



Geomagnetic observatory characteristic curves: a new tool to identify the geomagnetic nature of observatory stations and revealing anomalies related to earthquakes

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A new method to reduce the environmental noise from geomagnetic observatory data has been introduced in this study, to show the anomalies related to earthquake occurrence. The method is based on plotting different components of the magnetic field in specific time intervals in the same 24 hours frame, repeatedly. Assigning a mathematical polynomial to this curve will help us to find the characteristic behavior of the magnetic field components in the station. Then we reduce the values of the obtained characteristic curve form geomagnetic data by using the smoothed polynomial to reveal the anomalies, comparatively with less environmental noise. So the possible weak anomalies related to earthquakes will be shown. The characteristic curves obtained for each station can be employed as a new tool to determine the geomagnetic nature of the observatory stations. In combination with field geologic and tectonic studies, this kind of information can lead us to a new understanding of the geomagnetic field variation in the earth's environment. The method has been tested successfully in various stations. We consider several geomagnetic observatory data sets, obtained from SPIDR (space physics interactive data source) and the correlation of geomagnetic anomalies revealed after these processing steps, with earthquakes in each area are shown.