Geophysical Research Abstracts
Vol. 14, EGU2012-4349, 2012
EGU General Assembly 2012
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Characterizing statistically the near Earth plasmasheet using NPOES and THEMIS data to improve radiation belts modelling

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Radiation belts can be considered as an open-system whose population is fed by external sources. For trapped electrons and protons of energies below a few MeV, plasmasheet injections constitute the main seed population. Acceleration processes inside radiation belts will diffuse plasmasheet population to inner regions and energize them.

A statistical survey has been conducted using NPOES and THEMIS data in order to characterize near Earth plasmasheet according to geomagnetic activity parameters, radial distance and magnetic local time. Interesting features have been highlighted, in particular the unexpected good correlation between low-orbit and equatorial measurements. Such works constitute advances for a better radiation belts modelling. In particular, even if THEMIS spacecrafts are currently measuring really quiet geomagnetic activity since their launches, these statistical results highlight their great potentiality in improving our knowledge on radiation belts trapping processes.