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Re-evaluation and comparison of macroseismic effects for the major earthquakes occurred at the beginning of the 19th century in the Vrancea region, Romania

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The Vrancea region, located at the bending area of the Southeastern Carpathians in Romania, is characterized by concentrated seismicity at intermediate depths with relatively frequent destructive earthquakes of magnitude above 7. Hence, the re-evaluation of the effects produced by major earthquakes occurred in historical times is of crucial interest for seismic hazard assessment and related risk and disaster management problems. The purpose of the paper is first to collect and revise all the historical data related to the major earthquakes occurred in the first part of the 19th century in the Vrancea source: 26 October 1802, assumed to be the largest Vrancea event recorded in the Romania earthquake catalogue, 26 November 1829 and 23 January 1838. Second, the macroseismic information is re-evaluated using Medvedev-Sponheuer-Karnik (MSK-64) scale and updated versions of the macroseismic maps for these earthquakes are compiled, including several hundreds of macroseismic data points in Romania and neighboring countries. A comparative analysis of the effects for these events in correlation with estimated source parameters (depth and magnitude) and with the effects reported for the Vrancea earthquakes instrumentally recorded in 20th century is carried out. Finally, the implications for damage distribution as a function of source parameters of the Vrancea earthquakes are investigated.