

***Interactive comment on “A linear mixed model, with non-stationary mean and covariance, for soil potassium based on gamma radiometry” by K. A. Haskard et al.***

**Anonymous Referee #2**

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In this paper, authors present a comparison of the traditional stationary variance model and a new proposed non-stationary models, the emphasis is on a detailed description of the different statistical models and the tools used for model selection.

A very well written paper targeting a specialized statistical audience, being a valuable contribution in the field of statistical methods applied to soil science. I wrote some comments that the authors should take into account.

The authors use two model selection tools AIC and prediction error. However, they comment that both do not agree in selecting the same model. I think that you should illustrate to the non specialized audience why is this (very common problem that is

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related to the descriptive or predictive nature of the model). Can you avoid or resolve this problems with some type of cross validation method to calculate the prediction error?

The statistical model described by the authors should specify more the formulae presented in section 2. Try to keep in mind that in this special issue we should offer people good tools to acomplishe their studies but not to scare them to don't even try.

What about to put some  $R^2$  or  $R^2$  adjusted values? Most of Biogeoscience audience will be happy to see these to see how good the model fit. In the same line, if you observed versus fitted values your improvements among different models will be much more appreciated.

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