

Electromagnetic waves observed by DEMETER during sustained magnetic activity

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Abstract

DEMETER is a low orbiting satellite (660 km) which was operating for more than six years to study ionospheric perturbations in relation with seismic and anthropogenic activities. For this purpose, it recorded wave and plasma parameters all around the Earth (except in the auroral zones) at two different local times (10.30 and 22.30 LT). This paper will present an overview of the electromagnetic waves observed during sustained magnetic activity, and then enhanced by a wave-particle interaction. Many different waves have been observed. It includes: - strange MLR (Magnetospheric Line Radiation) which have frequency lines close to the PLHR (Power Line Harmonic Radiation) at the harmonics of 50 (60) Hz but which are drifting in frequency, - waves such as hiss, chorus, QP (Quasi Periodic) emissions, triggered emissions, EMIC (ElectroMagnetic Ion Cyclotron) waves in the equatorial region, - emissions at the lower hybrid frequency, and - specific waves recorded during very intense magnetic activities or in particular regions (SAA, sub-auroral zones).