Combining numerical modeling with geostatistical analysis for an improved reservoir exploration

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The estimation of subsurface temperatures is of high importance in geothermal exploration. However, temperature measurements of depth larger than a few hundred meters are very sparse. An interpolation of such sparse data always involves big uncertainties, no matter how good the interpolation approach is. Kriging with trend does allow including secondary data to improve the interpolation of the primary one.

Using this approach temperature measurements of depth larger than 1000 meters of Hessen/Germany have been interpolated in 3D while using a conductive numerical 3D temperature model as secondary information. The result shows that the quality of the estimation improves considerable this way.