GEOMAGNETIC INVESTIGATIONS IN THE EQUATORIAL ELECTROJET REGION-NE BRAZIL

by

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ABSTRACT

The Department of Geophysics and Aeronomy (DGA) of INPE plans to record geomagnetic daily variations in H, D, and Z components, simultaneously at about 15 to 20 stations on a profile perpendicular to both the magnetic equator and strike direction of geologic structures of the region. The proposed profile lies roughly on a line joining Alcantara (2.31°S, 45.4°W, dip 4°), Teresina (5.06°S, 42.83°W, dip -3.5°) and Valença do Piaui (8°S, 41°W, dip 12°). The instruments chosen for the operation a low power fluxgate magnetometer and a 12 bit precision digital data logger are already constructed in the laboratories of INPE. The prototypes are found satisfactory and it remains to construct more units before the period of its simultaneous operation in 1990. The project aims to study source fields of the equatorial electrojet (EEJ) in the ionosphere as well as the geoelectric structures present in the deep solid earth. Previous studies at INPE have indicated that equatorial electrojet (EEJ) currents in NE Brazil exhibit certain features different from those observed in Peru (Kane and Trivedi, 1980, 1982, 1985). The latitudinal distribution of EEJ and interaction of neutral winds with ionized winds moving across the varying direction of N-S horizontal geomagnetic field in NE Brazil need to be examined. Besides the profile starts in the São Luiz Craton in the north, runs across the

Parnaiba sedimentary basin and mobile belts related to Brasiliano Event (900-550 Ma) and terminates on São Francisco Craton in the south. Hence the information on geoelectric structures will be of interest.