

ANALYSIS OF THE EXTERNAL PART OF VERTICAL GEOMAGNETIC COMPONENT VARIATIONS (Z) RECORDED IN EUROPEAN INTERMAGNET OBSERVATORIES

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Variations of geomagnetic components X, Y, and Z recorded in 20 Intermagnet European observatories in 2004 were analysed. The data were subject to preliminary processing, i.e., periods longer than three hours were filtered out, and separation of component Z into external and internal parts was made. In our study we applied the previously introduced index η , which is a measure of deviation from planarity of a wave incident on the Earth's surface. Maps were created of the surface distribution of this parameter for the area of Europe at selected time periods, and changes of this distribution were monitored.

Also, the time changes of coefficient η for selected observatories are presented and compared with the values of two ionospheric parameters (critical frequency and the E layer height) obtained from measurements of a nearby ionosonde. Moreover, we discuss the very interesting phenomenon we discovered, that has never been described in geophysical literature. Namely, in the recordings of all the observatories we noticed the presence of very regular variations, observed almost exclusively in the vertical component Z, which is quite unusual. These regular variations occur in the form of sinusoidal "wave packets", whose amplitude does not exceed 10 nT and the period is of about 7200 s.

index η , external Z

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