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Spectral characteristics of the near-Earth electromagnetic field during the Space Weather events

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The paper investigates the coupling of the solar wind to the ground geo-electromagnetic field and to the geomagnetically induced currents (GIC) in power systems and pipelines. We examined the spectral characteristics of the interplanetary magnetic field (from ACE satellite), the magnetic field in the inner magnetosphere (from GOES and Oersted satellites), the ground magnetic and electric field (from ground magnetic and GIC stations in Canada and USA). The sonograms produced show the time dependence of the spectral density during the most disturbed times of recent Space Weather events. While the solar wind demonstrated relatively low wave activity in the frequency above 2 mHz, the effects of the Earth as a high pass filter increased the high frequency part of spectrum in ground electromagnetic field. More detailed results of the analysis will be discussed in the paper.