Estimating correlation between earthquake flow in Southern California and lunar-solar tides

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Abstract. A search for possible influence of lunar-solar gravitational tides on seismicity in Southern California is carried out. We took into account only the epochs when the seismic network configuration and the seismicity flow did not considerably change. An analysis of the magnitude of completeness in planar grid cells 0.8x1.0 degrees was performed for the catalog. The results were used to form quasi-homogeneous sets of earthquakes with known magnitude of completeness. Then we formed the time series of earthquakes characterizing the dynamic of seismic process during each concrete epoch within given magnitude interval. The correlation coefficients of all the time series obtained were calculated with the theoretical tidal parameters. We revealed good accordance in signs for the correlation coefficients of time series of earthquakes with magnitude from 1.8 to 2.5 and tidal parameters for some epochs.

Keywords: lunar-solar tide, gravitational tide, seismicity, correlation, Southern California.