

ENERGETIC ELECTRON PRECIPITATION AT THE SOUTH ATLANTIC
MAGNETIC ANOMALY: A REVIEW

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ABSTRACT

The South Atlantic Magnetic Anomaly (SAMA) has been recognized as a major sink for the trapped electrons of the radiation belts for more than 25 years. The first experimental evidence on the presence of enhanced energetic radiation in the anomaly region was provided from measurements carried out on board the Sputnik V satellite. Later on there has been considerable experimental and theoretical effort in order to understand the energetic particle precipitation in the SAMA region, as well as their ionospheric and aeronomic associated effects. The purpose of this paper is to review the literature dealing with energetic electron precipitation (or EEP for short), namely, electrons precipitating with energies greater than approximately 100 keV, in the SAMA region after 1975. The aim of this review is to provide a concise picture of the driving mechanisms that cause energetic electrons to precipitate in the atmosphere. In the last years several mechanisms for precipitating energetic electrons have been suggested, involving, in general, a type of wave-particle interaction. As a result, the status of knowledge about EEP in the SAMA region indicates a quite dynamical process, resulting from the combination of various mechanisms. However, the importance of them remains still not well understood.