



Analysis of the NOAA-POES proton radiation belt measurements.

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The measurements of the different energetic detectors on board the NOAA-POES satellites are of paramount importance for proton radiation belt modelling as they cover the energy range from 50keV up to 70 MeV (quasi continuously) during the period November 1978 to present (2.5 solar cycles). Moreover, as the satellites are low altitude (around 830km) sun synchronous, they cover a large range of the McIlwain L parameter, including the South Atlantic Anomaly up to large L values where magnetic disruptions take place. In this analysis, we wanted to clearly distinguish several effects which contribute to the observed variations:

- effects due to the satellite orbit (local time, altitude),
- effects due to the detector (contamination, ageing, looking direction),
- effects due the analysis (problems in the calculation of the magnetic coordinates),
- effects due to the physics (including effects related to the atmosphere, to the drift of the magnetic field, to magnetic activity, to Solar cycle).

To do that, we have constructed monthly cartography of the flux, and analysed their variations as a function of time. Several points will be discussed:

- the equatorial band of low energy protons (up to around 1MeV),
- the two radiation belts of low energy protons (up to 5 MeV),

- the effect of strong magnetic field events, even in the South Atlantic Anomaly region,
- the dissymmetry of the South Atlantic Anomaly.