General comments

This paper proposes the use of a linear combination of semivariogram models as a way to account for uncertainty attached with semivariogram parameters in spatial prediction (i.e. kriging). In a case-study, the so-called weighted semivariogram model is shown to provide more accurate predictions than the conventional use of a single semivariogram model fitted using cross-validation. I have several concerns regarding this approach:

1. It is purely empirical and the mixture of semivariogram models, albeit permissible, has no physical meaning, violates the parsimony rule and unnecessarily increases the CPU time of the kriging algorithm.
2. Cross-validation is a hazardous way to estimate the parameters of a semivariogram model since results depend on many implementation parameters, such as the search strategy, in addition to the semivariogram model itself. In addition, results can be very unstable when few observations are available. The statement on Page 4240, line 8 that cross-validation is widely used for semivariogram modeling is misleading.
3. The case-study is based on an unrealistically small number of observations, which likely creates very unstable semivariograms and prediction error statistics. Surprisingly, this manuscript does not include any figure with the experimental semivariograms and some models fitted using cross-validation.

The main conclusion might just be that the average of poorly fitted semivariogram models provides slightly more accurate predictions than each individual model. My advice would be to increase the number of observations and replace the black-box cross-validation approach by a graphical modeling strategy that allows one to incorporate any auxiliary information available about the study area (e.g. semivariogram of elevation) and phenomenon. An alternative is to use a ML or REML approach that requires fewer observations to estimate reliable semivariograms (Pardo-Igúzquiza, 1997; Lark, 2000; Kerry and Oliver, 2007).

The manuscript needs to be carefully proofread by a native speaker. It includes many duplicate words and awkward expressions.

- Kerry, R. & Oliver, M.A. 2007. Sampling requirements for variograms of soil properties computed by the method of moments and residual maximum likelihood. *Geoderma*, 140, 383–396.
- Lark, R.M. 2000. Estimating variograms of soil properties by the method-of-moments and maximum likelihood. *European Journal of Soil Science*, 51, 717–728.
- Pardo-Igúzquiza, E. 1997. MLREML: a computer program for the inference of spatial covariance parameters by maximum likelihood and restricted maximum likelihood. *Computers and Geosciences*, 23, 153–162.

Technical corrections

- Page 4233, line 7. N(h) is the number of observations separated by a distance h.
- Page 4234. Interestingly, the nugget effect is missing from the list of models. Of course, nugget effect cannot be estimated by cross-validation!
- Page 4234, line 13. Use the expression “lags” instead of “distance ranges”.
- Page 4235, line 14. The correct reference is Equation (9).
- Page 4234, line 15. The notation $\gamma_{m,i}(h)$ is inconsistent with the notation in Equation (9).