

FRINGE 96

SAR Interferometry: potential and limits for mining subsidence detection, with examples in the Mulhouse area (eastern France)

Daniel Raymond, Jean-Paul Rudant

U.R.A. C.N.R.S 1759, Dépt Géotectonique, Case 129, T26 E1, Université P & M Curie, 4, Place Jussieu, 75252 Paris Cedex 05, France

Abstract

Purpose: Detection of subsidence due to mining in the Mulhouse potassic mining district (eastern France), by means of SAR interferograms.

Thematic context: In the Mulhouse potassic mining district, to the North of Mulhouse, the subterranean working involves subsidence at the surface. This subsidence is increasing during 12 - 15 months after the caving processes, with a maximum vertical movement of 10 mm/day. Subsidence areas are at the most 0.5 km², and are asymmetrical saucer-shaped, with an active slope moving in the same direction as the mining. Moving in the active areas is followed by the mining Society.

Data: Three interferograms (10.09.92/26.03.93, 11.06.93/16.07.93, 24.09.93/29.10.93) have been established by the French Centre National d'Etudes Spatiales (C.N.E.S) in the area studied. The topographic effects have not been corrected, because the area is an alluvial plain with very little relief.

Results: On the latter interferogram, subsidence effects have been identified. Nevertheless; the active slopes (50m wide, or one pixel) are not visible, the subsidence rate is too rapid with respect to the resolution of the interferogram (interval; 35 days). An interval of three days would be necessary for an effective survey of the subsidence.

Keywords: