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STUDY AND MONITORING OF THE SOUTH ATLANTIC ANOMALY, USING FASAT CHARLIE'S MAGNETOMETER

Abstract

The Chilean Earth Observation Satellite, FASat Charlie, has been operative since December 2011. To fulfill their mission, the satellite FASat Charlie use several sensors and actuators, including a magnetometer. These sensors are used mainly by the satellite pointing process. In this information age, new data and studies are required in order to create new knowledge and tools that can be daily used. Considering this scenario, an electromagnetic field analysis was performed with FASat Charlie's magnetometer, specifically for the South Atlantic Anomaly. The main purpose of this study was to geolocalize measurements of Earth's magnetic field and plot them. After this, a comparison with differents international models of the Earth magnetic field was done in order to check the precission of the measurements. An important analysis of this research is to observe how the South Atlantic Anomaly has been changing over time. The latter was effectively analyzed by comparing differences between measurements with high precision instruments (as principal payload) and plataform equipment (which are less precise). A secondary scope of study seeked to delve into the structuring of satellite telemetry data, leading to future studies and applications of artificial intelligence and machine learning models.