

Geosci. Model Dev. Discuss., referee comment RC1
<https://doi.org/10.5194/gmd-2021-301-RC1>, 2021
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Comment on gmd-2021-301

Anonymous Referee #1

Referee comment on "GSTools v1.3: a toolbox for geostatistical modelling in Python" by
Sebastian Müller et al., Geosci. Model Dev. Discuss.,
<https://doi.org/10.5194/gmd-2021-301-RC1>, 2021

The manuscript describes a useful toolbox for geostatistical modelling in Python. The manuscript is well written and quite complete. I have few comments, which I think can be fixed by the Authors with a minor revision.

- 1) In Table 1, I suggest to define all the quantities and the functions appearing in the formulas, e.g., Gamma and Bessel functions.

- 2) Line 90. Substitute "principle" with "principal".

- 3) Figure 4. Here, "earth" should be written with capital E, as this is the proper name of our planet.

- 4) Figure 20. I think that it would be useful to show how the interpolated field can be limited to a region, for instance, within the Germany border or in the area where data are available.

- 5) Section 4.2. The concept of "connectivity" is not well defined here. Indeed, it can be used in several different ways when different fields or physical processes are considered (see, e.g., [doi:10.5194/gmd-12-2285-2019](https://doi.org/10.5194/gmd-12-2285-2019), [doi:10.1016/j.advwatres.2011.12.001](https://doi.org/10.1016/j.advwatres.2011.12.001), [doi:10.1007/s10040-009-0523-2](https://doi.org/10.1007/s10040-009-0523-2), [doi:10.1016/j.advwatres.2004.09.001](https://doi.org/10.1016/j.advwatres.2004.09.001), [doi:10.1007/s11242-007-9185-5](https://doi.org/10.1007/s11242-007-9185-5), [doi:10.1016/S0098-3004\(03\)00028-1](https://doi.org/10.1016/S0098-3004(03)00028-1), [doi:10.1029/2000WR900241](https://doi.org/10.1029/2000WR900241), etc.). Few relevant references could be selected and a discussion about how the toolbox can provide insights on different connectivity indicators could be useful. Also, I think it would be quite easy to include the computation of some of the connectivity indicators in GSTools.

6) I think it would be fair to discuss the differences between GSTools v1.3 and SGeMS, which is also interfaced with Python.
Remy, N., Boucher, A., & Wu, J. (2009). *Applied Geostatistics with SGeMS: A User's Guide*. Cambridge: Cambridge University Press. doi:10.1017/CBO9781139150019