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Interactive comment on “Structural evolution of the VMS-hosting Kristineberg area, Sweden – constraints from structural analysis and 3-D-modelling” by P. Skyttä et al.

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Review of the manuscript SE-2012-42 (Solid Earth)

“Structural evolution of the VMS-hosting Kristineberg area, Sweden – Constraints from structural analysis and 3D-modelling” by Skytta et al.

This paper deals with the tectonic evolution of a Palaeoproterozoic district located in the Kristineberg area, characterized by volcanogenic sulphides mineralization. The paper deals with the integration of different datasets to reconstruct the geometrical setting of the main geological bodies, as well as their structural evolution. Although the basic information are given in a well organized paragraphs set, original data aren't so well

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illustrated.

One of the main problem is that the Authors specify in the title “3D-modelling” but the text deals with a 3D-Viewing. In fact, “modelling” implies to make use of precessing, inversion methods, forward processes and so on... Another point is that the Authors refer to MT and reflection seismic investigation but any data dealing with have been presented. In my opinion, the authors have to prepare a paragraph illustrating the main results from MT and seismic investigation. Authors have to better specify which is the contribution of the MT and seismic investigation as data aren't nor described, neither discussed Furthermore, structural data are weak; general information are given but these are presented in inappropriate way: for example, stereographic diagrams are useful tools to analyse the geometry and kinematics of the main structural elements, but any kind of diagram has been presented. In addition, dealing with polyphased deformation affecting metamorphic rocks implies to take in consideration the mineralogical parageneses associated to each deformation, just to reconstruct the P-T evolution and to get an important objective data to discriminate the different tectonic foliations (at least at the microscopic scale). No appropriate information are given on the mineralogical parageneses nor by literature neither original. I suggest to prepare a table making a list of deformational events and associated mineralogical parageneses (at least by literature). Another point is that the paper deals with a volcanogenic massive sulphide mineralization but only general and superficial information are given about this. A more exhaustive description of the minerals, geological context, fluid-rock interaction and so on has to be added at least in a specific sub-paragraph. Finally, more technical information about the 3d (modelling)-viewing (its potentiality and limits for the specific case the authors would like to present) are needed. There are some improper use of the terminology. For example: Skellefte Group stratigraphy; it is better to use: Skellete Group stratigraphic succession, as stratigraphy is the name of a discipline. Supracrustal rocks: what does it means? I think it could be better use: upper crustal rocks

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More in detail:

Introduction: it is too prolix and repetitive in few parts. The authors have to better specify if the presented data are original and/or by literature. This isn't so clear.

Geological setting: It is informative but may be shortened in some parts; there are some repetitions of information given in the introduction.

Methodology: The listed methodologies aren't accompanied by adequate presentation data. For example the MT, the microstructural study (only in part). High resolution reflection seismic profile...

Structural geology: data have to be better illustrated by photographs and stereographic diagrams. Some photographs aren't so clear and in some cases are inappropriate. In my opinion data are presented in unusual way, resembling a thesis and/or a report. Authors have to: i) illustrate the geometrical setting of the main geological bodies; ii) describe the map-scale and outcrop-scale structures; iii) describe the microstructural setting integrated with the study on the relationships between microstructures and mineralogical parageneses.

Discussion and Conclusion: these paragraphs have to be better focused on the integration of data from the whole illustrated methodologies (geophysical and geological).

This paper is a potential good paper but needs to be improved. I hope that my suggestions and criticisms could be useful to the authors to do it.

Best regards,

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