

Relativistic electron losses in the outer radiation belts

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Relativistic electrons in the magnetosphere are both energized and lost via their interaction with plasma waves such as whister chorus, plasmaspheric hiss and EMIC waves. These waves are usually localized in different regions of the magnetosphere as well as being located either inside or outside the plasmopause.

We study relativistic electron losses in the outer radiation belts by chartacterzing decay times scales at low and high altitudes and their relationship to microbursts.

We use data collected by SAMPEX, a low Earth orbiting spacecraft in a highly inclined polar orbit and the HEO spacecraft in a high altitude Molniya orbit. The sensors onboard these spacecraft measure electrons of energies > 0.6 MeV, > 1 MeV, > 3 MeV, 2-6 MeV, 3-16 MeV.

High time resolution data enable identifying and characterizing electron microbursts observed at low altitudes.