Exploration of the Possible Relationship between Magnetic Pulsations and Earthquakes

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The sun is the main source of energy to the solar system, and it plays a major role in affecting the ionosphere, atmosphere and the earth surface. The connection between solar wind and the ground magnetic pulsations has been proven empirically by several researchers previously. In our preliminary statistical analysis on relationship between solar and seismic activities, we observed a high possibility of solar-terrestrial coupling. However a clear coupling mechanism was not established yet. To connect the solar impact on seismicity, we investigate the possibility of ground magnetic pulsations as one of the connecting agent. In our analysis, the recorded ground magnetic pulsations are analyzed at different ranges of ultra low frequency; Pc3 (22-100 mHz), Pc4 (6.7-22 mHz) and Pc5 (1.7-6.7 mHz) with the occurrence of local earthquake events at certain time periods. This analysis focuses at 2 different regions; north Japan (mid latitude) and north Sumatera, Indonesia (low latitude). The Pc3-Pc5 magnetic pulsations data were extracted from Magnetic Data Acquisition System (MAGDAS)/Circum Pan Magnetic Network (CPMN) located at Ashibetsu (Japan) and Langkawi (Malaysia). From the results, we observed significant correlations between ground magnetic pulsations, solar wind speed and shallow depth earthquakes epicenter. The details of the analysis will be discussed in the presentation.

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