

Interactive comment on “Application of particle swarm optimization for gravity inversion of 2.5-D sedimentary basins using variable density contrast” by Kunal Kishore Singh and Upendra Kumar Singh

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Reviewed to article “Application of particle swarm optimization for gravity inversion of 2.5-D sedimentary basins using variable density contrast” (authors Kunal Kishore Singh and Upendra Kumar Singh)

Determination of the depth of the sedimentary basin is an important factor in the study of geology at the deep structure of the upper part of the Earth's crust. In connection with this article that is interesting and relevant. The scientific basis is clear and substantiated. The results can be used. I think that the article can be recommended for

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publication. Nevertheless, there are some comments, which the authors will be able to correct, without any difficulty. 1) In the abstract the authors write: “The PSO results are better than the results obtained by Marquardt method...” But, in Figures 4, 5, 6, 7, 9 the depth determination PSO fully consistent depth of Marquardt. I think in the abstract authors should write: “The PSO results are better correlated with results obtained by Marquardt method and the borehole information.” 2) Equation (2) well-known, it cannot be attributed to Chakravarthi and Sundararajan (2006). It is advisable to write the following way: Line 58- The gravity effect of lith prism is given as... Line 62- Finally, after integration by Chakravarthi and Sundararajan (2006), Equation (2) becomes... 3) Line 169- It is advisable to write the following way: “... samples and provide more geological viable.” 4) Figure 8. Residual bouguer gravity anomaly map of Godavari sub-basin (modified after Chakravarthi and Sundararajan, 2005) and gravity anomaly profile taken for study. But in Figure 8 profile is not visible! Or draw a profile in Figure 8 or remove the phrase “... and gravity anomaly profile taken for study.”

My wish: 1. Of course density with depth does not vary according to the parabolic law, but rather changes abruptly (varies jumpwise). In the future, the authors might consider this position. 2. You can view the article: “The deep structure of Yevlakh-Agjabedi depression of Azerbaijan on the gravity-magnetometer investigations”, V.G.Gadirov, K.V.Gadirov, A.R.Gamidova, Lvov, Geodynamics, 1(20)/2016, pp. 133-143,

With respect Dr. V.G.Gadirov

Please also note the supplement to this comment:

<http://www.geosci-instrum-method-data-syst-discuss.net/gi-2016-10/gi-2016-10-RC2-supplement.pdf>