

# ***Interactive comment on “High-resolution palaeovalley classification from airborne electromagnetic imaging and deep neural network training using digital elevation model data” by Zhenjiao Jiang et al.***

## **Anonymous Referee #1**

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This paper describes a machine learning technique for analyzing airborne EM data. The paper is, in my opinion, a valuable contribution to the task of interpreting large volumes of airborne EM data in a consistent way that honors geological constraints. It is a good example of using techniques from one discipline (image enhancing, machine learning) in another discipline (interpretation of airborne EM data). The authors describe the data and the analysis - techniques used in sufficient detail. They take into account previous work done in the area in which the data is collected, but need to elaborate some more on the applicability of current landscape forms for the

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more ancient, buried forms, as this is critical to the technique used. The evaluation of the results is sufficient, given the scarce detailed independent data that is available (borehole data). It remains a difficult issue to evaluate results of the analysis of large spatial datasets (like airborne EM) with individual boreholes, and I would suggest that the evaluation of the method focusses some more on the geological plausibility of the results. To conclude, I suggest to advise some revisions, as indicated in the annotated pdf, and also take into account the above mentioned issues.

Please also note the supplement to this comment:

<https://www.hydrol-earth-syst-sci-discuss.net/hess-2019-16/hess-2019-16-RC1-supplement.pdf>

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