

Accepted Manuscript

Magnetic holes observed in the ring current region near the equatorial plane

V.V. Vovchenko, E.E. Antonova, M. Stepanova

PII: S1364-6826(17)30216-X

DOI: [10.1016/j.jastp.2017.08.024](https://doi.org/10.1016/j.jastp.2017.08.024)

Reference: ATP 4672

To appear in: *Journal of Atmospheric and Solar-Terrestrial Physics*

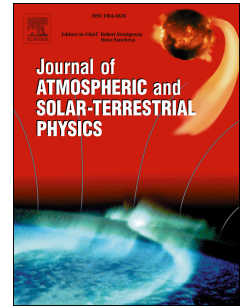
Received Date: 5 April 2017

Revised Date: 17 July 2017

Accepted Date: 18 August 2017

Please cite this article as: Vovchenko, V.V., Antonova, E.E., Stepanova, M., Magnetic holes observed in the ring current region near the equatorial plane, *Journal of Atmospheric and Solar-Terrestrial Physics* (2017), doi: 10.1016/j.jastp.2017.08.024.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Magnetic holes observed in the ring current region near the equatorial plane

V. V. Vovchenko^a, E. E. Antonova^{b,a,*}, M. Stepanova^{c,*}

^a*Space Research Institute RAS, Moscow, Russia*

^b*Skobeltsyn Institute of Nuclear Physics, Lomonosov Moscow State University, Moscow 119991, Russia*

^c*Physics Department, Universidad de Santiago de Chile (USACH)*

Abstract

There is little knowledge about the appearance of local reductions of the magnetic field at the equatorial plane in the inner magnetosphere. Using data from the AMPTE/CCE satellite inside the ring current region, we studied local reductions of the B_z component of the geomagnetic field, which were followed by subsequent enhancements, as a function of geocentric distance. We selected 102 comparatively large-scale and quasi-stable reduction/enhancement events and obtained their radial and magnetic local time (MLT) distribution. We find that these structures are observed for all MLT in the ring current region. Moreover, the probability to observe reduction/enhancement structures increases with the increase of geomagnetic activity, as measured by the Dst, AE, and PC indexes, and with the increase of the interplanetary magnetic field B_z component and the solar wind velocity. Detailed analyses of some of the events show that reduction/enhancement structures might be caused by diamagnetic effects due to local quasi-stationary enhancements of plasma pressure, which are observed to develop simultaneously with the magnetic depressions.

Keywords: inner magnetosphere, magnetic field depression, plasma pressure, geomagnetic effect

*Corresponding author

Email addresses: elizaveta.antonova@gmail.com (E. E. Antonova), marina.stepanova@usach.cl (M. Stepanova)

Download English Version:

<https://daneshyari.com/en/article/8955792>

Download Persian Version:

<https://daneshyari.com/article/8955792>

[Daneshyari.com](https://daneshyari.com)