

INVESTIGATION OF OVER-EXPLOITED COAL FIELDS BY SATELLITE GEODESY

Victor MOCANU

University of Bucharest, Faculty of Geology and Geophysics, Department of Geophysics
6 Traian Vuia Street, Bucharest 020956, Romania

ABSTRACT

Tens to hundred years of intensive exploitation of coal in mining zones of the Carpathian realm slowly impacted the environment to such degree that detailed investigations were necessary in order to anticipate the future impact of such works, even when abandoned. Numerous mines consist of various and intricate networks of underground galleries. When the mines are closed but the galleries are not filled-in with mine tailings, severe surface impact could evolve on short- and mid-term. The societal impact could be significant when old galleries start to collapse. On top of the surface expression of such accidents, the local communities could be affected and become reserved on the future permitting for other resource investigations. Detailed GNSS investigations could bring very useful details on the present-day evolution of such man-made hazards. We will present examples from the Southern Carpathians (Romania) coal mining areas, where horizontal velocities of up to ~250 mm/y were severely affecting the local topography. A serious subsidence of ~ 250 mm/y generated severe damages to the local communities. An interesting remark refers to the fact that the most of the severe area is superposed to the oldest galleries. However, the general pattern suggests a very interesting peripheral flexure of the uppermost layers, slightly uplifted in response to the central area's significant subsidence.

Key words: coal, mining zone, Carpathian orogen, subsidence, vertical and horizontal velocity