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Comment on Article by Lum and Gelfand

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I congratulate Dr. Lum and Professor Gelfand for their important contribution to the development of Bayesian quantile regression models for spatial data. Their quantile regression model incorporates spatial dependence through the use of the spatial asymmetric Laplace process. Moreover, they explore a representation of the asymmetric Laplace distribution as a mixture of a standard normal random variable and an exponential random variable. To incorporate spatial dependence, they substitute the standard normal random variable by a zero-mean variance-one Gaussian process. Further, for $\xi(s)$, the exponential part of the mixture representation at site s, the authors discuss three possible modeling specifications: a common ξ for all s, an iid model, and a spatial model. However, for fitting the authors consider only the iid model for $\xi(s)$. I have three interrelated questions associated with the modeling specification for $\xi(s)$. First, what are the practical implications of each of the three possible modeling specifications for $\xi(s)$? Second, if in a certain application $\xi(s)$ is spatially correlated, what problems and limitations would likely arise from wrongly assuming an iid specification for $\xi(s)$? Finally, what are the difficulties associated with the implementation of the copula-based spatial model for $\xi(s)$?

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