



Analysis on land subsidence changes of Beijing plain from 2004 to 2015

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Land subsidence, as a surface response to the development, utilization and evolution of underground space, has become a global and multidisciplinary complex geological environment problem. Since 60s of last century, land subsidence has been developing rapidly in Beijing plain area. Under the background of Beijing-Tianjin-Hebei integration and "southern water" entering Beijing, the systematic study of its evolution mechanism is of great significance to the sustainable development of regional economy. Firstly, this study used ENVISAT ASAR and RADARSAT 2 data to obtain surface deformation information of Beijing plain area from 2004 to 2015, and verified the results. Secondly, the study area was divided into units with the grid of 960m x 960m and the ground settlement rate of each grid from 2004 to 2015 was obtained. Finally, the Mann-Kendall test is performed on the grid in turn to obtain the mutation information of each grid. Combined with hydrogeology and basic geological conditions, we try to analyze the causes of the mutations in the grid. The results show that 2347 grids were mutated in a single year, and most of them were distributed in the Yongding River alluvial fan, the middle and lower parts of the Chaobai River alluvial fan. The number of grids that have been mutated in multiple years is 1128, mainly distributed in the upper-middle area of the alluvial fan, near the emergency water source and at the edge of the groundwater funnel. This study can provide favorable technical support and scientific basis for Beijing urban construction.