Earthquake data handling by using GIS

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Geographic Information Systems (GIS) are systems where spatial and non-spatial data are stored, processed, and analyzed. Considering tectonics and huge seismicity of Turkey, GIS is the most suitable tool for quickly accessing accurate and reliable information. The aim of this study is to store and compile earthquake related data and then build a database in GIS environment and finally perform queries, analysis and visualizations using these data. 41.600 earthquakes which occurred between the years 1900-2008 in Turkey with magnitudes between 2.5 and 7.5 are stored in the system. Locations, origin times, magnitudes and depths of earthquakes, and also installation informations and technical properties of 145 seismic stations, field studies and geology of the region are included in the database. Additionally, 2283 historical earthquakes, 144 damaging earthquakes and characteristic informations of them are also stored. Source mechanism solutions for 35 earthquakes with magnitude greater than 4.5 added to the database. 17-21 October 2005 Seferihisar-İzmir and 17 August 1999 Gölcük-İzmit earthquakes and their aftershocks are used to perform queries using recording stations, waveforms and the number of occurrence per day. Lot of query and analysis are done with this wide-ranging data base and thus the usability and advantages of GIS is tested.