

## 16. Monthly Numbers of Earthquakes at Kainan City, Wakayama Prefecture in 1947.

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(Read Feb. 17, 1948.—Received Mar. 31, 1949.)

After the great earthquake on Dec. 21, 1946, which hit the southern part of Kinki and Shikoku districts, a set of two horizontal seismographs resumed its observation at Kainan City by Mr. H. Imamura and Miss T. Nagasaki. The seismograph had been set by late Dr. A. Imamura, but its observation was stopped during the second World War.

The observation began in Jan., 1947, but its condition was not good and the time marks on the seismograms did not succeed for many days. The recording papers were exchanged at about 10 h every day, then for simplicity of the disposition the dates of the observation were changed at the time of the exchange.

The monthly frequencies in 1947 were as follows:

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	
Observ. freq.	145	18	36	21	29	20	11	27	8	5	2	1	323
Calcul. freq.	67	50	37	28	21	15	11	8	6	4	3	2	252

The earthquakes might be considered as the after-shocks of the great earthquake on Dec. 1946. The frequency distribution was expressed in an exponential function as usual:

$$f = (90.4 \pm 1.3) e^{-(0.236 \pm 0.038)t},$$

where  $t$  denotes a month. The frequencies calculated by the above formula are shown also in the above table. The fitness of the formula was studied by  $\chi^2$ -test. The value of  $\chi^2$  obtained as 164.7, therefore it will be concluded that the above formula does not express well the observed frequencies.

The intensity of the earthquakes were classified in three: slight, moderate and rather strong. And the contingency table of the earthquake frequency in a day and the greatest intensity scale of the earthquake of that day was made as shown in the following table (see Fig. 1).

*Monthly Numbers of Earthquakes at Kainan City, in 1947.*

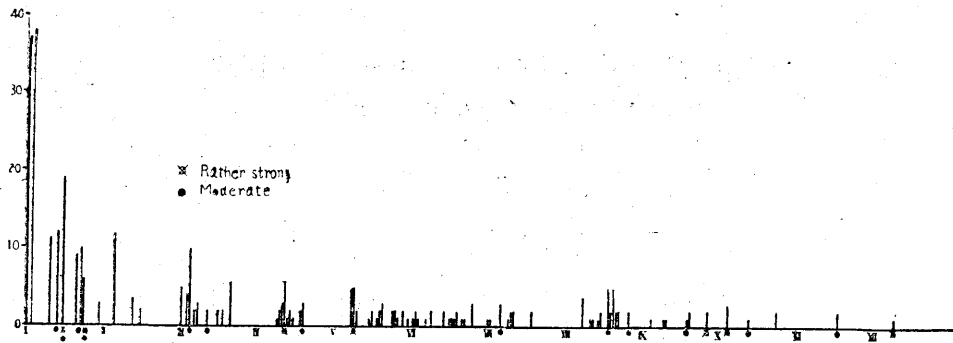


Fig. 1. Daily number of earthquakes at Kainan City in 1947.  
Roman figures indicate months.

No. of earthquakes	Slight	Moderate	Rather strong	Total
0-9	60	8	5	73
>10	4	3	2	9
	64	11	7	82

As the average, 11.3 earthquakes were recorded in a day when a strong earthquake occurred, and 6.0 when a moderate one occurred, and 3.1 when a slight one took place in a day. The probability of the non-correlation was calculated with the above table, and its value obtained as 0.0095, so it will be concluded that the intensity and the frequency of the earthquake in a day were correlative.