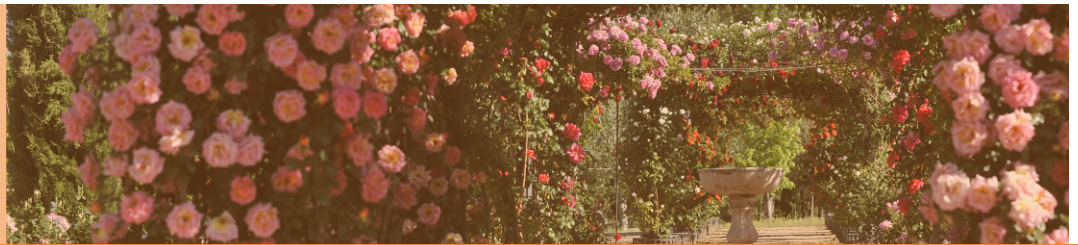




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**RISK MANAGEMENT OF THE EFFECTS OF SOLAR ACTIVITY: DEVICE AND PROCEDURE OF OBTAINING IN REAL TIME AND HIGH RESOLUTION, THE LOCAL GEOMAGNETIC DISTURBANCE AT MIDDLE LATITUDES**

**Patent**

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**Code**

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**Application areas**

- Information and Communication Technologies
- Industrial Manufacture, Material and Transport technologies
- Energy, Physical and Exact Sciences
- Environment and risk prevention

**Type of Collaboration**

- Technical cooperation
- Commercial agreement and
- Technical assistance
- License agreement

**Main Researchers**

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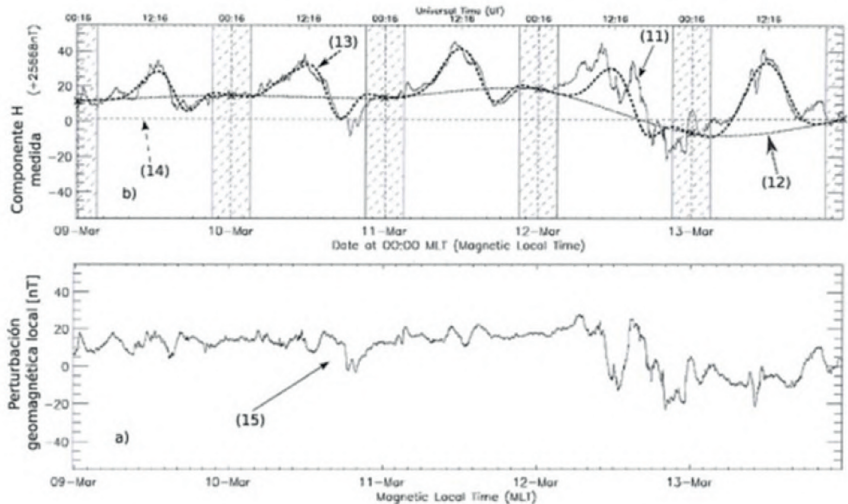
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**ABSTRACT**

Device and procedure that, based on the measurement of the local geomagnetic field, is able to estimate the magnetic disturbance component associated with solar activity at middle latitudes. The determination of the magnetic disturbance component is especially relevant in cases of sporadic but explosive solar phenomena. The present invention describes a method and device capable of obtaining the local geomagnetic disturbance component at medium latitudes in real time and high precision (1 minute). The geomagnetic disturbance is obtained by removing different components of undisturbed geomagnetic field from the magnetic field measured on the earth's surface (solving the problems existing in the prior state of the art). In the invention, a day model in magnetic calm at medium latitudes is described for the horizontal component of the geomagnetic field. The procedure implies the characterization of a day of magnetic calm or disturbed day by evaluating the goodness of the fit of the invented model to the measured data of the horizontal component of total magnetic field, once subtracted an auxiliary curve of tendency of the night values.

**ADVANTAGES AND INNOVATIONS**

From the perspective of the actual user, the present invention constitutes an essential element in the risk management of the effects of solar activity on vulnerable technologies, both ground-based and satellite-based (electric power, rail transport, terrestrial and positioning navigation systems, radio and satellite communication systems ...), increasing the capacities of public administrations, civil protection and emergencies and the companies themselves, in order to prepare a successful strategy for adverse conditions related to the solar activity. The innovative character of the present invention is made possible by the application of a day model in magnetic calm at midlatitudes. At this latitude the regular magnetic variation (one day), associated with the current system generated by the solar radiation received in the illuminated zone on Earth, presents great variability and is difficult to obtain. The model invented to determine the daily geomagnetic variation, differentiates two types of points: (a) fixed to zero intensity, in the hours of night, and (b) free in intensity, for the hours of day.