

Features of the Night-Time F-Region Currents over Equatorial Africa.

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Abstract

In this paper, we present the features of the equatorial F-region current systems over equatorial Africa during nighttime on 05th August, 2001 observed at midnight. The observations have been inferred from in situ CHAMP satellite measurements of the vector magnetic field. The magnitudes of the current along all the three magnetic field components of the Earth's magnetic field varied considerably. The B_x-component recorded a diamagnetic effect of about 8 nT, B_y-component recorded a current density of 5 mA/m, and B_z-component reached a value of 3 mA/m. The F-region dynamo, gravity dynamo and plasma-pressure gradients are the possible mechanisms for the occurrence of these currents. The signatures are confined to the equatorial region bounded by the Appleton anomaly.

Keywords: Ionosphere, Equatorial ionosphere, ionospheric current systems, magnetic field.

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