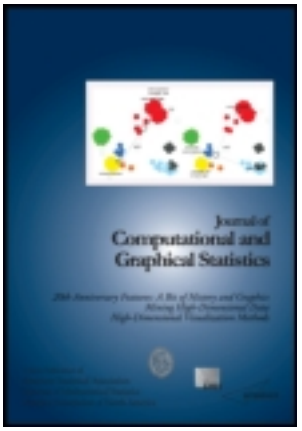

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Erratum and Addendum to: "Covariance Tapering for Interpolation of Large Spatial Datasets" published in the *Journal of Computational and Graphical Statistics*, 15, 502–523

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The Taper Condition stated in Furrer et al. (2006) (FGN hereafter) should either exclude the case $\epsilon = 0$ or be slightly rephrased. The proof of Proposition 1 in FGN shows that the limit superior of (A.1) is bounded but it does not explicitly show that it is equal to the limit inferior for $\epsilon = 0$. It is, moreover, possible to construct tapers satisfying the taper condition which lead to non-existing limits (A.1), an example is the sum of a spherical and triangular covariance function in $\mathbb{R}$.

To include the case $\epsilon = 0$ a slightly stronger tail condition on the spectral density of the taper is required.

Modified Taper Condition. *Let f_θ be the spectral density of the taper covariance, C_θ with taper range θ, and*

$$0 < f_\theta(\rho) \text{ and } \lim_{\rho \to \infty} f_\theta(\rho)\rho^{2k} = M(\theta) < \infty, \text{ for some } k \geq \nu + d/2\,.$$

The supplementary material gives a proof of Proposition 1 of FGN under this modified taper condition combining the cases $k > \nu + d/2$ ($\epsilon > 0$) and $k = \nu + d/2$ ($\epsilon = 0$).

As indicated in Appendix B of FGN, the tapers discussed there satisfy the taper condition with $2k = 1 + d - \epsilon, 2 + d - \epsilon, 3 + d - \epsilon$ for the Spherical, Wendland$_1$ and Wendland$_2$ tapers, respectively, with $\epsilon \geq 0$ in $d = 1, 2$ and $\epsilon > 0$ in $d = 3$. Hence, the simulation results in FGN are correct.

Based on the present addendum, the statement given in the last sentence of Section 2 of FGN can be formulated more precisely: If the taper is not sufficiently differentiable away from zero, the spectral density may not be strictly positive or may not have a limit as specified in the taper condition.

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SUPPLEMENTARY MATERIALS

FGN.proof.pdf: Full details of the proof based on the reformulated taper condition are given.

FGN.mathematica.nb: A Mathematica script giving additional insights and closed form expressions related to particular tapers.

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REFERENCE

Furrer, R., Genton, M. G., and Nychka, D. (2006), "Covariance Tapering for Interpolation of Large Spatial Datasets," *Journal of Computational and Graphical Statistics*, 15, 502–523. [823]