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# Correlation of earthquake activity and induced Sq-currents along the American continent

**T. LIPOVICS**

**Department of Geophysics, Eötvös Loránd University, Budapest, Hungary (lipo@ludens.elte.hu / Phone: +36-1-2090555 / 1766)**

Earthquakes primarily occur along boundaries of tectonic plates, however, statistical analyses point out that the probability of occurrence highly depends on the geomagnetic latitude of the event location. The daily distribution of seismic events also correlates with the diurnal variations of the geomagnetic field in a number of active regions (Duma and Vilardo, 1998). Moreover, the seasonal variation of earthquake locations plotted against geomagnetic latitude likewise follows the track of the current vortex created by the ionospheric dynamo. These observations reveal that there is a close relationship between the regular diurnal changes of the Earth's magnetic field, the so-called Sq-variations, and the geodynamic process of varying earthquake activity.

Duma and Rhuzin (2003) suggested a model which originated the effect from the interaction between induced Sq-currents and the regional geomagnetic field, and which is able to explain the formation of mechanical stresses within the lithosphere. Nevertheless, the model does not demonstrate reassuringly the arising stress magnitudes needed for earthquake triggering.

A detailed statistical analysis shows the relations of magnetic and seismological catalogue data recorded along the western margin of the North and South American Plates, and the Caribbean Plate. The obtained results reliably confirm the close correlation of induced Sq-currents and regional seismic activity. Furthermore, they shed light on the important role of specific parts of the crust characterized by higher electrical conductivity.