



## **A study on determination of CAV threshold levels for the Vrancea earthquakes**

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Natural disasters from earthquakes can cause considerable damages, with potentially severe effects to urban areas. Last strong Vrancea earthquake ( $M_w=7.4$ ) which occurred on March 4, 1977 hit Bucharest causing tens of thousands of buildings damaged, many people injured and dead. Strong earthquakes in the Vrancea zone occur between 60-200 km depth within an almost vertical column. Bucharest Earthquake Early Warning (EEW) system detects earthquakes with a seismic network in the epicentral Vrancea region and issue a warning in Bucharest providing 20-25s warning time. In this study, to enhance EEW capability to mitigate the effects of Vrancea earthquakes on the Bucharest city, the relationships of the bracketed cumulative absolute velocity window (BCAV-W) approach versus epicentral distance and magnitude for Vrancea region are investigated. A dataset of the strong ground motion records, which consists of intermediate depth earthquakes with different magnitudes ( $4.0 \leq M_w \leq 6.0$ ) and with epicentral distances of less than 200 km, is used. As a conclusion, rational threshold levels related to  $M_w=5.4+$  earthquakes are determined as 0.28 m/s and 0.34 m/s related to 12-second and 16-second windows, respectively.