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Dealing with outliers within the Kriging Framework

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The question of how to deal with potential outlier effects on a dataset in order to minimise the unrealistic spreading of grades onto estimates, has been a bit of a bone of contention within the geostatistical community for the last few decades. Rule of thumb methods such as removing or cutting potential outliers, the use of multiple indicator Kriging [1] etcetera are as numerous as there are Geostatisticians. With no general consensus, and hence various levels of success being achieved, has led to an overall lack of confidence when dealing with distributions that exhibit marked Skewness. The following paper deals with an embedded methodology in order to allow outliers to be treated during the estimation process, rather than forms of cutting that in a spatial context may or may not be result in an optimal estimation methodology, thus not only dealing with the spatial variance concept but additionally considering the impact of the value distribution function. This will be followed up by ending the paper with a short case study illustrating the concepts outlined in practice.

References

[1] Journel, A.G., 1983. Nonparametric estimation of spatial distributions. Mathematical Geology 15 (3), 445–468.