



**Climate Program Remote Sensing Workshop
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SPEAKER TITLES/ABSTRACTS

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“Blocking Methods for Spatial Statistics and Potential Applications to Distributed Data”

When spatial data are distributed across multiple servers, there is an obvious difficulty with computing the likelihood function without combining all the data onto one server. Therefore, it would be of interest to compute estimates of the spatial parameters based on decompositions of the spatial field into blocks, each block corresponding to one server. Two methods suggest themselves, a “between blocks” approach in which each block is reduced to a single observation (or a lowdimensional summary) to facilitate calculation of a likelihood across blocks, or a “within blocks” approach in which the likelihood is calculated for each block and then combined into an overall likelihood for the full process. In fact, I argue that a hybrid approach that combines both ideas is best. Theoretical calculations are provided for the statistical efficiency of each approach. In conclusion, I will present some thoughts for optimal sampling designs with distributed data.

This is joint work with Petrutza Caragea of Iowa State University.