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An Evaluation of the RADIUS Model in Assessing the Damages Caused by Earthquake via GIS (case study Region1 Tehran)

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Extended abstract

1-Introduction

Earthquake as one of the most devastating natural hazards is widely occurring in most part of Iran plateau. The importance of the dangers of earthquake is increasing because of the intensity of the town's expanse and capital centralization .Tehran as a main city for purpose of population, social and economy infrastructure and for purpose of to settle some active fault in and around it having a more risk of earthquake. Therefore the investigation relevant to the susceptibility of seismic this city finding the best model for the study his susceptible, is one of the necessaries of the management of Tehran. Hence, the first zone of Tehran area was selected as a case study.

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The method of collected information analyses accomplished due to the method based on informational based on and with exploitation from RADIUS model. Three scenarios were applied to estimate the amount of earth quake damages considering three different faults including Northern Tehran, Mesa and Rey.

2- Theoretical bases

Vulnerability is a condition that residency or building by their proximity with adventures and quality of them are threated. For investigate the area susceptibility region1 of Tehran, RADIUS viewpoint in 1996 to put in practice with the purpose of supply earthquake scenario and codify ploy plan for the cities of the developing countries that is exposed the danger of earthquake. To raise the information and creation a scientific and application tools decreasing the risk of earthquake in the urban area is the main purpose of RADIUS project that start with the UN supports. This ploy is to put in practice with the done reformation as a damages estimate software and preparation and codify of earthquake scenario.

RADIUS is a program that work in Excel environment and user must enter the size and limit of the studied area via lattice way total population of studied area, total number of building and the kind of building factors, the type of land, vital arteries information of studied area, selection of earthquake scenario and it's parameters' to his software.

3– Discussion

The result of earthquake damages and victims, based on regarded scenario, in the studied area indicate that based on Masha fault scenario, 9873 building will destructed, 2371 persons will bi killed and 38542 persons will be wounded.

Within north Tehran scenario also 17867 building will destructed,7482 persons will be killed and 62805 persons will be wounded and within Rey fault scenario, too, 3998 building will destructed, 347 persons will be killed and 7273 persons will be wounded. The result of vital alternate damages based on considered scenario, say that within Masha fault model, 9.1 percent of thoroughfare network, 3.3 percent of water line and sewage system and 19.4 percent of fuel station will be destructed. Also within Ray fault 3.8 percent of thoroughfare network, 0.8 percent of water line and sewage system and 9.1 percent of fuel station of the studied area will be destructed that the 7,8,2,4 area having the most scale of susceptibility in the whole. North Tehran fault, having the most susceptibility for the area and the Ray having less susceptibility.

4– Conclusion

RADIUS model that have the advantages such as, all utilized relation and environs in the plan clarity showed and available and if need be change them, and possible and domestication them based on environs available in country is possible. Also within use of this viewpoint for codify earthquake scenario and estimate probable damages con having a best perceptions about earthquake and the meter of risks that we facing with it. Also, damage amplitude and the susceptible area in city will be determined. Also this has some defects. Lattice in the RADIUS software is stable and done as an equal square. That in this case, it cause, creation wrongs is the bound and appropriate Un lattice in the studied area and always the part of information in the borders of area not enter to the software correctly. In the RADIUS viewpoint numbers and rate of entrance information is stable and we can't change it at pleasure and add or remove information. In the whole RADIUS model with due to rapid represent of result in the short period of time, for the area that the exact and complete information is not available it is a suitable model for estimate damages of earthquake and for the current condition most of the Iran's area that haven't the GIS information it's a good model for estimated the damages of earthquake.

5– Suggestions

5-1- Evaluating and investigating of different model in the background of estimate and analyses of earthquake

damages to be able access to a logical and effective model for the earthquake damages.

5-2- Investigating the susceptible area of other Tehran urban region and also other seismic area of country against earthquake to do necessary acts in the background of reducing the susceptibility of this area.

5-3- Whit the investigation of susceptibility of area and determine the susceptible urban area prevented development the city to this area.

5-4- For decrease the body susceptibility, the insurance of factors and correct design of construct factors available be done.

Key words: RADIUS model, Earthquake, Damages, region 1 of Tehran, scenario.

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