Geoscientific

Model Development

Discussions

[GMDD]

Interactive

comment

Interactive comment on "A Spatiotemporal Weighted Regression Model (STWRv1.0) for Analyzing Local Non-stationarity in Space and Time" *by* Xiang Que et al.

Anonymous Referee #1

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In my opinion, the authors have done a great work. They identified a potential problem in the current spatiotemporal algorithms, and propose a new algorithm to solve this. However, I have the following concerns:

1. A possible major problem

- Not sure if I am missing something here, but the authors claim that current spatiotemporal GWR models ignore the difference in the value change of observed points during a period of time. They suggest the introduction of the rate of change in the model. They go on with the example that the faster the house price of a point changes, the stronger the temporal effect is to the house at its nearby points. To me, this makes more sense

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if all observed points are measured at the same location throughout time. But in house price modeling, points are rarely measured at the same place throughout time.

- Accordingly, and following Equation (4), that distance between yi(t) and yj(t-q) will not reflect a changing rate between two houses over time because those houses are not the same. The authors should address this concern.

- The situation is different when for the four case studies used to test the algorithm because locations of observed points are the same over time. So the author may suggest the use of this new algorithm for this type of data collection.

1. Minor problems

-I think this study does not need four case studies to test the algorithm. It could be reduced to only one case study, the one with the real-world data. - The name of the journal is missing in line 79, page 31. - Reduce the number of decimals in tables - Considering that GWR provides R-square for each regression point, how should readers interpret the single the R-square shown in the tables? - Provide a possible explanation for the significant difference in the R-square values for OLS and the other methods. Something that helps readers to understand why such a big difference occurs.

Interactive comment on Geosci. Model Dev. Discuss., https://doi.org/10.5194/gmd-2019-292, 2020.