



2nd place

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Abstract

Assessing Potential Disruptions from Earthquakes in the Historical Peninsula in Istanbul Using 3D Modelling

The increased number of city networks such as 100 Resilient Cities, proves the importance of making cities disaster resilient. The major difficulty on this trajectory is the interrelated components in urban systems that influence each other and increase uncertainty in the risk assessment and management. This study analyses the potential disruptions that impact traffic control with the help of multi-hazard risk assessment for the historical peninsula of Istanbul. 3D modelling is introduced for the visualisation of disaster risk to support the communication of the causes of such potential disruptions. The additive normalization indicator-based approach is used to assess the socioeconomic, road and systemic vulnerability and risk. Besides, the EMS-98 Macroseismic method is applied to determine the building vulnerability and damage grades. The results show that the socioeconomic vulnerability is high to very high which is likely to contribute to traffic congestions and communication issues. Most buildings are expected to be 'very heavily damaged'. So, while roads have low risk to damage, there is high risk for road blockages in the narrow streets of the case study area. The application of 3D models improves the recognition of buildings and the identification of the causes of road blockages.