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Interactive comment on "Expert modelling of a geological cross-section from boreholes: sources of uncertainty and their quantification" *by* R. M. Lark et al.

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We are grateful for this referee's helpful comments. As with referee 1 we note that no scientific concerns are raised. We are asked to improve the presentation of the paper, in particular with a view to a geological readership. Our responses are as follows.

1. We will expand section 2.1 considerably to give a more thorough account of the geological cross-section, entitling it 'Geological context of the cross-section'. A figure showing a map and an interpreted cross-section with the location of all 51 boreholes will be included in this section.

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2. See our response to referee 1. The methodology must be presented in full if the paper is to count as an explicit and reproducible account of what we did. We do not think that it would be advisable to consign the statistical component to an appendix, but, as indicated in our response to referee 1, we propose to offer a brief and intuitive account of the statistical models in a new section 3.1, indicating to the readers that subsequent sections can be skipped if no further detail on the models is required. As indicated in our response to referee 1, we would produce a new table for section 3.1. Given that the mathematical symbols would now be confined to new sections 3.2–3.4, and all are defined when first used, we are not convinced that a table of symbols would be justified use of space in the journal. However, we will take the topic editor's guidance on this.

3. Tables 3 and 4 are tightly linked to the text in what will be new sections 3.2–3.4. We propose an additional table to summarize results, which will be based on the structure of the new table for section 3.1, referred to in (2) above. Please note that AIC is a basis for operational selection between two models of differing complexity. Although the use of the AIC does have sound statistical foundations (minimizing expected information loss through the selection decision) it is not a significance test. If the more complex model does not have a smaller AIC then there is not sufficient evidence to justify its selection.

Interactive comment on Solid Earth Discuss., 6, 1687, 2014.