Urban Texture vulnerability assessment due to land subsidence in the South Metropolice Tehran

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Introduction

Vulnerability is a logical effect outcome from risk of living over the hazardous regions as well as the resiliency capacity of people for recovers the damages of hazard events.

Vulnerability is a complex phenomenon which can effect and observe in from of environmental, political and c-social-economical vulnerability.

According to land subsidence hazard affected over the residential area of south and risk of settlements and infrastructures due to this morphological hazard, the vulnerability appeared as important and necessary task to study area in form of extortion and spatial analysis.

Unfortunately, the wide angle of vulnerability in from of environmental and socio- economical have been effect to the area. It is mainly due to hidden form of hazard (land subsidence) as well as lake of knowledge about this phenomena and ability to manage. Based on this situation of study area, the present study where dell with vulnerability assessment over the settlements and infrastructures in part of south Tehran.

Study Area

This work incorporates investigation of land subsidence vulnerability assessment in part of south Tehran. It is covered an area of 64 Sq km\textsuperscript{2} between Latitudes 35.3522 N to 35.3939 N and Longitudes 51.1819 E to 51.2292 E. The study area lied in all or part of 17,18,19 and 20\textsuperscript{th} Tehran’s urban areas.

Material and Methods

The set of several following data set was applied in this study:

- Time series of ENVISAT Satellite radar images of ASAR sensor from ESA with time differential of 45-day in period of spring to summer 2011
- Optical satellite images from Landsat TM sensor patch 164 Row 35 on date of 18/07/2010
- The field survey data collected from D-GPS
- Documental and reports data as well as library resources

In other to extract and measure the rat and area of land subsidence, the set of radar data were analysed for inter fog ram generated using D-InSAR techniques. The outcome map (rat and area of land subsidence) were analysed over the GIS platform to generate risk assessment map and
classified it based on pixel involved over the land subsidence hazard area. This map was overlaid with spatial settlement and population maps at last step for vulnerability assessment and analysis.

Results and discussion, Conclusion

Risk map analysis over the study area was shown that more than 50 percent (57%) of study area lied in low risk area where observed the 12.7% of area in very high risk, 14.7% in a high risk and 15.5% in a moderate high risk zone. The result of vulnerability assessment analysis was shown 53 percent of area population and 29 percent of settlement area with high and very high degree of vulnerability. More over nearly of 50 percent of infrastructure include building; highway, metro and road are lied over the valuable area. Furthermore, it is observed that most of area residents include people and government managers are not inform about risk prone to the area. Which, can increase the social vulnerability and convert the phenomena to disaster.

Key Words: vulnerability, D-INSAR, subsidence, South Tehran.

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