Reply to reviewers and note to editor

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We thank the reviewers, Michel Bechtold, and the editor for their efforts for our manuscript. Since the submission of our manuscript another paper has been published that we believe makes our work no longer needed. The publication of Xu et al. (2018) details their PEATMAP product which is a global peatland map based primarily on mapping products and other geospatial information at global, regional, and local scales. This paper effectively provides the needed mask of peatland locations that we were hoping to achieve using our machine learning approach. As a result, in the hopes of not confusing the literature, we choose to withdraw our paper and instead draw readers' attention to the Xu et al. paper.

While we won't reply in detail to our reviewers as we are withdrawing our paper (although we do, again, wish to express our appreciation for their time in reviewing our paper), we would like to clarify one aspect that seems to be a prevalent point of confusion. If we are interpreting their comments correctly, spatial autocorrelation was raised by Michel Bechtold and Anonymous Reviewer #2. A high degree of spatial autocorrelation of the peatland locations is to be expected and is not problematic. The view that spatial autocorrelation is problematic is not uncommon but is incorrect. Kühn and Dormann (2012) have written a nice discussion on why spatial autocorrelation is sometimes assumed to be problematic while the real issue is spatial autocorrelation of residuals.

In order to investigate the degree to which the model residuals are spatially autocorrelated, we generated a spatial correlogram (Figure 1 below) using the R package "ncf" (Bjornstad, 2016). The package computes the statistic, "Moran's I" (Cliff and Ord, 1981), which takes the form of a classic correlation coefficient with values ranging from -1 to 1 (strongly negatively to strongly positively correlated) as a function of distance. Moran's I is calculated based on all pairs of values within a distance interval (lag). Distance bins of 100 km (~ 2 grid squares) were chosen for the figure, where Moran's I is plotted against the mean distance between all points within each bin. The correlogram for the model residuals is shown in red, and for comparison, the correlogram for our peatland map is shown in blue. This indicates that the peatland map is highly autocorrelated spatially (as expected) but the residuals are not with the exception of the first distance bin.

References:

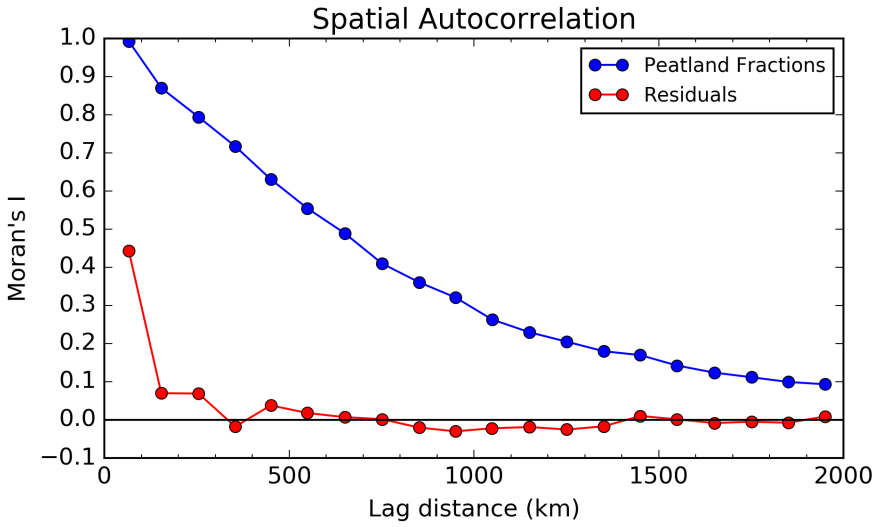

Figure 1: Figure 1: Spatial autocorrelation of residuals

Ottar N. Bjornstad (2016). ncf: Spatial Nonparametric Covariance Functions. R package version 1.1-7. http://CRAN.R-project.org/package=ncf

Cliff, A. D., and J. K. Ord. (1981). Spatial Processes—Models and Applications. London: Pion.

Kühn, I. and Dormann, C. F.: Less than eight (and a half) misconceptions of spatial analysis, J. Biogeogr., 39(5), 995–998, 2012.

Xu, J., Morris, P. J., Liu, J. and Holden, J.: PEATMAP: Refining estimates of global peatland distribution based on a meta-analysis, Catena, 160(Supplement C), 134–140, 2018.