

البحث السادس

Title

Multi-space observations of the storm sudden commencement (September 2017) and its effect on the geomagnetic field

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English Abstract

The present study describes the results of the magnetic field perturbations associated with the storm sudden commencement (SSC) during the geomagnetic storm in September 2017, and the shock-induced electron depletions in geosynchronous orbit. Multi-space observations were detected by ten various satellites with different orbits at distinct locations with a comprehensive view inside the magnetosphere. Magnetospheric Multiscale (MMS1) satellite is the only equipment that observed the SSC waveform as a sharp peak inside the daytime plasmasphere. Depending on SSC events of this storm, the largest ΔB_H amplitude for SSC was at different satellite locations in the local noon sector (MLT = 11–15) and at L-shell values from 2 to 11 R_E . The L-shell value has almost a linear relation with the delay time of the SSC onset and a reverse one with the ΔB_H amplitude at the nightside. The dominated rise time value is 2 min at nightside. IP shocks of SSC events during this storm generate shock-induced relativistic electron depletions.