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The Mpumalanga Coal Coalfields: Quality, Quantity variations and Environmental Issues through time and space



Kekana M.P. and Wagner N.J.



CIMERA, Geology Department, University of Johannesburg, Auckland Park, Johannesburg papikekana@yahoo.com.

This research project is aimed at compiling an integrated geological model demonstrating coal quality and quantity variations over time and space in the Mpumalanga coalfields. It will explore the historical changes in the coal quality across the Mpumalanga coalfields. Changing environmental issues that have influenced mining are also explored. Mining legislation has evolved and the project has demonstrated these different changes. These have had an influence in the actual products mined over time, for example there has been a reduction in the sulphur content coal produced in the Mpumalanga coalfields. The use of historical coal quality data is demonstrated with the use of geostatistical methods of verifying data. Multiple scattergrams and variograms were plotted to check relationships between different coal quality parameters.

Recent years are characterised by a shortage of coal quality data in publication, as is demonstrated by the data gathered in this research project. It is further demonstrated that there have been changes in the market demands for coal products. Cleaner coal products are taking over in the coal markets and hence the Mpumalanga producers are now focussing on cleaner coal blocks. Data was tabulated according to spatial and temporal organization. These tables were used to plot graphs and maps of the Witbank, Highveld and Ermelo coalfields. Chemical and select petrographic characteristics, specifically ash content, calorific value, volatile matter, carbon content, total sulphur and vitrinite content were used to assess the quality of the Mpumalanga coalfields. Beneficiation and export data was also used to determine the effects on market demand.

Ordinary kriging was used to generate maps of different coal quality parameters across the Mpumalanga coalfields. Environmental impacts of sulphur are also investigated by plotting sulphur trends in the coals, and comparing them to reported atmospheric sulphur values.

