

April 11th, 2026

RE: Manuscript submission

Dear Editors,

Thank you for the opportunity to submit a revised draft of our manuscript entitled “*Spatialize v1.0: A Python/C++ Library for Ensemble Spatial Interpolation*” to be considered for publication in the Geoscientific Model Development (GMD) journal.

The Ensemble Spatial Interpolation (ESI) algorithm, proposed by Egaña et al. (2021), combines multiple weak interpolation functions through an aggregation function to generate a robust ensemble response. ESI exhibits a promising ability to produce robust spatial estimates, scale to large datasets, and handle uncertainty quantification. Recently, another related publication, Egaña et al. (2025), was published in Scientific Reports of Nature, where a reinterpretation of the ESI algorithm is presented as a generative Bayesian model, which offers a simple and insightful reinterpretation of the concept of spatial interpolation in general.

We sincerely appreciate the time and effort the editor has dedicated to providing valuable feedback on our manuscript. We have successfully incorporated changes that address the suggestions. We have provided a point-by-point response to the editors’ comments and concerns (in blue). Additionally, specific figures have been adjusted, and the changes have been incorporated directly into the manuscript.

Sincerely,



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Advanced Mining Technology Center – AMTC
Universidad de Chile
Corresponding Author

References:

- Egaña, A., Navarro, F., Maleki, M. *et al.* Ensemble Spatial Interpolation: A New Approach to Natural or Anthropogenic Variable Assessment. *Nat Resour Res* **30**, 3777–3793 (2021). <https://doi.org/10.1007/s11053-021-09860-2>
- Egaña, A.F., Valenzuela, M.J., Maleki, M. *et al.* Adaptive ensemble spatial analysis. *Sci Rep* **15**, 26599 (2025). <https://doi.org/10.1038/s41598-025-08844-z>

Editor #1:

Dear authors

Editor #1 comment 1:

Before acceptance, please ensure that you have permission from the journal Natural Resources Research to use the Figures 1, 3, 4. See "Reprints and permissions" at <https://link.springer.com/article/10.1007/s11053-021-09860-2#rightslink> and request the permission if necessary.

- **Author's response:**

We have submitted a formal request for permission regarding the mentioned journal, attached at the end of this letter.

Editor #1 comment 2:

Also, please address the following:

Figures 1 and 2: alpha is only introduced on page 10, briefly mention the role of alpha in the captions

- **Author's response:**

Yes, of course. We added additional information in the mentioned Figures.

Editor #1 comment 3:

Page 6, algorithm 1, line 8 and page 7, line 7: "Exp(mu(theta))" -> "Exp(-mu(theta))"

- **Author's response:**

In the algorithm mentioned, the term "Exp" refers to an Exponential distribution, which does not require a minus sign because it is already incorporated into the distribution's definition.

Editor #1 comment 4:

Page 8, line 153, 154: The subscript of L_i identifies the Voronoi cell, whereas in 2.1.2 it identifies the tree. Consider other notations like superscript indices.

- **Author's response:**

The mentioned subscript identifies the Voronoi cell in both places; L_k is the **set of conditioning data points** (measurements) that fall within that **cell**.

Editor #1 comment 5:

Page 9, Eq. (9): Define the notation E_P^{\wedge} ...

- **Author's response:**

We added clear definitions to enhance understanding. Thank you!.

Editor #1 comment 6:

Page 11, line 213: The sentence "Secondly, ..." is incomplete.

- **Author's response:**

We fixed the mentioned sentence. Thanks!.

Editor #1 comment 7:

Page 11, line 215: Define the notation C(...)

- **Author's response:**

We appreciate this suggestion and have updated the notation for better clarity.

Editor #1 comment 8:

Page 18, line 317: Please mention that the Mondrian forest process is used

- **Author's response:**

We have fixed this sentence in the manuscript. Thank you!

Editor #1 comment 9:

Page 39, line 496: "critical gap geostatistics" should read "critical gap in geostatistics"

- **Author's response:**

We acknowledge this suggestion, and we have fixed the sentence.

Editor #1 comment 10:

References: Please fix all references with double doi prefix ("<https://doi.org/https://doi.org/>").

Page 43, line 590: Kirkwood et al. 2022 is listed twice

Page 43, line 603: Menafoglio et al. 2018 is listed twice

Page 43, line 594: "WindDirection" -> "Wind Direction"

Page 44, line 609: "january" -> "January".

- **Author's response:**

These issues were amended in the text. Thanks for spotting them!.

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