

# Variable Selection for Geostatistical Models

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**Abstract:** Variable selection in spatial regression is an important problem, but has not been well studied in the literature. In this paper, we consider a class of conditional information criteria for variable selection. Instead of using a particular conditional information criterion with a fixed penalty parameter, we propose to select the penalty parameter from data, resulting in a criterion that is data adaptive. We apply a concept called generalized degrees of freedom to select this penalty parameter, leading to unbiased estimation of mean squared prediction errors via a data perturbation technique.

**Keywords:** Akaike information criterion; data perturbation; generalized degrees of freedom; kriging; spatial regression.