

JAXA 衛星による放射線帯電子の観測

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ENERGETIC ELECTRON DYNAMICS IN THE RADIATION BELTS INFERRED FROM JAXA SATELLITE OBSERVATIONS

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In order to investigate space radiation environment and its temporal variation, JAXA has been installing radiation particle detectors on LEO satellites (GOSAT, ALOS, Jason-2), GEO satellites (ETS-V, DRTS), GTO satellites (ETS-VI, MSD-1) and Quasi zenith orbiting satellite (QZS-1). With these radiation particle data, some distinguished sciences of energetic electrons have been obtained. Intensity of highly energetic (MeV) electrons in the outer radiation belt increases drastically during the magnetic storms in a very wide region from L^3 to L^8 . Increase of MeV electrons in the outer radiation belt (L^3 to L^8) seems to be controlled by solar wind velocity as well as magnetic activities. Seasonal variation of the increase in the intensity of MeV electrons was found with peaks of spring and autumn. This is understood as Russell-McPherron effect. With these relations, we have constructed an advanced (dynamic) outer radiation belt model, and compared it with observations. Strong injection or transportation of intermediate energy (40-100keV) electrons from the plasmashet into the heart of outer radiation zone (L^4) was identified during the major and big storms. These intermediate energy electrons should be seeds of highly energetic (MeV) electrons in the outer radiation belt. This means that seed electrons should be accelerated internally in the outer radiation zone via wave particle interaction. It was also found that MeV electrons as well as intermediate energy (40-100keV) electrons penetrate into the inner radiation belt across the slot region. We newly found that inner radiation belt is also dynamic in time and in space. We will make comparison with simulation results to interpret observations.