BISP8

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A class of generalized conditionally autoregressive models

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Areal or lattice data is usually analyzed by specifying a sampling model for the data that introduces spatial random effects provided with a conditionally autoregressive (CAR) prior. In a CAR model, the weights used in the full conditionals are constant over space and fixed a priori to be either binary or inversely proportional to the distances among subregions/cells. We propose a generalized class of CAR models where the weights are non-constant and are random variables obtained by appropriately transforming a latent Gaussian process. The resulting class of CAR models is flexible, allows for directionality in the weights and generalizes the class of fixed-weights CAR models, which arises as a special case. Marginal properties of the weights and of the spatial random effects can be derived. As an illustration we present an application in disease mapping.

ABSTRACT BISP8.08
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