Long-term Behavior of energetic Particle Fluxes at low L-shells and Their Relation to the South Atlantic Anomaly

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A recent study by Asikainen and Mursula (2005) showed that, at least during great magnetic storms, the South Atlantic Anomaly (SAA) can reduce the eastward drift speed of energetic electrons at low invariant latitudes, leading to their effective trapping within the SAA region. Here we study energetic particle fluxes observed within the SAA region during a period of a few months using data from the low-altitude NOAA-15 and 16 satellites. Observations by these two spacecraft can yield long-term measurements of energetic particle fluxes at four different local time sectors. We will discuss the time development and local time dependence of energetic electron and proton fluxes inside and outside of the SAA region. Moreover, we will study the dependence of these fluxes on global geomagnetic activity (measured by the Kp index) and the ring current intensity (Dst/Dcx index). We will study, e.g., if the trapping of energetic electrons within the SAA only occurs during great magnetic storms or if it is a more general feature of the SAA region.

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