



Monitoring Land Subsidence in the Sub-center of Beijing from Time Series InSAR Technique

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As one of the most water-scarce cities in the world, Beijing has been suffering from land subsidence for decades because of over-pumping of ground water. According to the latest released plan for the urban layout, the sub-center of Beijing, located in one of the subsiding zones of the eastern part of the capital, is designed to dredge the non-capital functions of Beijing and to accommodate 1.3 million permanent residents by 2035. It is well known that land subsidence can impact the safety of urban infrastructure, so it is important to monitor the evolution of land subsidence in the Beijing's sub-center along with its rapid urbanization processes. In this presentation, the ascending TerraSAR-X stripmap images collected during the period from 2010 to 2016 and the descending RADARSAT-2 data from 2010 to 2016 were utilized to obtain the annual subsidence rate and the corresponding displacement time-series in the sub-center of Beijing using the time series InSAR technique. Comparisons of our InSAR retrievals with the leveling measurements show a high correlation, indicating the reliability of our InSAR results. Our preliminary results show an accelerating rate of land subsidence during the period from 2010 to 2016. The spatio-temporal evolution characteristics of land subsidence in Beijing's sub-center were analyzed, and the conditioning and triggering factors of the subsidence was investigated using geological and hydrogeological datasets.