

Thickness of Eagle Coal in Powellton Quadrangle, West Virginia

Data file eagpow.eas includes the thickness of the Eagle Coal in the Powellton 7.5' quadrangle, as well as in surrounding quadrangles. There are 1,256 locations in the file, of which 370 lie within the quadrangle. The geographic limits of a rectangle enclosing the Powellton quadrangle are 467040 to 478080 in the east-west direction, and 4205610 to 4219530 north-south.

Sequential Gaussian simulation requires computing normal scores of the data, variography, and fitting a model to the variogram of normal scores. The best fit was obtained with an omnidirectional, nested variogram model comprising a spherical model with sill of 0.5, and range of 4,500m, and an exponential model with sill of 0.45 and range of 250m. Long-range geographic trends in thickness might account for the failure of the variogram to reach 1 within the range modeled.



Figure 1. Variogram of normal scores (points) and fitted model (solid line).

The file of simulated values is called eagpown.sim. It contains 369 columns and 465 rows; values were simulated on a 30m grid. Figure 2 shows that the Eagle is eroded away in many areas. File eagexists.txt was used to mask out these areas at the mapping stage.





Figure 2. Thickness of Eagle Coal bed. One realization generated with sequential Gaussian simulation.