Bayesian Transgaussian Kriging

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Abstract

In geostatistics a widely used method for prediction is kriging. It is well known and used for many years. But some limits are inherent on the traditional ways of kriging, i.e. simple, ordinary and universal kriging.

Kriging is based on the assumptions that the covariance function is exactly known and the underlying random field is a gaussian field. In practice, neither the trend or the variogram are exactly known, but on the other hand there may be expert knowledge for the trend or the variogram that should be used for prediction in geostatistics. So a mixture of kriging and Bayesian statistics can be useful.

In theory, Baysian transgaussian kriging can handle random fields with non-gaussian behaviour and with various trends and different link functions, but the problem is the computational effort. Many applications need near real-time evaluations of the random process, so the CPU-time is limited.

In the article and in the presentation a short overview on the wide field of kriging and Bayesian statistics is given, showing some of the current research the author is doing in moment.