عنوان مقاله:

Assessing GWR performance in land subsidence modeling, a case study: southwestern of Tehran Plain

محل انتشار:

هفتمین کنگره سالانه بین المللی عمران، معماری و توسعه شهری (سال: 1400)

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خلاصه مقاله:

Land subsidence, which is a common issue in most of developing countries, induces massive and often irreparable damage to infrastructures annually. Most previous studies on subsidence consider the over-extraction of groundwater and, consequently, the decrease in the groundwater level as the main factor in the occurrence of hazards associated with subsidence. In this study, we investigate the effect of other spatial factors involved in subsidence. Recognizing the magnitude and extent of the impact of each one of these factors can help to devise an effective plan to reduce or stop the process. In this study, we manifest the results of the comparison of a Geographically Weighted Regression (GWR) method with an adaptive bi-square kernel to identify the impact of each of the spatial factors affecting subsidence to the results from a Multi Linear Regression (MLR). In this regard, we consume the outputs of a compiled Interferometric Synthetic Aperture Radar (InSAR) time series analysis of the Envisat ASAR to capture displacement during the years ۲۰۰۳-۲۰۰۵. Afterward, implement a kriging interpolation method to create a surface of subsidence. Both models were compiled with the mgwr python package. The statistical diagnostics indicate the desirable match of GWR estimates compares to sample data. Finally, we compare the different statistical outputs of both GWR and MLR methods. The GWR results show that just six factors out of ten are tend to be dominant factor.

کلمات کلیدی:

Subsidence, Multi linear regression, Geographically Weighted Regression, InSAR