



Investigation of relationship between barometric pressure and coal and gas outburst events in underground coal mining

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Coal and gas outburst is a serious risk which occurs during the mine production. This accident results both ejection of high volumes of gas and high amount of coal into the mine production area, and death of mining workers for many years in Turkey. Outburst of gas, coal and rock can be defined as sudden release of coal and rock accompanied by large quantities of gas into the working face or other mine workings. It is a phenomena that influenced by geological structure such as folds, joints of rocks or coal seams, is also still investigated for many years. Zonguldak Coal Basin is the main part of the Upper Carboniferous bituminous coal basin of Turkey. Much of the bituminous coal mining has thus been concentrated in the Zonguldak Basin which is located on the Black Sea coast. The coal field has been disturbed by tectonic activity, first by Hercynian and later by Alpine orogenesis resulting in folding and faulting of strata. This formation has a complex structural geology which consists mostly fault zones, anticlinal and syncline strata and because of this a large amount of methane gases are adsorbed or accumulated in strata or in coal fractures, pores and micropores. There are 5 Collieries exists in Zonguldak Coalfield and coal and gas outbursts were occurred only in two collieries such as Karadon and Kozlu Mines. In addition at a number of 90 coal and gas outburst events were experienced in these collieries. Based on the analysis of data, oscillation at barometric pressure and temperature values at the location of Kozlu and Karadon Mines were seen when coal and gas outburst events were occurred. In this study, barometric pressure and temperature changes are investigated at Kozlu and Karadon Mines. Also the relationship between the variation at temperature with barometric pressure and coal and gas outbursts are evaluated. It can be understand that this investigation depends to field observations and macroscopic considerations and on the purpose of predicting the coal and gas outburst event earlier.