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Interpolation with irregular support - a simplifation

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Whereas geostatistical and objective methods mostly have been developed for observations with point support or a regular support, e.g. runoff related data can be assumed to have an irregular support. The correlations between observations and between observations and the prediction location can be found through a computationally complex integration of a point variogram or point correlation function. With improved speed of computers, solving such integration has become easier, but numerical problems can still cause instabilities in the kriging matrices.

Gottschalk [1993a; 1993b] suggested to replace the integration by a Taylor expansion, hence reducing the computation time considerably, and also expecting an improved stability of the results. Although the simplification has already been used in some papers of Gottschalk and collaborators [Sauquet, et al., 2000a; Sauquet, et al., 2000b], the properties of it have not been examined in detail. Hence, we will here analyse this simplification, both in sense of its ability to reproduce regularised semivariogram and correlation values, and the influence on the final interpolated maps.

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