



The some patterns of spatio-temporal variations of the distributions of the number of earthquakes strong earthquakes

Natalia Bulatova (1), Vladimir Shirokov (2), and Julia Serafimova (1)

(1) IPE RAS, RAS, Moscow, Russian Federation (n.p.bulatova@mail.ru), (2) Institute of Volcanology and Seismology, Far Eastern Branch of Russian Academy of Sciences, Petropavlovsk-Kamchatsky, Russia

It is well known that catastrophic processes of the Earth occur at simultaneous action of several groups of factors that include external global space influences (the Sun and the Moon) and internal geological influences, which provide the condition in strong earthquake area. Identify the impact of each factor is a complex task, as the ensemble acting factors. Statistical methods revealed some time intervals dominated by the effects of some of them.

The time series of strong earthquakes in 1973-2010 years. are analysed by the consistent use linear and cyclic trends and was showed, that the variation the number of strong earthquakes have a cyclical trend for 1973-2010 years. The distribution of time series of the earthquakes was correlated with parameters lunar cycles (18.6 years) and minima s solar activity of 11-year cycles (Bulatova, 2004,2013).

A distribution of strong eruptions in Pacific belt for data of observations in XVIII-XIX centuries has been studied for the two-dimensional phase plane. Coordinates of this plane were both in the phase of 18.6 -years lunar tide and the phase of 22-years magnetic solar cycle. The for long-term seismic forecast was made for the eight regions Pacific belt on the basis cyclic solar and lunar dates of the method of phase pathways that has been developed B.Shirokov and J. Serafimova.

It was received a conclusion about the impact on the number of strong earthquakes of the cyclical nature of the gravitational influence of the moon and the magnetic influence of the Sun.