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F044/F003

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TITLE: A graticule for macroseismic estimation fo the focal depth of earthquakes

PERIODICAL: Ti Ch'iu Wu Li Hsüeh Pai, v. 10, no. 2, 1961, 113-119

TEXT: The purpose of this article is to simplify the estimation of focal depth within a permissible error range by means of a graticule. Various formulas have been employed by seismologists. The author recommends the following general formula applicable to all cases:

$$h = \Delta_i \sqrt{10^{(I_o - I_i)/S} - 1} \qquad (7)$$

where h = depth of the centrum, Δ_i = isoseimic radius, I_i = intensity at the centrum S = a parameter, and I_o = epicentral intensity. In terms of common logarithm the formula will become

$$\log h = \log \Delta_i - \frac{1}{2} \log (10^{(I_o - I_i)/S} - 1) \qquad (8)$$

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Taking $x = I_o - I_i$, $y = \frac{1}{2} \log (10^{(I_o - I_i)/S} - 1)$, and S as a variable parameter, the basic points are established with $x = I_o - I_i$ as an abscissa and $y = \log \Delta_i$ as an ordinate. By means of graticules, the values of S and h for 19 earthquakes in China were estimated. The S values for eastern China are lower than those for western China. Based on data obtained from 61 earthquakes, S values increase with increasing focal depths. There are 4 figures and 1 table. English-language references are: Gutenburg, B. and Richter, C. F., Earthquake Magnitude, Intensity, Energy and Acceleration, Bull. Seism. Soc. Amer., v. 32, 1942; Blake A., On the Estimation of Focal Depth from macroseismic data, Bull. Seism. Soc. Amer. v. 31, 1941.

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