

Geomagnetic sudden commencements (SCs) observed by low altitudes satellites

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The amplitude and waveform of geomagnetic sudden commencements (SCs) show a complex global distribution depending upon local time and latitude. This is because the disturbance field of SCs is produced by transient electric currents flowing in the wide range from the magnetopause to the earth's interior. Each current behaves differently during SC. We can say that the study of the SC is to identify the behavior of each source current separately from the combined magnetic field observed on the ground and in the magnetosphere. Among them the ionospheric currents are important because they play important roles to produce the complex global distribution of the amplitude and waveform. We need a simultaneous magnetic observation above and below the ionosphere in order to detect an ionospheric current. So far it was possible only by observations by MAGSAT which flew from November 1979 to May 1980. Now data are available from observations of OERSTED (launched to the orbit of altitude 640-850km in February, 1999.) and CHAMP (450km, July, 2000). Here we report the initial results of an SC analysis using data of both satellites.