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Error Analysis on the InSAR Processing of Tibet Region -To Cite an Instance of the Coseismic Deformation Measurement of Ms6.6 Dangxiong Earthquake

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Because of the low amount of vegetation and large amount of bare rock, Tibetan region is very suitable for the application of InSAR technology. However, as the complex terrain which is undulating and the serious atmospheric changes, analysis for errors is necessary in the InSAR processing. There are many reasons for InSAR measurement errors, such as system errors of original signals, imaging errors due to parameter selection, track calculation errors, errors of the digital elevation model (DEM), errors caused by the delay of atmosphere radiation and random errors. The mechanism and impact of these factors call for qualitative and quantitative reviews of the InSAR system. This paper takes the Ms6.6 earthquake occurred on October 6,2008 in the Dangxiong region for example, analysing the degree of various errors impact on the final result and the main methods for reducing errors are brought forward.

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The network construction and preliminary results analysis of fault zone deformation monitoring in Dangxiong, Tibet

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Dangxiong in Tibet and its adjacent area is located in the central of Lhasa Massif in the tibetan orogen. dangxiong-yangbajing active fault zone is the Late Cenozoic crustal extension tectonic system. Dangxiong-yangbajing fault zone is a kind oblique slip fault which has both sinistral strike-slip and normal dip-slip active faults, and it is an important seismically active belt and active zone of geotherm. Along this area, there have been 25 destructive earthquakes above magnitude 4.5 have been recorded during the period of 1921 to 1976. Monitoring the current deformation of the Dangxiong fault zone is very important. For this reason to build monitoring network in the two sides of fault zone, and use the technology of InSAR to high precision measure the fault movement for getting the deformation information. Since 1992, Satellite SAR data has accumulated nearly 100King,and has determined the strong reflection information of ten thousands holes. The studying team emplaced 15 corner reflectors near the dangxiong fault zone in 2009.9.This paper mainly through the arrangement of corner reflector and combined with strong natural reflection point to build a monitoring network that cover the fault zone. By processing the continuous accumulation of space borne SAR data, respectively, to determine the relative deformation change information on the network important nodes, lines and surface, for quantitative analysis of fault motion parameters provide important reference.

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Reliability analysis on monitoring Suzhou ground subsidence using InSAR technique

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D-InSAR technique provides a potential tool to monitor ground subsidence, which has been used in many subsidence areas related to Ruhrgehiet (German) and Mexico City (America). In China, since about the year 2002, D-InSAR technique is applied to monitor ground subsidence due to groundwater pumping and coal mining in Shanghai, Tianjian, Cangzhou, Wu¡¯an, Xianggang, Nanjing, and Xi¡¯an. Suzhou-Wuxi-Changzhou area, with the developed economy in China, is also a typical ground subsidence region. The area has a smooth terrain and abundant surface water development, and the terrain slopes slowly from northwest to southeast. Because hundreds of SAR images covering the Su-Xi-Chang area are accumulated since 1991, many researchers monitored ground subsidence of Suzhou area with InSAR and obtained a great number of achievements. However, there are major differences between different researchers¡¯ results because of the differences of technical conditions and data processing. In this paper, we will compare the results of different technical conditions and methods of different researchers, and the actual observations and hydrogeology materials of groundwater pumping are also used to evaluate the reliability of InSAR in monitoring ground subsidence.

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