عنوان مقاله:

Survey and visualization of land subsistence caused by groundwater depletion using Sentinel-۱A IW TOPS Interferometry

محل انتشار:

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خلاصه مقاله:

Land subsidence including downward subsidence with a horizontal displacement vector normally occurs in small amounts. In the present study, two pairs of Sentinel-۱A descending and ascending images of ۲۰۱۴ and ۲۰۱۵ were used to survey the subsidence rate in Garmsar Plain. After ensuring the high correlation of the images, their interferogram was prepared and following removal of unnecessary phases, the displacement phase was calculated and converted to the vertical component. The InSAR analysis revealed that the Garmsar Plain witnesses an annual subsidence of ۳۶ cm, which is very close to that of Tehran and Varamin plains. High-subsidence areas are generally located in the northern part of Garmsar, decreasing towards the southeast. The temporal and regional relationships of groundwater data and subsidence suggest that the general pattern of the subsidence in the Garmsar Plain is caused by overexploitation of groundwater that has led to widespread surface deformation. Since Garmsar is close to Tehran metropolis and the industrial boom in this city puts enormous pressure on water resources, there is an urgent need to curb extra groundwater extraction and manage water resources more wisely to decrease the speed of this unrepairable phenomenon in the area.

کلمات کلیدی:

aquifer, InSAR, Subsidence, Groundwater, Interferometer