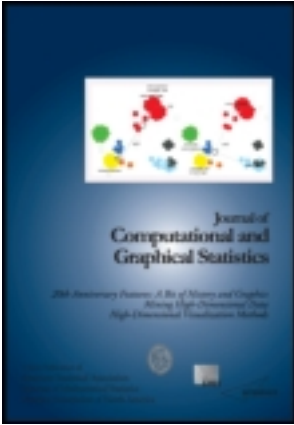


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# Erratum and Addendum to: “Covariance Tapering for Interpolation of Large Spatial Datasets” published in the *Journal of Computational and Graphical Statistics*, 15, 502–523

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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  $f_\theta$  be the spectral density of the taper covariance,  $C_\theta$  with taper range  $\theta$ , and

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

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<sub>1</sub> and Wendland<sub>2</sub> 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.

## 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.

## ACKNOWLEDGEMENTS

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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](#)]