

## Nonparametric Quantile Regression for Multivariate Spatial Data

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**Abstract :** Spatial prediction is an issue appealing and attracting several fields such as agriculture, environmental sciences, ecology, econometrics, and many others. Although multiple non-parametric prediction methods exist for spatial data, those are based on the conditional expectation. This paper took a different approach by examining a non-parametric spatial predictor of the conditional quantile. The study especially observes the stationary multidimensional spatial process over a rectangular domain. Indeed, the proposed quantile is obtained by inverting the conditional distribution function. Furthermore, the proposed estimator of the conditional distribution function depends on three kernels, where one of them controls the distance between spatial locations, while the other two control the distance between observations. In addition, the almost complete convergence and the convergence in mean order  $q$  of the kernel predictor are obtained when the sample considered is alpha-mixing. Such approach of the prediction method gives the advantage of accuracy as it overcomes sensitivity to extreme and outliers values.

**Keywords :** conditional quantile, kernel, nonparametric, stationary

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