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The ponderomotive impact of the global seismicity on the magnetospheric Pc1 wave activity

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ULF electromagnetic waves in the magnetosphere are exited due to plasma instabilities. We focus our attention on the Pc1 pearl-type waves in the frequency range of 1 Hz. The observation of Pc1 is a rich source of exciting problems. Specifically, it has been noted that the Pc1 waves correlate with some jerks, that is with the impulsive processes of the celestial and terrestrial origin, for example, with the interplanetary shock fronts, with the magnetospheric injections of particles, with the switching of electric devices, etceteras. The ground based observations testify that sometimes pearls show signs of unexpected relation with the earthquakes. If so, we have the curious difficult problems associated with the interaction between the lithosphere and magnetosphere. The hypothesis of ponderomotive earthquakes impact on the conditions of Pc1 wave propagation predicts an inverse relation between the global seismicity and Pc1 number occurrence. Our report describes the analysis of ground-based long-term observations for checking this prediction. The result of statistical investigation does not contradict our hypothesis. The scenario describing the possible mechanism of relation of the Pc1 waves to earthquakes is presented. The work was supported by grant RFBR 09-05-00048.