Increase in seismic activity near the footprints of new radiation belts forming after geomagnetic storms

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Recently, attention was drawn [1] that after geomagnetic storms that cause formation of new radiation belts in slot region or in the inner magnetosphere, after about 2 months, there is an increase in seismic activity near the footprints of geomagnetic lines of new radiation belts. More detailed studies showed [2] that on May 30, 1991, an earthquake M=7.0 occurred in Alaska with (54.57N, 161.61E) near the footprint of geomagnetic line L = 2.69 belonging to new radiation belt, which was observed by the CRRES satellite [3] around geomagnetic lines 2<L<3 after geomagnetic storm on March 24, 1991. After geomagnetic storm on September 3, 2012, the Van Allen Probes satellites observed new radiation belt around 3.0≤L≤3.5 [4], and about 2 months later, on October 28, 2012, earthquake M=7.8 occurred off the coast of Canada (52.79N, 132.1W) near the footprint of geomagnetic line L=3.32 belonging to the new radiation belt. Also, Van Allen Probes observed new radiation belt around L=1.5-1.8 after geomagnetic storm on June 23, 2015 [5], and ~2 months later, in September 2015, seismic activity noticeably increased near the footprint of these geomagnetic lines. We consider variations in seismic activity in connection with the strongest geomagnetic storms in 2003 with Dst~ -400 nT (Halloween Storm) and the formation of a belt of relativistic electrons in the inner magnetosphere around L~1.5 existed until the end of 2005 as observed SAMPEX [6]. Analysis of data from the USGS global seismological catalog showed that near the footprint of geomagnetic lines L=1.4-1.6 the number of earthquakes with M≥4.5 increased in 2003-2004 by ~70% compared with their number in two previous years. On the Northern Tien Shan, on December 1, 2003 a strong for the region earthquake M=6.0 occurred on the border of Kazakhstan and China (42.9N, 80.5E) near the footprint of L = 1.63, adjacent to the new radiation belt.