



Ground subsidence monitoring using InSAR measurement in coal mining area

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Developing a coal mine is often attended with natural hazard. There are many coalfields at Kangwon province in Korea in operation since the 1930s and recently abandoned under a coal industry policy. Mining activity may lead to surface deformation, subsequently impact on manmade structures. In coal mining area, surface displacement can take place above underground workings to excavate coal bearing layers. A sag subsidence commonly related to underground coal mining shows a gentle, gradual settling of the overlying ground surface. To detect slow and continuous deformation in wide area is not easy by means of field investigation using visual inspection. InSAR-based measurements have become an important remote sensing tool in the estimation of temporal and spatial surface motions due to subsidence. JERS-1 SAR L-band data between 1992-1998 and ALOS PALSAR L-band data between 2006-2008 was used to monitor ground subsidence in abandoned coal mining, Kangwon province, Korea. Several sites undergoing subsidence were revealed by JERS-1 differential SAR interferometry. Overlaying subsidence map with underground mine map shows good agreement in spatial extent. The detailed variation of subsidence rate at each location was estimated from SBAS (Small BAseline Subset) technique using JERS-1 data and conformed using ALOS measurement during 2006-2008.