Geophysical Research Abstracts
Vol. 16, EGU2014-11550-1, 2014
EGU General Assembly 2014

The disturbed geomagnetic field at European observatories. Sources and significance

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The disturbed geomagnetic field recorded at Earth's surface is given by the effects of electric current systems in the magnetosphere and ionosphere, as a result of the interaction of geomagnetic field with the solar wind and the interplanetary magnetic field.
In this paper the geomagnetic disturbance recorded at European observatories has been investigated as regards its sources, for the time interval August 1-10, 2010, in which a moderate storm (Dstmin= –70 nT) occurred (August 3-4). The disturbance has been evidenced against the solar quiet daily variation, for each of the 29 observatories with minute data in the mentioned time interval. Data have been downloaded from the INTERMAGNET web page. The contribution of the magnetospheric ring current and of the auroral electrojet to the observed disturbance field in the X, Z, and D geomagnetic elements is discussed and the corresponding geographical distribution is presented.