

ON THE TERMS OF GEOMAGNETIC DAILY VARIATION IN ANTARCTICA

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The target of this work is to investigate the nature of magnetic perturbations produced by ionospheric and magnetospheric currents as recorded at high-latitude geomagnetic stations. In particular, we investigate the effects of these currents on geomagnetic data recorded in Antarctica. To this purpose we apply a mathematical method, known as Natural Orthogonal Composition, to analyze the magnetic field disturbances along the three geomagnetic field elements (X, Y and Z) recorded at Mario Zucchelli Station (IAGA code TNB; geographic coordinates: 74.7°S, 164.1°E) from 1995 to 1998. Using this type of analysis, we characterize the dominant modes of the geomagnetic field daily variability through a set of empirical orthogonal functions (EOFs). While such mathematically independent EOFs do not necessarily represent physically independent modes of variability, we find that some of them are actually related to well known current patterns located at high latitudes.

Time variation, Polar cap phenomena, Solar wind-magnetosphere interactions

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