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# The 2012 MW5.6 earthquake in the vicinity of the city of Sofia

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The territory of Bulgaria represents a typical example of high seismic risk area in the eastern part of the Balkan Peninsula. The neotectonic movements on the Balkan Peninsula were controlled by extensional collapse of the Late Alpin orogen, and were influenced by extension behind the Aegean arc and by the complicated vertical and horizontal movements in the Pannonian region.
The city of Sofia is the capital of Bulgaria. It is situated in the centre of the Sofia seismic zone that is the most populated (more than 1.2 mil. inhabitants), industrial and cultural region of Bulgaria that faces considerable earthquake risk. Seismicity in the zone is related mainly to the marginal neotectonic faults of Sofia graben. The available historical documents prove the occurrence of destructive earthquakes during the 15th-18th centuries in the Sofia zone. In 19th century the city of Sofia has experienced two strong earthquakes: the 1818 earthquake with epicentral intensity I0=8-9 MSK and the 1858 earthquake with I0=IX-X MSK64. The 1858 earthquake caused heavy destruction in the town of Sofia and the appearance of thermal springs in the western part of the town. After a quiescence of about 50 years a strong event with M=6.5 occurred in 1905 near the western marginal part of the Sofia zone. During the 20th century the strongest event occurred in the vicinity of the city of Sofia is the 1917 earthquake with MS=5.3 (I0=7-8 MSK64). The earthquake caused a lot of damages in the town and changed the capacity of the thermal mineral springs in Sofia and the surrounding villages. The earthquake was felt in an area of 50000 km2 and followed by aftershocks, which lasted more than one year.
Almost a century later (95 years) an earthquake of moment magnitude 5.6 hit Sofia seismic zone, on May 22nd, 2012, at 25 km south west of the city of Sofia. This shallow earthquake was largely felt in the region and up to Greece, FYROM, Serbia and Romania. No severe injuries have been reported so far, though a state of emergency was declared in Pernik (the closest city to the epicenter) and superficial damages were observed.
The present study was aimed at both presenting the results of seismological study carried out (such as analysis of wave forms, fault plane solutions, spatial distribution of intensity field, temporal aftershocks distribution) and at weighting in the balance to stress outstanding problems. The earthquake hit Bulgaria on May 22, 2012 gave lots of precious lessons to learn, especially in anticipating other disaster that may occur un-predictably in the future.