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A powerful mechanism controlling the temporal performance of earthquake activity

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One can easily demonstrate that earthquake activity in most of the major earthquake zones performs in a systematic way: with respect to the time of day, to seasonal variations of activity and to the long term performance. This phenomenon has not often been considered in scientific studies so far, nevertheless, notes in ancient times indicate already e.g. that in the Mediterranean 'earthquakes seem to happen more frequently at night than during day'(Plinius, 1st century). Later publications dealing with that topic are e.g. from Conrad (1932), Shimshoni (1971), Duma (1996), Duma, Ruzhin (2002), Schekotov et al.(2005), Lipovics (2005). In particular, the first comprehensive study of Conrad indicates the cycles of earthquake activity depending on local time, but Conrad's interpretation efforts which built on several meteorological parameters did not succeed. In the current presentation several examples are shown of the systematic performance of seismic activity in the three time ranges for regions in Europe, Asia and the USA. This even applies to strong earthquake activity with event magnitudes exceeding M6. Such regularities can only result from a powerful and systematic geodynamic mechanism acting on the Earth's lithosphere. A surprising correlation between temporal geomagnetic variations and seismic activity (e.g.Duma, Vilardo 1998) was a first hint at an electromagnetic process, which meanwhile has been modelled and verified, also with respect to the involved energy. The model builds on the mechanic 'Lorentz forces' and torques which are generated by the regularly induced electric ('telluric') currents in the Earth's lithosphere, in presence of the Earth's main magnetic field. The current variations are routinely monitored by geomagnetic observatories. Several results are presented, showing the convincing correlation of magnetic variations and regional seismicity in the three time ranges. Obviously, this 'Magneto-Seismic Effect MSE' acts as a major trigger mechanism for seismic activity.