Analysis of the diurnal periodicity in the Dushanbe-Vakhsh earthquake catalog using Rayleigh–Schuster's hodograph

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Abstract. The diurnal earthquake periodicity is analyzed in four regions of the Dushanbe-Vakhsh district, Tajikistan. The earthquake samples of different energy are considered: weak (non-representative, of energy less than the level of completeness), strong, and moderate ones. All the samples are formed within the time intervals, when the catalog characteristics change insignificantly, and can be considered as homogeneous at a first approximation. We revealed the opposite diurnal changes in the weak and moderate earthquake samples. Similar to the most other regions, weak earthquakes more often occur at night. But the picture is reversed for the moderate earthquakes: a large peak of a number of the moderate earthquakes is observed in the day-time. We made a suggestion that the day peak is caused by unidentified blasts which contaminate the catalog.

Keywords: seismicity, diurnal earthquake periodicity, Dushanbe-Vakhsh district, Rayleigh–Schuster's hodograph, blast contamination of catalogs