Hellenides: possible locations of M7+ earthquakes defined by pattern recognition

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The study aimed to identify capable nodes for M7+ and define their characteristic geological-geomorphic features in the Hellenides where a big number of large events is well documented in seismic history. Nodes were delineated by morphostructural zoning method based on the formalized analysis of the present-day topography and geological data. We assume that nodes, formed around the intersections and junctions of lineaments, are most likely locations for large earthquakes. In the Hellenides, the epicenters of M7+ earthquakes correlate with some of the delineated nodes. The other potential nodes were identified with the help of the pattern recognition technique using geological-geomorphic parameters of the nodes. Nodes experienced M7+ earthquakes were treated as the samples for training the recognition algorithm. As a result, we have properly recognized all nodes hosting M7+ earthquakes and a number of potential nodes where events of such size have not happen so far. The results provide information on the potential earthquake sources for long-term seismic hazard assessment in the Hellenides.