

## 9. Microseisms and Typhoons.

By Fuyuhiko KISHINOUE and Mieko KOTAKA,

Earthquake Research Institute.

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In Japan relation between microseisms and typhoons had been investigated and published in many papers. But most studies were made with observed data obtained at one or a few stations. Recently "Report of Microseisms Observation 1956"<sup>1)</sup> was published by the Japan Meteorological Agency. In this report data of microseisms at several places in Japan are printed. The authors began to study the relation between microseisms and typhoons widely in Japan. The variation of microseisms in two dimensions and that in time could be discussed.

Tracks of typhoons adopted in this study are shown in Fig. 1. Relations between microseisms and central pressure of typhoon, travelling velocity of typhoon, wind velocity at the stations were studied and some parts are shown in Figs. 2 and 3. From these we attained following results.

Travelling velocity was considered to be re-

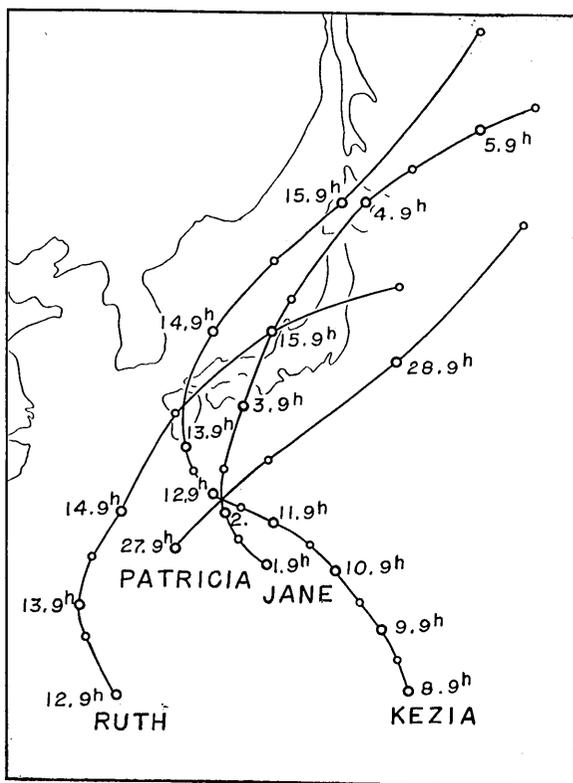


Fig. 1. Track of cyclones.

1) *Quarterly Journ. Seismology, Supplementary Volume 21* (1956).

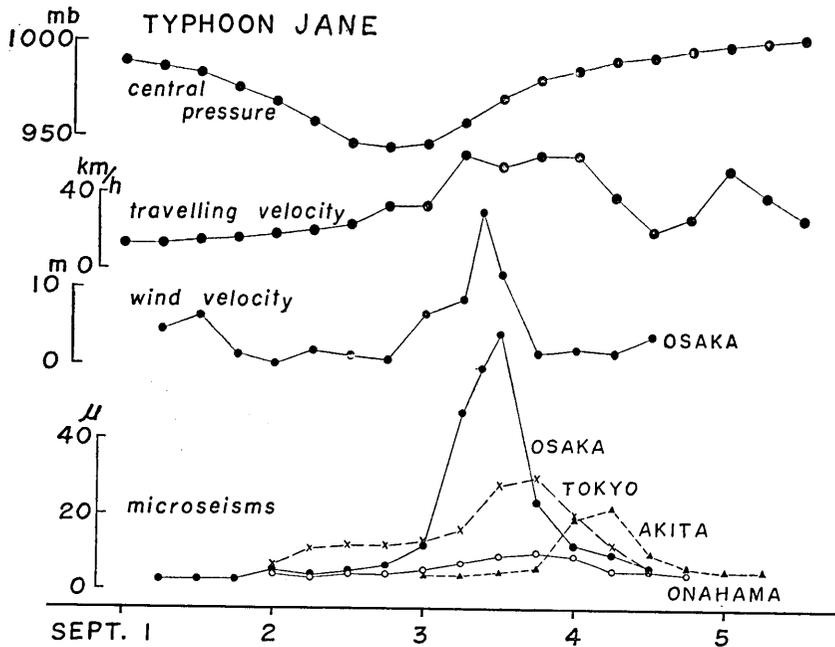


Fig. 2.

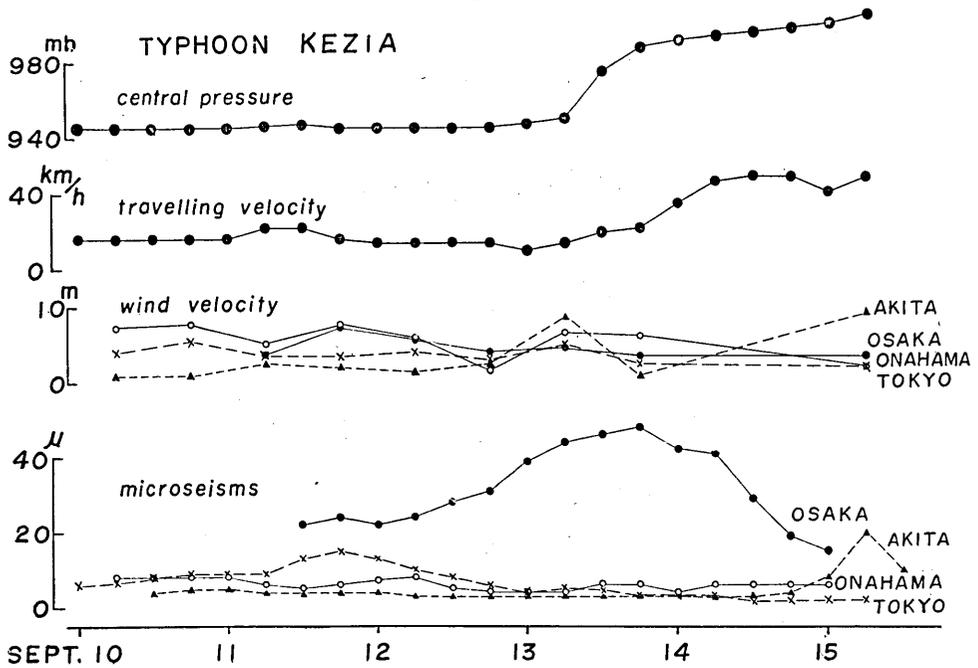


Fig. 3.

lated to growth of swells of the sea and to be parallel to amplitude of microseisms. Microseisms at Osaka seem to vary with the travelling velocity, but others do not.

Data at Osaka also presents some relation to wind velocity. But at other stations amplitude of microseisms might depend upon distance of the centre of cyclone from there.

In general energy of propagated waves is inversely proportional to distance from the origin of waves for surface waves, and to square of distance for bodily waves or spherical waves. To examine whether microseismic waves are surface waves or bodily waves, diagrams in Figs. 4 and 5 were drawn which show relation between amplitude and distance from the typhoon centre. From these diagrams, the writers deduced amplitude at Osaka was inversely proportional to distance from the data. One of the writers considers that "micro-ratio chart" studied by M. H. Gilmore<sup>2)</sup> may be deduced statistically from similar distribution of amplitude.

Results of observations at Tokyo and Akita could not be explained by the above hypothesis at Osaka. In these cases microseismic amplitude might depend on the position of the cyclone centre. And this

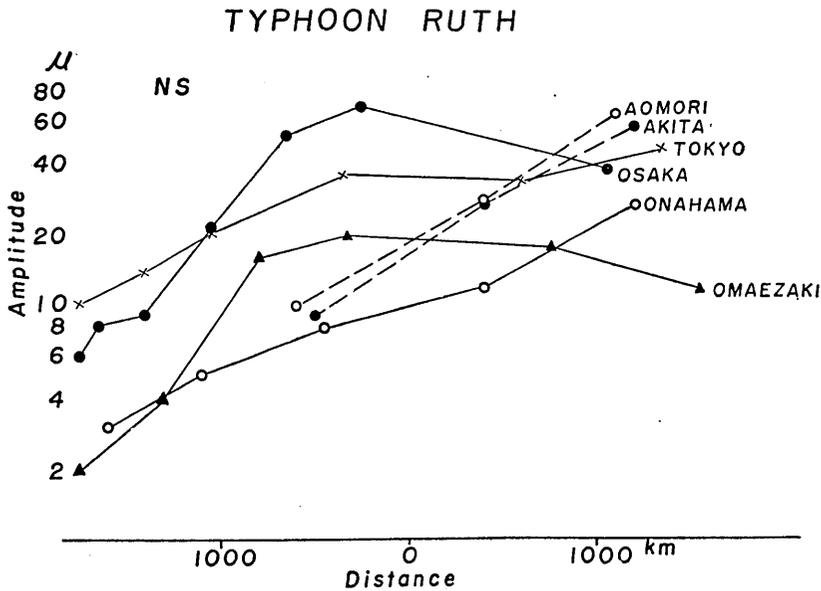


Fig. 4a.

2) M. H. GILMORE, "Amplitude Distribution of Storm Microseisms," *Symposium on Microseisms (1952)*, 20-55, Washington D.C. 1953.

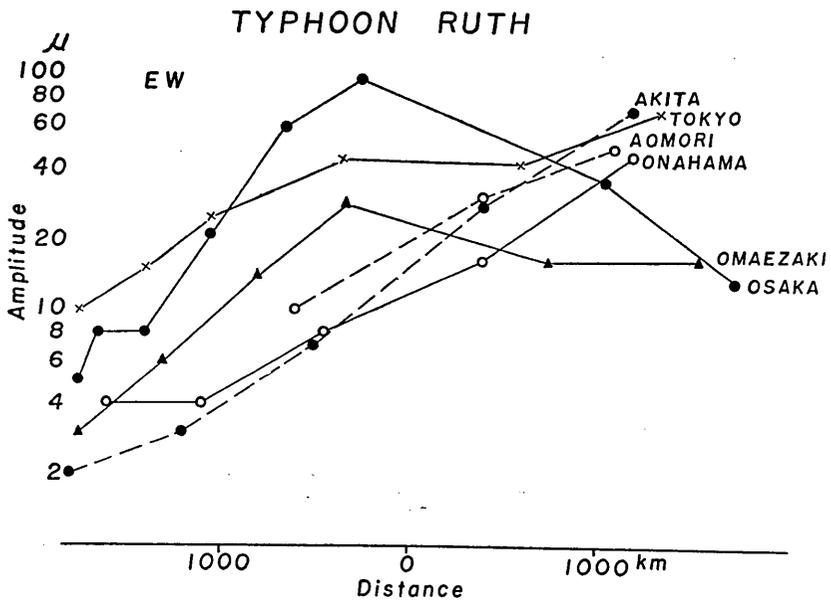


Fig. 4b.

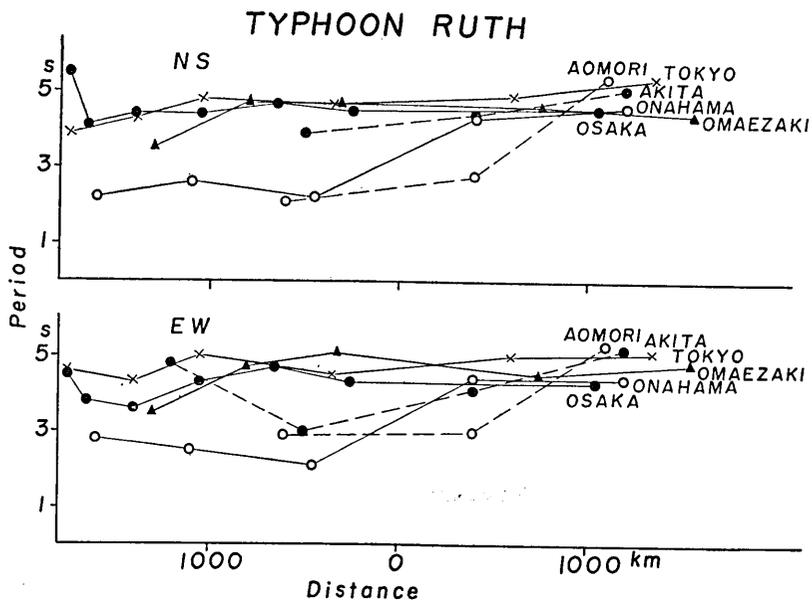


Fig. 4c.

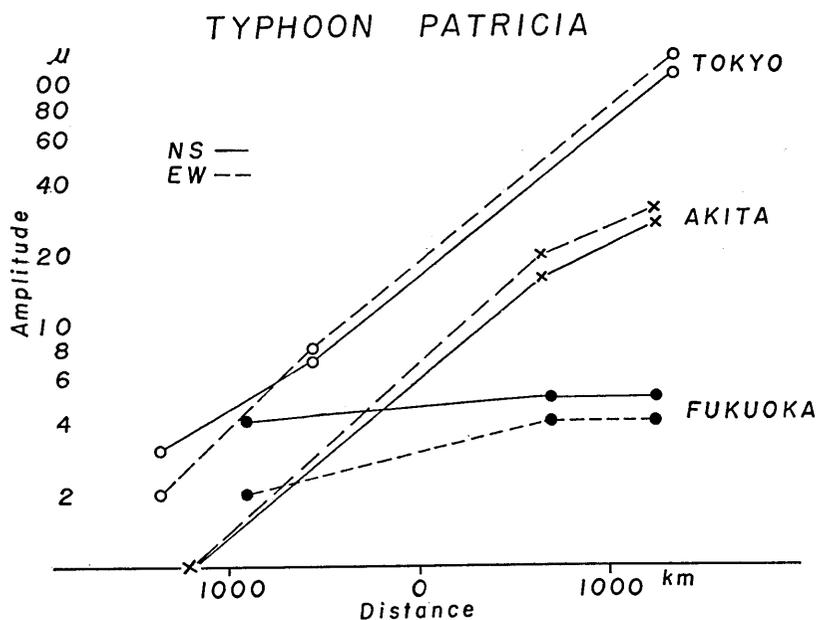


Fig. 5a.

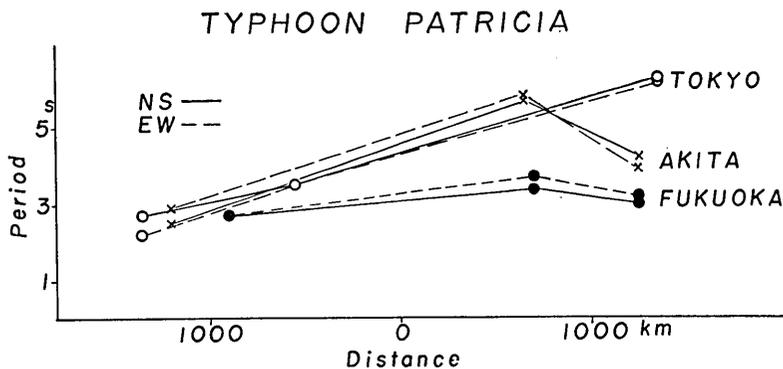


Fig. 5b.

consideration may be in good accord with the fact that microseisms at Tokyo are large when the centre of cyclone is off the northeastern coast of Japan Main Land.

Therefore microseisms are thought not to be simple elastic waves, but be dependent on the condition of the cyclone. In the International Geophysical Year of 1958, many detailed data may be obtained, so the nature of microseisms will be studied in progress.

## 9. 土地の脈動と台風

地震研究所 { 岸上冬彦  
                  小高美江子

脈動と台風との関係について多くの研究があつたが、脈動の観測は1個所の場合が多かつた。気象庁から1956年の脈動観測報告が出版されたので、それを材料として日本を脈動がどのように伝わるかを調べた。

台風の中心示度、台風の進行速度、観測所における風速と脈動の関係を見た。その関係はないようであつた。

次に各観測所において、台風の中心までの距離と脈動の振幅との関係を見た。これでは減り方によつて表面波であるか実体波であるかを見ようとした、ある時は表面波の性質が見えるが、全くそのように考えられない場合がある。台風の状態によつて脈動との関係は変わると考えた。

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