



Electromagnetic emissions and fine structures observed near main ionospheric trough during geomagnetic storms and their interactions

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Geomagnetic conditions triggered by the solar activity affect the ionosphere, its fine and global structures. Very intense magnetic storms substantially change the plasma density, concentration and circulation. Especially sensitive region is located near auroral oval, where most energy is deposited during geomagnetic storms. In this region and just below it, where the main ionospheric trough is located, we observe enhanced electromagnetic emissions in different frequency ranges. In particular the AKR-like (Auroral Kilometric Radiation) emissions are seen at frequencies of the order of hundreds of kHz in the ionosphere, just below the auroral oval. Analyzing spectrograms from DEMETER mission and comparing them with electron density measurements from DEMETER, we found that AKR-like emissions are seen near poleward wall of the main ionospheric trough, during geomagnetic storms. Main ionospheric trough is known as a turbulent region which properties change as the geomagnetic storm evolves. This work is an attempt to determine how the presence of the different emissions affect main ionospheric trough parameters such as location, width and depth. Data used in this study come from DEMETER and RELEC missions.

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