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Geoscientific Instrumentation Methods and Data Systems Discussions

Interactive comment on "Continuous wavelet transform and the Euler deconvolution method and their application to magnetic field data of Jharia coal field, India" *by* Arvind Singh and Upendra Kumar Singh

Anonymous Referee #2

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Authors have applied Continuous Wavelet Transform (CWT) and Euler Deconvolution Methods EDM) to magnetic data of Jharia Coalfield, India. At the outset, they tested CWT methods on the synthetic data which is important to have confidence in the used methodology. The Abstract is written very poorly. The best way is to divide it into abstract and introduction. The Abstract should be self-explanatory covering the objective, method employed, summary of the results and principal conclusion (Day and Gastel, 2006). The abstract read more often than the whole paper and generally do not contain references. "References to the literature must not be cited in the Abstract (except in rare instances, such as modification of a previously published method" (Day

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Discussion paper

and Gastel,2006). Very vague or general statements not supported by the study may be avoided: “Prepared magnetic anomaly map that reflects clear tectonics control and nature of the underlying basement, demarcation of the basin, geological faults by steep gradients of magnetic anomaly”. The original paper dealing with magnetic data is provided as Verma et al. (1979). I looked in this paper and found that this paper deals only with gravity data of the region.Therefore, it is difficult to check the quality of data and its suitability for obtaining shallow and deep information. All the necessary corrections might be applied in the original paper. Therefore, I do not agree with the statement at line 82 in the manuscript. Authors should say either they have digitized the original data or processed the raw data. “Obviously the anomaly map reflects the sediments have been highly folded and faulted and coal seams have been highly deformed” is difficult to quantify from the anomaly map presented by the authors. A reference may be provided for the “Barakar seriesproduces the best quality coal in India”.

The methodology portion may be presented in an easy and implementable way.

The section 4. Modeling and Inversion of Gravity and Magnetic data: Joint inversion is not presented in the present study. Therefore, it is not necessary to write a page on this topic. Authors have used information from their published results from gravity data and borehole data for forwarding modeling of the magnetic anomaly. It is difficult to judge the variation between fitted and obtained depth values using CWT and EDM methods. It will be better to present such variation in Table. The methodology part may be presented in an easy and implementable way. The result and discussion part should be separated. Figure captions for forwarding modeling may be extended. I struggled for finding the depth values used for forwarding modeling since these are different than obtained from the magnetic data. Fig. 16 mentioned in the conclusion is not found. The number of figures may be reduced.

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