Comparative studies between linear-core fluxgate magnetometer and ring-core fluxgate magnetometer data record in the South Atlantic Magnetic Anomaly region

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Abstract: The investigation of the Earth's Geomagnetic Field variations provide very important information about the Magnetosphere, the Earth/Sun interaction, as well as events occurring in the Ionosphere which can, for instance, generate disturbances in telecommunications, induce currents in small satellites circuits and also induce currents in power lines or in oil/gas tubes in Earth surface. In the area where it is observed the smallest intensity of the Earth's magnetic field, the South Atlantic Magnetic Anomaly - SAMA, the effects of geomagnetic storms are increased due the occurrence of charged particle precipitations during strong events like geomagnetic storms. To study the behavior and the geomagnetic processes in the SAMA's region it has been tested a linear-core fluxgate magnetometer and also a ring-core fluxgate magnetometer developed at the Southern Regional Space Research Center - CRS/CIE/INPE-MCT in the south of Brazil. This paper has the intention to compare the two electronic circuits used in each sensor and show some preliminary data and conclusions about experiments performed at the Southern Space Observatory - SSO/CRS/INPE - MCT (29°S, 53°W), Sao Martinho da Serra, RS, which is located near the center of the SAMA in South of Brazil.

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