New Methodology for Quantifying Geological Uncertainty in Coal Assessments with an Application to a U.S. Gulf Coast Deposit

The current USGS coal resource assessment methodology follows USGS Circular 891 (Wood and others, 1983). It handles uncertainty in terms of distance from a site to the closest drill hole and uses drill hole spacing as the sole criteria for defining geological assurance on coal resource estimations. Circular 891 groups estimates into a few reliability categories without any quantification of expected error. Because geological assurance is more than just thickness variability between drill holes, evaluation of uncertainty should be based on models integrating drill data at different spacings, coal bed structure, and surface topography.

The objective of this study is to review the Circular 891 methodology and explore the advantages of stochastic methods, which allow probabilistic assessments.