Geophysical Research Abstracts
Vol. 16, EGU2014-5253-6, 2014
EGU General Assembly 2014

On dependence of seismic activity on 11 year variations in solar activity and/or cosmic rays

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It is found in the last decades that seismic activity of the Earth has a tendency to increase with decreasing solar activity (increasing cosmic rays). A good example of this effect may be the growing number of catastrophic earthquakes in the recent rather long solar minimum. Such results support idea on existence a solar-lithosphere relationship which, no doubts, is a part of total pattern of solar-terrestrial relationships. The physical mechanism of solar-terrestrial relationships is not developed yet. It is believed at present that one of the main contenders for such mechanism may be the global electric circuit (GEC) - vertical current loops, piercing and electrodynamically coupling all geospheres. It is also believed, that the upper boundary of the GEC is located at the magnetopause, where magnetic field of the solar wind reconnects with the geomagnetic field, that results in penetrating solar wind energy into the earth's environment. The effectiveness of the GEC operation depends on intensity of cosmic rays (CR), which ionize the air in the middle atmosphere and provide its conductivity. In connection with the foregoing, it can be expected: i) quantitatively, an increasing seismic activity from solar maximum to solar minimum may be in the same range as increasing CR flux; and ii) in those regions of the globe, where the crust is shipped by the magnetic field lines with number L= $\sim$ 2.0, which are populated by anomalous cosmic rays (ACR), the relationship of seismic activity with variations in solar activity will be manifested most clearly, since there is a pronounced dependence of ACR on solar activity variations. Checking an assumption (i) with data of the global seismological catalog of the NEIC, USGS for 1973-2010, it was found that yearly number of earthquake with magnitude M$\geq$4.5 varies into the 11 year solar cycle in a quantitative range of about 7-8% increasing to solar minimum, that qualitatively and quantitatively as well is in agreement with the variations of CR in the 11 year solar cycle. Checking an assumptions (ii), it is found that during the period from 1973 to 2010, the twenty earthquakes with magnitude M$\geq$7.0 occurred in the seismic areas, where geomagnetic force lines L=2.0 -2.2 are loaned into the earth's crust. Surprisingly, all of these strong earthquakes occurred only at declining phase of the 11 year solar cycle, while were absent at ascending phase. This result proves an expectation (ii) and can be taken into account for forecasting strong earthquake occurrence in the seismic areas where the crust is riddled with geomagnetic field lines L= $\sim$ 2.0. In conclusion: the results support a modern idea that earthquake occurrence is related to operation of global electric circuit, but more research are required to study this problem in more details.