

ESTIMATING CORRELATION BETWEEN ALASKA EARTHQUAKE FLOW AND TIDAL GRAVITY VARIATIONS

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Abstract. An influence of theoretical tidal gravity variations on Alaska seismicity is studied. A set of object oriented homogenous samples of earthquakes with different magnitudes and well determined the magnitude of completeness (M_c) is considered. The spectra and correlation coefficients with the tide are calculated for each sample. No clear peculiarities are found at the M_2 and O_1 periods of the tide. Unacceptability of the null hypothesis on the lack of correlation between seismicity flow variation and tide is reliably proved. However, the effect is most statistically significant for the solar tide only. It means that the correlation can be caused by non-gravity effects synchronized with the solar periodicity. The null hypothesis on the lack of correlation between seismicity flow variation and the lunar tide is discarded with 95% significance only. It is not yet sufficient to allow reliable conclusions on the lunar tide influence on seismicity. From our opinion, an account of the ocean tide in an explicit form can considerably improve our understanding of the problem under consideration and will give new insight into the phenomenon

Keywords: seismicity, earthquake flow, Alaska, earthquake catalog, homogeneous samples, lunisolar tide, tidal gravity, correlation analysis.