

# DIURNAL PERIODICITY OF EARTHQUAKE FLOW IN ALASKA

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**Abstract.** A detailed analysis of the Alaska earthquake catalog aimed at studying the diurnal earthquake periodicity is performed. For this purpose, a set of homogeneous in space and time samples with the well known magnitude of completeness ( $M_c$ ) was prepared. The spectra, average diurnal variations in the number of earthquakes and their amplitudes were calculated for each sample. The average diurnal variation forms were compared. We found no significant diurnal variations in the samples of representative earthquakes of magnitude more than  $M_c$ . The average diurnal variations in the number of sub-representative earthquakes are not significant or the ratio of signal to noise is only a little more than 1.3–1.9. Statistically significant diurnal variations (the ratio signal to noise is equal to 2–4.5) are revealed only for the samples of weak earthquakes with magnitudes of 1.4 or less. It is 0.5 magnitude unit less than  $M_c$  ensured for the sample. The results obtained are in general agreement with the hypothesis which relates the diurnal periodicity of earthquakes to the effects of noise discrimination. But a comparative analysis of the parameters of the diurnal earthquake variations estimated by many homogeneous in space and time samples from earthquake catalogs of Alaska, Southern California and Greece evidenced that the result totality cannot be explained within the frameworks of this model.

**Keywords:** seismicity, earthquake flow, Alaska, earthquake catalog, catalog completeness, homogeneous samples, diurnal periodicity.