Solid Earth Discussions

Solid Earth Discuss., referee comment RC1
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Comments on se-2021-108

Anonymous Referee #1

Referee comment on "Rare earth elements associated with carbonatite–alkaline complexes in western Rajasthan, India: exploration targeting at regional scale" by Malcolm Aranha et al., Solid Earth Discuss., https://doi.org/10.5194/se-2021-108-RC1, 2021

General Comments:

This is a thorough and detailed study. The main strength of the study is the rigorous approach towards identifying all the relevant features from various datasets. However, such a data pre-processing workflow could also add artifacts or cause identification of same features multiple times. Given the lack of Figures representing input data or the final identified features, it is difficult to understand and relate geophysical signals to the extracted features.

The scale and resolution of the primary data is quite wide-ranging, therefore one question that arises is how these were integrated together while maintaining adequate balance between extracting information from the datasets but at the same time keeping a non-subjective and quantitative check on introduction of stochastic uncertainties. Data inconsistencies is a common issue in prospectivity mapping studies, but here there seems to be one-to-two-orders of differences in the spatial resolution of the input datasets, so the magnitude of artifacts could easily increase accordingly. Moreover, the spatial resolution of the predictors maps and prospectivity mapping is not provided in the manuscript.

Table 4 contains a lot of repetition and needs to be simplified. The full form of the acronyms used in Table 4 are not provided in the manuscript. Most are standard acronyms such as RTP (Reduced to Pole), but to conform to the norms of scientific writing, as a suggestion, it would be useful to define all the acronyms, either in the table as footnotes or in the text.

Several predictor maps are used more than once in the modelling procedure as shown in Table 5 and Table 6. Will this not increase the influence of such predictor maps in the results? The question is should they be really considered more than once, because

spatially they are the same? From Section 5 it seems that the objective of using three FIS was to progressively reduce the area of exploration, but if large-scale features of a previous FIS are used in the next FIS, then how does this influence the results?

Overall, the research is well-implemented and concisely presented in the manuscript. Results are rationally evaluated and discussed.

Detailed comments: In the attached document.

Please also note the supplement to this comment:
https://se.copernicus.org/preprints/se-2021-108/se-2021-108-RC1-supplement.pdf