

# Scalable modeling of nonstationary covariance functions with regularized

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We propose a semiparametric method for nonstationary covariance function modeling, based on the spatial deformation method of Sampson and Guttorp (1992), but using a low-rank, scalable, regularized deformation function. We show that a choice of regularization penalty can ensure that the deformation does not fold in on itself, and therefore yields proper covariance function estimates. An application to rainfall data illustrates the method.