

Interactive comment on “Reverse time migration (RTM) imaging of iron-oxide deposits in the Ludvika mining area, Sweden” by Yinshuai Ding and Alireza Malehmir

Anonymous Referee #1

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The review for “Reverse time migration (RTM) imaging of iron-oxide deposits in the Ludvika mining area, Sweden”

The authors presented an interesting case study with application of Reverse Time Migration which has been rarely practiced in the hard rock environment. The study provides some clues for those would like to test/improve the method for mineral exploration.

In Figure 2, the authors show their processing flow. Why they did not applied deconvolution to remove seismic source effect. Normally, deconvolution is a crucial step in hard rock environment. The authors need to address if they applied it and if not then

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why? Is it crucial to preserve the seismic source signature in the shot gathers when RTM is applied?

In Step 4 offset regularization: How did you apply it. Did you need to pick specific reflection in a shot gather and try to make it up in which to fill the area that the reflection is missing/improve the coherency of the reflection? Or, you applied the linear interpolation filter equally to all shot gather? Please explain this step in more details. Also, can you discuss the pros/cons of the offset regularization method in hard rock environment? Step 5: what is advantage of curvelet filtering method to remove surface waves? Is it working better than median filter? Did you test both filters (i.e., median versus curvelet filter)?

What is the best procedure to improve the migration velocity model shown in Figure 4? Please explain in more details.

In this case study the straight part of the survey is considered. How do you deal with a crooked survey? Do you think the RTM method is applicable? Please provide more insight about crooked surveys.

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