Current Landscape of Spatial Decision Support Systems (SDSS) and Software Applications for Earthquake Disaster Management in Turkey

Penjani Hopkins Nyimbili and Turan Erden (Turkey)

SUMMARY

Earthquake disasters pose significant risks for millions of people causing devastating loss of lives and damage to the infrastructure resulting in huge socio-economic and environmental losses worldwide. In the last decade, recent catastrophic earthquake events have underscored the importance of the increasing need for effective disaster management in considering appropriate planning, responses and strategies, with time and complex decision-making, being vital across the four phases of the disaster and emergency management (DEM) life cycle - preparedness, mitigation, response and recovery. In this paper, selected spatial decision support systems (SDSSs) related to the geographic information system (GIS)-based applications in earthquake DEM, ranging from scenario or simulation based, early warning and rapid response and loss estimation systems, have been analysed. These have been generalised into global systems to include HAZTURK, QLARM, SELENA, DBELA, CATS, PAGER and regional and local systems comprising of ELER, HAZUS-MH, KOERILoss, MAEviz, EQRM and LNECLOSS. From the analysis of SDSS usage worldwide, but especially in Turkey, HAZTURK has been recommended for implementation of earthquake risk and loss estimation studies in Turkey based on its significant comparative advantages over other SDSSs and the suitability and applicability to the local conditions of Turkey, which have been discussed in this research. Key challenges that need to be addressed, range from issues in spatial data acquisition, quality, interoperability, data exchange and lack of coordination among relevant institutions involved in earthquake DEM and recommendations, as well as future functional improvements of HAZTURK software, have been characterised for successful implementation in Turkey.

Current Landscape of Spatial Decision Support Systems (SDSS) and Software Applications for Earthquake Disaster Management in Turkey (9443)
Penjani Hopkins Nyimbili and Turan Erden (Turkey)

FIG Congress 2018
Embracing our smart world where the continents connect: enhancing the geospatial maturity of societies
Istanbul, Turkey, May 6–11, 2018