

Dear Reviewer

We would like to thank you for your valuable comments that helped us to improve our paper. Please find below our detailed reply to your comments presented in bold font.

Best regards,
Samsonov et al.

Specific comments: The results you presented for the joint descending-ascending inversion shows that the sill type source presents a lower (-1.1cm) RMS value. But, is from the statistical point of view the sill source more significant than the spherical one? Can you say something more by (for example) using an F-type scheme statistical test in order to assess better the differences between the two geometries? I feel that such additional test would indeed be very helpful and improve the quality of the paper.

Reply: We now included results of an F-test in the last paragraph of result section. These results also favour the sill model.

You have not addressed anything about if one of these two sources is more compatible with what expected from the potash mining operations. Please comment on that. One of the important topics in this paper is the fast subsidence. Do you have other data on the surface expression or other ground observations of cracks, oriented fractures etc. Finally, is there any seismological observations from within the mining field?

Reply: We wrote the following to address suitability of the sill model to mining operation: “Although the actual shape of underground mine is unknown, it seems logical to assume that its vertical dimension (height) is smaller than the horizontal dimension (radius or width and length), resembling a sill-shaped model.”

We performed field work but could not observe any effects on the surface. This, however, is expected for an agricultural area with soft sediments and limited access. We contacted mining companies operating in the region asking for information (underground mine location and depth, ground measurements etc) but our requests were not supported.

Figures: I think that you should add the residuals as a green line in Figs 4d to 7d and Figs 8g,h and 9g,h.

Reply: We added residual in green to these figures as requested.