

Special astronomical configurations, solar activity and deep degassing as a trigger of natural hazards

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Extraordinary cases of tectonic events (strong earthquakes, volcano eruptions), mine explosions, typhoons, hurricanes, tornado outbreak sequences, ball lightnings, transient luminous events are analyzed in relation with special astronomical configurations, which are specific relative positions of the Sun, Earth, Moon and the closest planets of the Solar System (Venus, Mars and Jupiter) [1]. Usage of special astronomical coordinate systems give evidence not only of correlations but also of hidden causes-and-effect relations between the analyzed phenomena.

The geocentric ecliptic latitude system is an example of such astronomical coordinate systems. It gives clear evidence of coherence between strong earthquakes and the maximal Moon declination from the plane of the ecliptic. Extraordinary cases of planet activity from the beginning of XX century till the present time are shown in the years of special astronomical configurations and abrupt increasing of solar activity.

According to the empirical scheme of short-term earthquake prediction [3], geomagnetic disturbances are the triggers of earthquakes. Geomagnetic disturbances perform electromagnetic pumping (electromagnetic excitation) of the Earth's interior in the regions of intersections of seismomagnetic meridians with the plate boundaries as a result of electrothermal breakdowns in the heterogeneous medium of tectonic faults. This results in the local intensification of deep degassing [4], decreasing of shear strength of the medium that triggers earthquakes usually after 2 or 3 weeks (± 2 days) after the geomagnetic disturbance. Examples of officially registered predictions of Kamchatka earthquakes with M7+ without missing events, including deep-focus earthquakes in the Okhotsk Sea since the year of 2002, are shown.

It is discussed correlations and possible cause-and-effect relations between a different phenomena such as

- dangerous natural hazardous events such as the record tornado outbreak sequences in the USA (May 2003, 400 tornadoes in 20 states and the 2011 Superb Outbreak in April 2011 (580 tornadoes), which corresponds to a third and about a half of the average annual number of tornadoes)
- naturally-anthropogenic accidents with gas explosions in diggings and coal mines [4];
- special Moon phases (new moons and full moons);
- local intensification of deep hydrogen-methane degassing;
- extensive spatial anomalies of total ozone content in the stratosphere;
- strong geomagnetic disturbances.

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References

1. V. M. Fedorov, Gravitational factors and astronomical chronology of geosphere processes [Gravitacionnye faktory i astronomicheskaja hronologija geosfernyh processov]. Moscow State University, Moscow, 2000. 368p. (In Russian)
2. V. L. Natyaganov, A. M. Nechaev, I. V. Stepanov, "Spatio-temporal relations of planet tectonic activity [Prostranstvenno-vremennye zakonomernosti tektonicheskoy aktivnosti planety]", Eurasian Union of Scientists, 2015, No. 3(12), Vol. 8. pp. 120-123. (In Russian)
3. L. N. Doda, V. L. Natyaganov, I. V. Stepanov, "An empirical scheme of short-term earthquake prediction," Doklady Earth Sciences, vol. 453, no.5, pp.551-557, Dec., 2013
4. V. L. Syvorotkin. Deep degassing and global catastrophes. Geoinformcentr. Moscow, 2002, 250 p. (In Russian)