



## **Diurnal periodicity of earthquakes in catalogs of various regions of the world**

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### **0.1 Introduction**

The catalogs of earthquakes of 18 regions of the world have been analyzed: 1- California (1990-2004); 2 - Nevada (2000-2004); 3 - Alaska (1995-2004); 4 - North-east of Canada (1996-2004); 5 - a part of South America (1995-2004); 6 - New Zealand (1999-2004); 7 - Iceland (1995-2004), 8 - Fenoscandia (1999-2004), 9- the seas to the north of Norway (1994-2004); 10- a part of Mediterranean area (Italy and Greece) (1999-2004); 11-The Hawaii Islands area; 12 – Spain; 13 - Japan (1991-1998); 14 - Kamchatka (1995-2004); 15 - The Caucasus (1960-1990); 16 – Kazakhstan; 17 - large vicinity area of the Toktogul HPS in Kirgizia (1970-1990); 18 -The Garm region of Tadjikistan. The Fourier spectra with a step by the period of 0.5 h in the range from 0 to 48 h and on the periods of lunar-solar tides have been calculated. The same data were calculated by a method of epochs' superposition (stroboscope).

### **0.2 Results**

Presence of considerable periodicities with periods of 24, 12 and 8 h has been established. These extremums appeared to be of a very narrow band (high quality factor). Although the form of the daily course does not coincide with a sine and often has rather steep fronts, the periods of 12 and 8 h are independent but not due to the signal form deviation from a harmonic one towards a meander. The harmonics with the lunar tide periods are absent.

The mentioned periodicities in different regions of the world become insignificant

with the earthquakes' magnitude increase. In the majority of the cases the seismic activity increases at nighttime but in some regions a seismicity increase is noted at the daytime. Possible causes of revealed periodicity including existence of global mechanism that controls seismicity in different regions of the world are discussed.