

This study used *in situ* PM2.5 measured by portable laser air quality monitors to replace traditional PM2.5 data collected by ground monitoring stations or derived from remote sensing images and developed a new hybrid (land use regression plus geostatistical) method to map PM2.5 concentrations in an urban area. Generally, this manuscript is well organized and clearly written, even though a few of sentences need to be rephrased and more details need to be supplemented. I recommend the editor to accept this manuscript after a minor or moderate revision.

The authors developed a hybrid model in which the deterministic component of the PM2.5 concentration was fitted by LUR and the stochastic component (i.e. residual) was interpolated by kriging. Thus this is a typical LUR based REGRESSION kriging but not universal kriging. Please see Liu et al. (2018). Incorrectly naming the method is my biggest concern for the manuscript.

Liu, Y. et al., 2018. Improve ground-level PM2.5 concentration mapping using a random forests-based geostatistical approach. *Environmental Pollution*, 235, 272-282.

I am afraid that the Abstract from line 16 to 27 is not clear for a new reader especially who has not read the Method section. What do the “Period 1” and “Period 2” represent?

(Page 2, line 19) The authors should cite Liu et al. (2018) that is a typical study combining two technologies to estimate PM2.5 concentrations.

In the Measurement Instrument section, the authors may add more details for their portable air quality monitors, e.g. the company producing the equipment and other practical uses of the portable monitor.

(Page 4, lines 13-20). The sentences here are unclear and the authors may need to rewrite them. “*Sampling was carried out in two time periods in the winter of 2015...*” I am wondering

whether the authors can provide a specific time periods (e.g. from November 1 to December 31) to replace “the winter”. “*The second period was between 14:00 and 18:00, when Orange warning signals of haze were released by Changsha Meteorology Bureau...*” I guess Orange warning signal was not released every day, but from your last sentence “*The first period was between 8:00 and 12:00, representing a light-polluted period*” it seems the Orange warning signal is released every afternoon. So please make it clear whether you measured PM2.5 concentrations during the two time slots all days or only Orange days. Additional, I suggest using “time slots” to replace “time periods”. The “period” may be used for the days when you collected the PM2.5 concentration samples.

(Page 4, line 20). “*The official observations at 10 national monitoring ~~sites~~ stations.*”

(Page 6, lines 21-22) “*Clearly, the average PM2.5 concentrations of Period 2 were **two times** higher than those of Period 1...*” I wonder why the authors emphasized “two times” higher here. It gave me a deep impression that “two times” implied something, but I have not seen any explanation for the “two times” in the following text. I would simply say: the average PM2.5 concentrations of Period 2 were much higher than ...

(Page 9, lines 1-10) I cannot accept the authors’ discussion in this paragraph whatsoever. Compared with the authors’ cheaper portable air pollution monitors, I more trust instruments from national monitoring stations. “*This suggests the inconvenient **truth** (what a strong word! It is just a possible.) that the exposure risk remains relatively high for the public when official air pollution levels are “Good” and “Moderate” and this risk ...*” I completely understand what the authors intend to express, but if the government intentionally falsified the air quality data, it was more likely to lower the heavy- rather than light-pollution data. I thought of another possibility: the authors’ portable monitors were not sensitive for the low PM2.5 concentrations and are prone

to be saturated in the heavy-pollution days. In that case, it will also get the result the authors showed in the manuscript. The authors intended to emphasize that the large error (difference) on PM2.5 concentrations over the city is due to the relatively small number of national monitoring stations and thus their method using portable monitors to collect PM2.5 data is useful. However, based on the authors' statement, large differences on PM2.5 concentrations have existed even if concentrations are measured by the instruments of the national monitoring stations and the portable equipments of the authors at the same location.

I suggest the authors cautiously using some very strong adjectives and adverbs, such as clearly, significantly, tremendous, etc. (Abstract, line 25) "This method selection strategy provides **solid experimental** evidence for method selection of ..." I will say "this study provides **empirical** evidence for ..." Although generally clear for me, it is better to further polish the English of this manuscript, especially in the Results and Discussion sections.