Reply on Editor

Dear Editor:

We would like to express our great gratitude for you to revise our manuscript. We have made a revision of the manuscript according to the comments and suggestions from you. These comments are all valuable for improving our paper. We sincerely hope that our revisions would meet your requirements. Please don't hesitate to contact us if you have any problems about the response.

Comment 1: The authors have addressed the reviewer comments but the literature review is weak. The authors need to revise and improve the literature review and also remove abbreviation in brackets from title.

[Response]: Thanks for your very helpful comment. We have reorganized and strengthened the literature review in the introduction section. Besides, the abbreviation and brackets in the title have been removed.

Comment 2: The authors need to ensure code and data is provided and enough documentation is provided to execute it.

[Response]: Thanks for your reminder. On the basis of the previous version, we have added some doc comments in the code to explain the role or operation mode of each part. The new version of code and data have been re uploaded to the original figshare link in the code and data availability section.
(https://figshare.com/s/8d5e4b6e5b74cc1e0bc1)

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Dear Referee:

Thanks very much for your great support and constructive suggestions with regard to our manuscript. These comments are very helpful for revising and improving our paper. We have made our best efforts to improve our paper very carefully following

your comments and suggestions. Our point by point response to the comments are given below. We hope the revised manuscript will be acceptable to your requirements. If you still have any concerns, we will be happy to take care once we hear from you.

Comment 1: The statement "Unbiasedness means that z*(x0) is the unbiased estimate of z(xi)…" in the newly added explanation of Kriging method (Section 2.1.2) is incorrect. It should read, "z*(x0) is the unbiased estimation of z(x)".

[Response]: Thanks for your comment. The statement has been corrected.

Comment 2: In the same section, the sentence "Kriging assumes that there is a functional relationship…from the dataset" is either missing a comma or should be split into two sentences.

[Response]: Thanks for your very helpful comment. The sentence has been split into two sentences to express the meaning more clearly.

"Kriging assumes that there is a functional relationship between r_{ij} *and* d_{ij} *(the distance between point* i *and point* j*). By taking any two sampled points from the dataset, a total of* $\frac{n(n-1)}{2}$ (r, d) *pairs can be generated."*

Comment 3: The matrix computation in formula 13 is Hadamard product, not multiplication, so I am afraid that is mathematically incorrect. Matrix multiplication is not equivalent to element-wise multiplication, unless there is a property of ρ, such as ρ12 + ρ13 + … + ρ1n = 0 written somewhere. Again, the authors failed to address the kij issue raised in Minor Comment 2 by the first reviewer in formula 14.

[Response]: Thanks for your very helpful comment. $\boldsymbol{W}$ is the Hadamard product (element-wise product) of matrix $\boldsymbol{\rho}$ and $\boldsymbol{K}$. Formula 13 as well as Formula 10 use the incorrect operating symbol '*'. They have been corrected to '∘'. Besides, the k_{ij} issue in Formula 14 has also been corrected.

$$\boldsymbol{W} = \boldsymbol{\rho} \circ \boldsymbol{K} = \begin{bmatrix} \rho_{11} & \rho_{12} & \cdots & \rho_{1n} \\ \rho_{21} & \rho_{22} & \cdots & \rho_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ \rho_{n1} & \rho_{n2} & \cdots & \rho_{nn} \end{bmatrix} \circ \begin{bmatrix} 0 & 1 & \cdots & 1 \\ 1 & 0 & \cdots & 1 \\ \vdots & \vdots & \ddots & \vdots \\ 1 & 1 & \cdots & 0 \end{bmatrix} = \begin{bmatrix} 0 & \rho_{12} & \cdots & \rho_{1n} \\ \rho_{21} & 0 & \cdots & \rho_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ \rho_{n1} & \rho_{n2} & \cdots & 0 \end{bmatrix} \quad (13)$$

$$\hat{\boldsymbol{y}} = \begin{bmatrix} 0 & \rho_{12} & \cdots & \rho_{1n} \\ \rho_{21} & 0 & \cdots & \rho_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ \rho_{n1} & \rho_{n2} & \cdots & 0 \end{bmatrix} \begin{bmatrix} y_1 \\ y_2 \\ \vdots \\ y_n \end{bmatrix} = \boldsymbol{W} * \boldsymbol{y} \tag{14}$$

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Dear Referee:

Thanks very much for your affirmation and great support.