STUDY OF LAND SUBSIDENCE AND GROUND FISSURE ACTIVITIES IN XI'AN CITY WITH INSAR

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Abstract: Land subsidence and ground fissure activities have been a serious geo-hazard in Xi'an city, China. The land subsidence started in the 1960s and has affected a large area in the city. The ground fissures associated with the land subsidence have caused damages to a large number of buildings, bridges and other structures. Differential SAR interferometry (DInSAR) technique is applied to monitor the phenomena of land subsidence since 1992. Special interferogram filtering and phase unwrapping algorithms are used in processing the data. Leveling and GPS measurements are used to validate and calibrate the InSAR results. Three main subsidence stages during 1992 to 2006 are revealed based on the DInSAR results. High correlation with uncontrolled ground water withdrawal and city development can be seen from the results.

Key words: Land subsidence, ground fissures, DInSAR, GPS, city development

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