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Interactive comment on "The enigmatic Zerelia twin-lakes (Thessaly, Central Greece): two potential meteorite impact Craters" *by* V. J. Dietrich et al.

Anonymous Referee #1

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The ms provides mineralogical, geochemical and geophysical information on two adjacent, a few hundred meters wide, circular lakes of suspected impact origin. The study is extensive and detailed. The analysis is relatively balanced (although I object to how the last figure is presented, see annotated pdf). HOWEVER, and I would say unfortunately, a lot of work has been done in vain. Central elements of the analysis have been carried out in a way that renders it less useful/useless for an evaluation of the impact hypothesis; the mineralogical/geochemical study has been done on soils and breccia blocks without clear connection to the genesis of the structure, and the geophysical modeling, to which the geological results are tied, is incomplete to such an extent that it does not provide any useful information on the subsurface structure

of the central parts of the depressions of significance for the evaluation. In addition, too little attention is given to the alternatives, such as calcrete vs. carbonate melt breccia in the mineralogical analysis, and the impact crater shape vs. other geological structures (e.g. karst) in the geophysical modeling (Now it is concluded that it must be bowl-shaped, but the reader is not convinced that a rooted structure wouldn't fit just as well). My detailed comments are given in the attached annotated pdf file. I recommend "reject and resubmit" as I find that the two central parts on which the analysis is based, the so-called "breccias", and the geophysical data are ambiguous and incomplete and would require more data collection beyond a major revision. I repeat that I find it unfortunately, as I think a detailed description of a suspected impact structure deserves to be published even when the result is not conclusive. I wish the authors better luck next time after complementing the study with the missing data and a more thorough comparative analysis. The English language does also need correction, especially the extensive use of long sentences that frequently cause grammatical errors. I have marked some of these places in the annotated pdf file.

Please also note the supplement to this comment:
http://www.solid-earth-discuss.net/5/C586/2013/sed-5-C586-2013-supplement.pdf

Interactive comment on Solid Earth Discuss., 5, 1511, 2013.