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VII.11   Estimating the Autocorrelation Function of Spatio-Temporal
Variables

In geological exploration as well as in air pollution studies
it is often necessary to interpolate from a sparse and irregu-
larly positioned set of measurement points. The principal
practical difficulty (Delfiner, 1976) in studies of this sort
consists in obtaining good estimates for the spatial auto-
correlation function. Motivated by these problems we suggest
(Tjøstheim, 1977) an estimate for the autocorrelation function
for spatio-temporal variables. The estimate is meaningful for
non-integer lags and for irregularly positioned data points.
It is constructed using a double Fourier transform technique.
The statistical properties of the estimate are studied in a
special case. For more details and for a brief summary of
applications to air pollution modelling, we refer to Tjøstheim
(1977).

D. Tjøstheim

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Delfiner, P. (1976): Linear estimation of nonstationary spatial
    phenomena, Proceedings of NATO A.S.I. "Geostatistics 75", Rome,
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Tjøstheim, D. (1977): On the problem of estimating the autocorrelation
    function of spatio-temporal variables, Dept. of Statistics, Stanford
    University, SIMS Tech. Report, to appear.