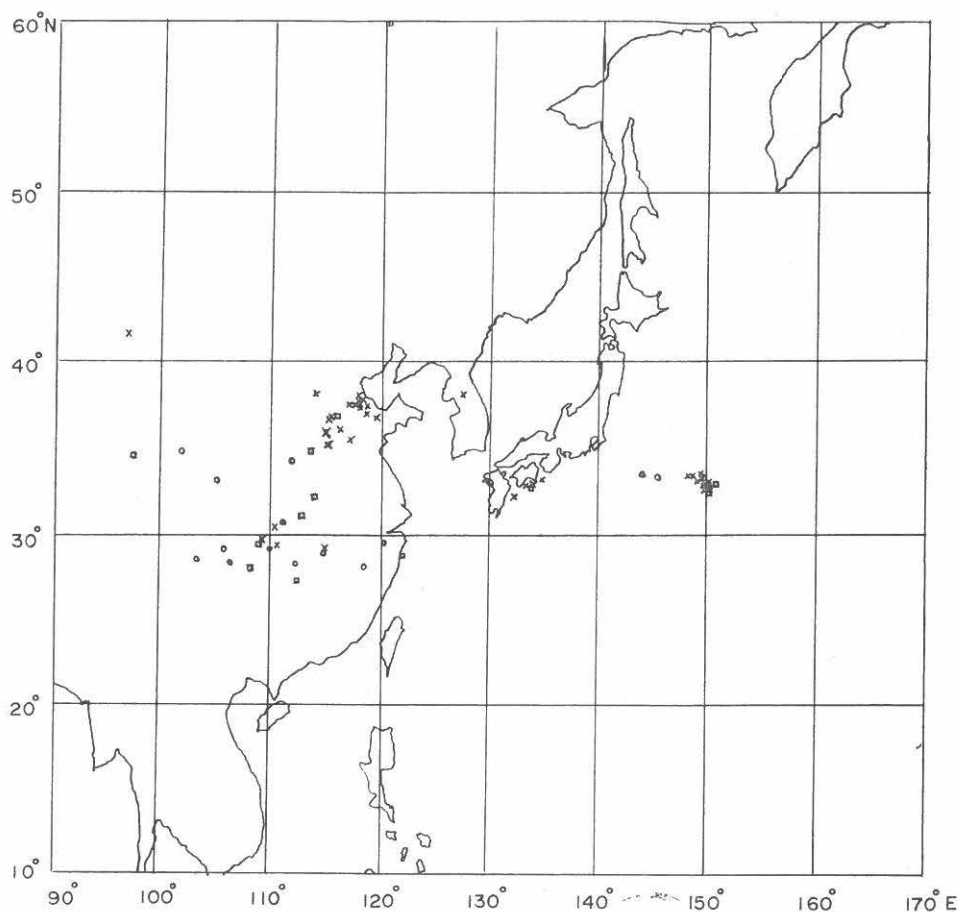


Fig. 2b. The position of atmospheric sources during 1510-1513, 1810-1813 and 2110-2113 J. S. T. 8th Aug., 1969.

- \times indicates atmospheric sources 1510-1513
- \square during 1810-1813
- \circ during 2110-2113

arriving of the point of long. 151°E and lat. 33°N at 18h.

It is considered that this group was excited by a growing cyclone around the point of long. 143°E and lat. 36°N at 09h, and until 18h this group moved along the front accompanied by the growing cyclone moving eastwards. Then, at 21h, atmospheric sources due to this cyclone were found. In another area, another group of atmospheric sources was seen near the point of long. 118°E and lat. 37°N at 09h, and this group was still observed around the same point till 18h.

At 15h and 18h, the sources distributed along a stationary front, but this stationary front vanished at 21h. Atmospheric sources were still distributed along this vanishing stationary front at 21h.

Another group of atmospheric sources was generated around a severe tropical storm at 21h.

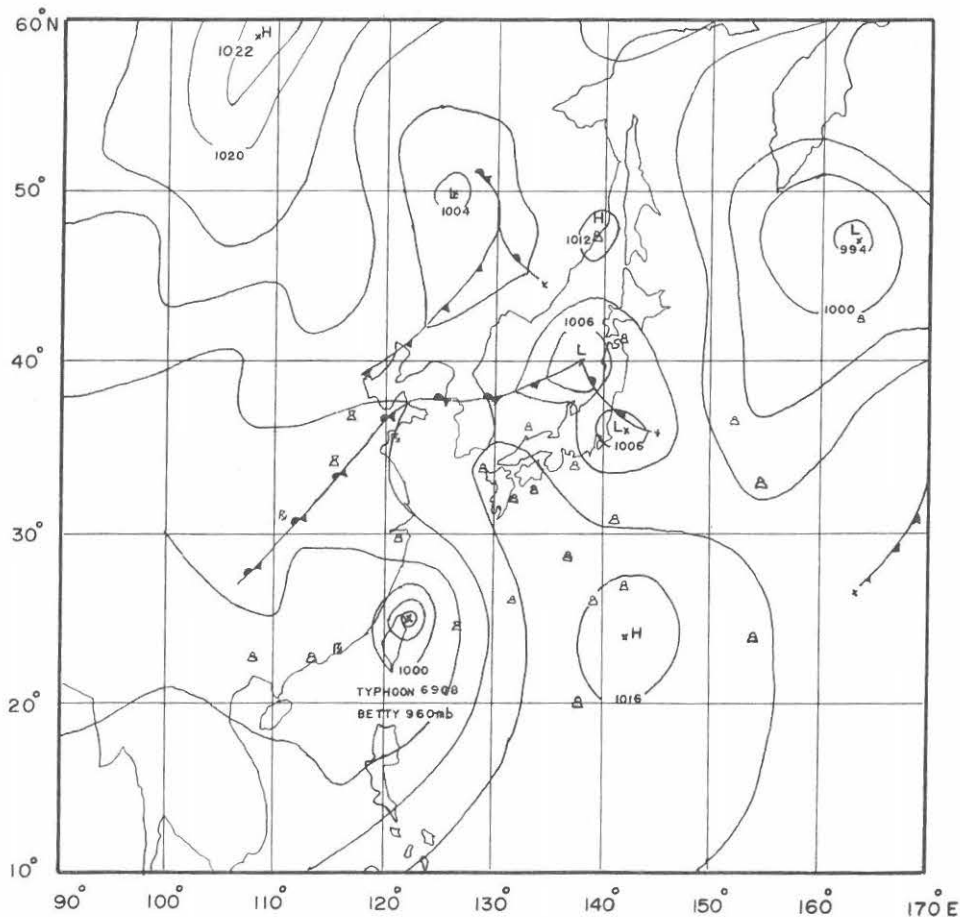


Fig. 3a. Synoptic chart at 0900 J. S. T. 8th Aug., 1969.

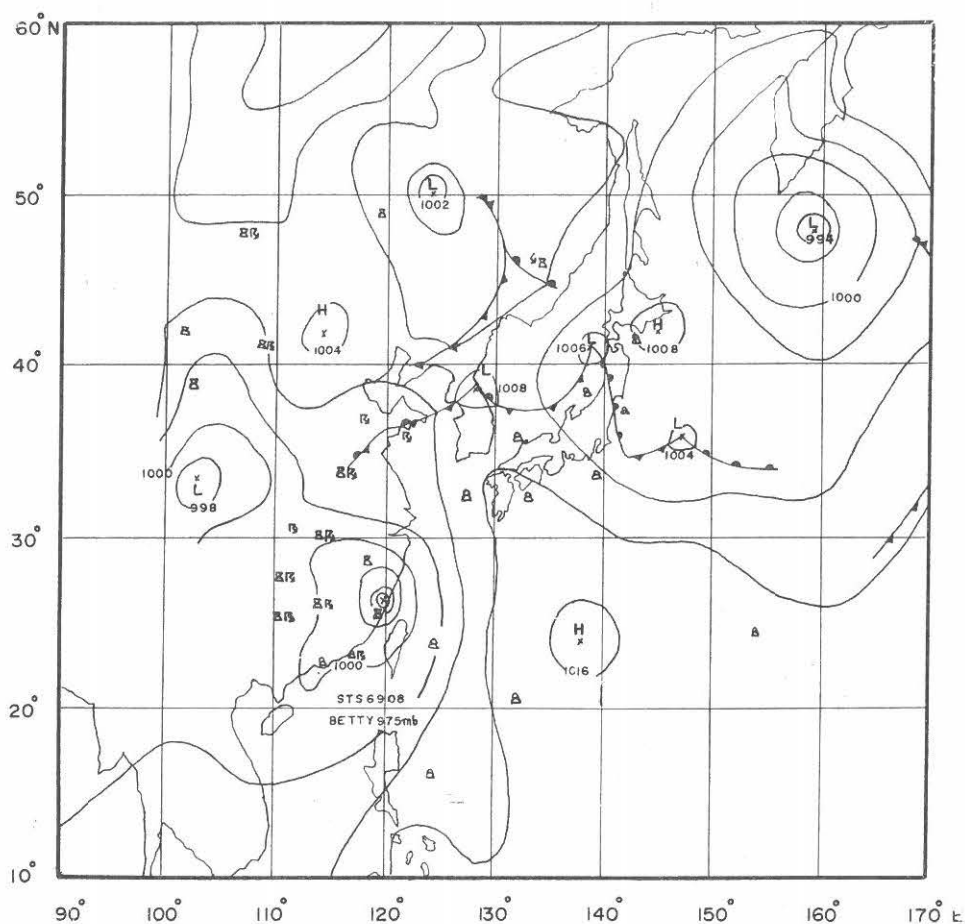


Fig. 3b. Synoptic chart at 2100 J. S. T. 8th Aug., 1969.

Fig. 4 shows the synoptic chart at 0900 J. S. T. 11th Aug., 1969: where symbol (\circ) indicates atmospheric sources during 0910-0913; symbol (\square) during 1210-1213; and symbol (\times) during 1510-1513 J. S. T., respectively.

Atmospheric sources due to a cold front were observed at 09h; and at 12h and 15h, atmospheric sources accompanied by a cyclone and the cold front were seen.

Fig. 5 shows the synoptic chart at 2100 J. S. T. 9th Aug., 1969.

Location of atmospheric sources were made during 1510-1513 J. S. T. and for three minutes every hour from 1810 to 2210 J. S. T. 9th Aug., 1969. During this observation period, atmospheric sources due to a tropical cyclone and another cyclone were always observed, but sources due to a stationary front across the Korea Peninsula were observed only at 20h and 21h.

From these observation results, it may be concluded that the activity of the

atmospherics was accompanied by a tropical cyclone or a cyclone continue for a long period, but on the other hand, the atmospherics generated on the front existed a comparatively short period and their active regions varied gradually along the front.

Fig. 6 shows the distribution of atmospheric sources which were observed for three minutes from 0910, 1210, 1510, 1810 and 2110 J. S. T., Aug. 7-14, 1969. The active regions of atmospheric sources were South China, North China and Pacific Ocean around long. 150°E and lat. 30°N.

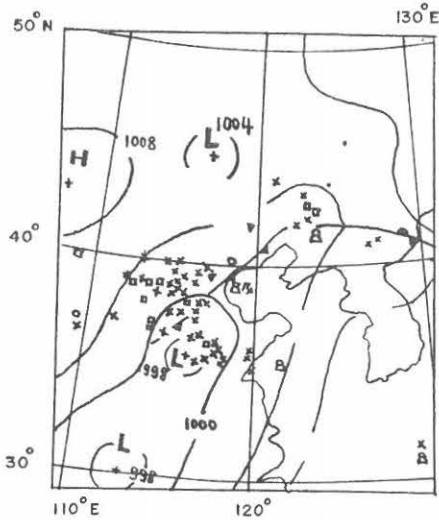
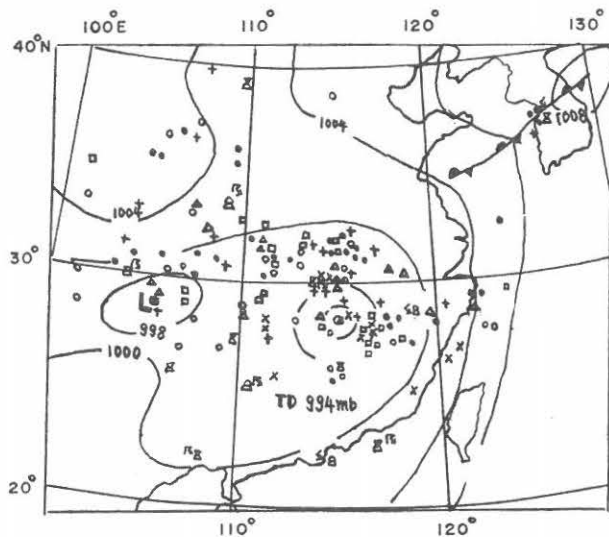


Fig. 4. Synoptic chart at 0900 J. S. T. 11th Aug., 1969.

- indicates atmospheric sources during 0900-0910
- during 1210-1213
- × during 1510-1513

Fig. 5. Synoptic chart at 2100 J. S. T. 9th Aug., 1969.

- × indicates atmospheric sources during 11510-1513
- during 1810-1813
- during 1910-1913
- + during 2010-2013
- during 2110-2113
- △ during 2210-2213



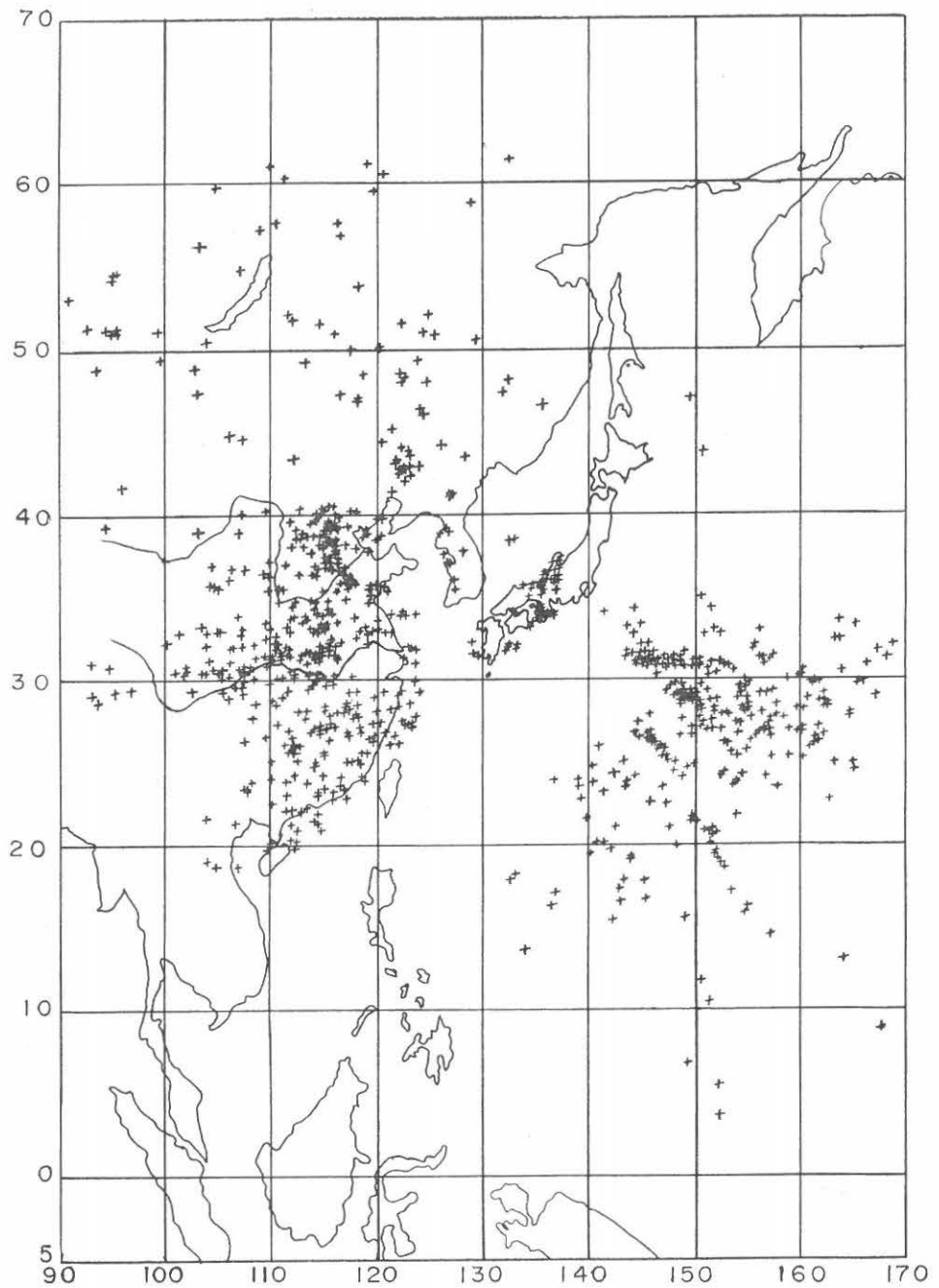


Fig. 6. Distribution of atmospheric sources Aug. 7-14, 1969.

The position of atmospheric sources plotted by the direction-finding system is limited to the hatched area, as shown in Fig. 1.

This limitation is caused by the ambiguity of the measuring accuracy near the direction of the base line. In order to improve this trouble, a correction curve of site error at each observation station is now being made. After completing this process, the correction between atmospheric and meteorological phenomena will be investigated in more detail.

Acknowledgements

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