

Interactive comment on “Eliciting geologists’ tacit model of the uncertainty of mapped geological boundaries” by R. M. Lark et al.

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Reviewer 2

We are grateful for these comments, to which we respond below.

Detailed comments

- We acknowledged explicitly that there is an overlap between scale-dependent and cartographic uncertainty (see page 150, line 22). However, there is a distinction to be made because the cartographic uncertainty, as defined here, is inserted into the map when the boundaries on field sheets are converted to a

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smaller publication scale. We will expand on this in revision.

- We will refer to some of this literature, although the current review is strongly focussed on boundaries and we do not want it to become too diffuse.
- It is the SHELF procedure to have a group discussion to fix the limits on the elicited variable before the individual elicitation.
- The quartile method in the SHELF procedure specifically uses the upper and lower limits and the quartiles, and we stick to this method. As mentioned on page 160, line 26, the 95th and 5th percentiles are provided as feedback during the group elicitation of quartiles, from the best-fitting distribution (see also Figure 3), but the general agreement of research is that extreme percentiles are not easy to elicit. We agree that some of the individual elicited results are not consistent with plausible distributions. It is part of the role of the statistical facilitator to point out and explain such problems (they inevitably are identified because a probability density cannot be fitted to the individual results) and ensure that they are avoided during the group stage, what the table shows are the original quartiles that each individual wrote down. This is explicitly mentioned in the SHELF documentation (Oakley et al.). With respect to the discontinuous functions in Figure 4, these were explained in the text. They are not density functions but simply illustrate the group-elicited quartiles by showing the mean density over piecewise intervals bounded by the upper and lower limits and the quartiles.
- We agree that the example of uncertain deformable objects in the paper by Heuvelink et al. (2007) is a better starting point for a stochastic model of map unit delineations, and will cite it in the revised paper.
- As noted in response to other reviewers, we will ensure that it is clear in the caption that the individual distributions for experts C and B coincide.

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