

Application of SAR Interferometry to the Imaging and Measurement of Neotectonic Movement Applied to Mining and Other Subsidence/Downwarp Modelling

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Abstract

The overall philosophy of this project is to improve the accuracy of subsidence prediction models used in the mining industry. These models are used to help optimise mine production, but currently produce actual-to-predicted subsidence accuracies in the range 43%-773%. The project intends to provide accurate measurements of elevation change due to mining activity, via the application of synthetic aperture radar (SAR) interferometric techniques. These data can then be fed into subsidence models to improve predictions. Initially, effort has been concentrated on establishing a capability to produce information which allows the detection, and ultimately measurement (ideally to a centimetric scale), of subsidence using satellite SAR data.

The project covers two sites, the Selby coalfield in the UK and the Silesian coalfield in the Czech Republic. The Selby site is currently being studied using both ERS tandem data and 35 day repeat data in order to est