

# **ELECTROMAGNETIC INDUCTION IN THE EQUATORIAL ELECTROJET REGION: MORPHOLOGICAL FEATURES OF THE TRANSIENT VARIATIONS OF THE EARTH' ELECTROMAGNETIC FIELD IN WEST AFRICA LONGITUDES**

K. Boka <sup>a</sup>, M. Menvielle <sup>b</sup>, V. DOUMBIA <sup>a</sup>, C. Amory-Mazaudier <sup>b</sup>, E. Guisso <sup>a</sup>, P. Vila <sup>b</sup>, A. T. Koba <sup>a</sup>, J. Vassal <sup>c</sup> and A. S. Achy <sup>a</sup>

<sup>a</sup> Laboratoire de Physique de l'Atmosphère, Université de Cocody, BP 582 Abidjan 22, Côte d'Ivoire

<sup>b</sup> Centre d'étude des Environnements Terrestre et Planétaires, (CETP/IPSL; UMR CNRS/UVSQ), 4 Avenue de Neptune, 94107 Saint-Maur-des-Fossés, France

<sup>c</sup> IRD, LGI (Institut Français de Recherche pour le Développement et la coopération scientifique, Laboratoire de Géodynamique Interne) 32 rue Henri Varagnat F 93143, Bondy, France

We present in this paper the results of magnetic and telluric data recorded for the first time along a North-South chain of ten regularly spaced stations to investigate the induced effects of the Equatorial Electrojet (EEJ) and /or those of its associated current systems. Magnetic quiet days were selected by means of a criterion on the daily values ( $A_m$ ) of the am planetary magnetic activity index ( $A_m \leq 25$  nT).

The magnetic field variations observed at the network of the stations during periods of magnetic quietness almost consist in the so-called Equatorial Electrojet magnetic variations. Although the features of the telluric potential (field) depend on the geological structures and on magnetic activity conditions, it was found that the ratio of the two first coefficients of Fourier expansion could be used to study its seasonal and latitudinal variations. The N-S component presents a maximum at the magnetic equator (Sikasso) and decreases when the station is far from it. As far as the E-W is concerned, the ratio  $c_1/c_2$  is higher in North than in the South of the equator. The amplitude of E-W component is almost the double of that of the N-S component. The amplitude of the telluric potential corresponding to morning equatorial counter-electrojet days was found to be weaker than that of EEJ days. Although this difference could be associated with ionospheric sources, it is found to be poorly correlated with the EEJ.

Equatorial electrojet, telluric potential, electromagnetic induction, electric field