

Interactive comment on “Estimating sediment thickness by using horizontal distance to outcrop as secondary information” by Nils-Otto Kitterød

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Thank you very much for reviewing the manuscript! I agree that the title would benefit on the two precisions that you suggested. The revised title of the manuscript is then: “Estimating unconsolidated sediment cover thickness by using horizontal distance to bedrock outcrop as secondary information”.

To make the abstract clearer and more consistent to the title, I would also suggest to substitute “Sediment thickness (D) . . . ” by “Unconsolidated sediment cover thickness (D) above bedrock . . . ” (page 1, line 1), and “nearest outcrop (L) . . .”, by “nearest bedrock outcrop (L) . . . ” (page 1, line 3).

Reply on C1: It is true that the suggested method is “contrived to” large scale estimation, and that the estimation uncertainty usually is too big for small scale deterministic

C1

(or local engineering) purposes. It does not mean, however, that geostatistical estimation is useless for small-scale estimation. The key issue is to minimize the estimation uncertainty, and to obtain that goal all available information should be taken into account. With that respect geophysical prospecting methods, like gravity anomalies or seismic mapping provide of course useful information. The estimation uncertainty is therefore very often a question of costs. For hydrological applications like estimation of storage capacity of water in unconsolidated sediments, it may be necessary with estimates in areas where no measurements are available. In such cases, methods that utilize available information to minimize estimation uncertainty is of great interest.

I recognize that both Sadler and Farmer are a bit disturbed by the concept “grid origo” and suggest to use the term “grid origin”. To me the term “grid origo” means the location where the grid coordinates are zero, while the term “grid orgin” alludes more to “where the grid is coming from”. The point is that the whole grid has to be moved in order to calculate stable weights. The purpose of moving the “origo” is clearly expressed in the manuscript, and I think it is misleading to say that the “origin” is moved. So, I still prefer to keep the concept “grid origo”, even though it may sounds a bit strange for the native English speaking community.

The ambiguity with respect to window-sizes and delta h was also pointed out by Farmer. I suggest a minor revision of the text to avoid this ambiguity (c.f. the reply to Farmer’s review).

Reply on C2 and C3: I’m also very grateful for all help with respect to my written English language. The grammatical flaws indicated in C2 and C3, will be corrected in the final manuscript.

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C2