

Modified Mercalli Intensity Scale for Earthquakes For Use with Geoscience Data Puzzle Project

MM I. Not felt - or, except rarely under especially favorable circumstances.

MM II. Felt indoors, especially on upper floors. Sometimes hanging objects may swing, especially when delicately suspended. Sometimes doors may swing, very slowly. Sometimes dizziness or nausea experienced.

MM III. Felt indoors by several. Sometimes not recognized to be an earthquake at first,. Duration estimated in some cases. Motion usually rapid vibration; vibration like that due to passing of light trucks. Hanging objects may swing slightly. Movement may be appreciable on upper levels of tall structures.

MM IV. Felt indoors by many, outdoors by few. Awakened some, especially light sleepers. Frightened those apprehensive from previous experience. Vibration like that due to passing of heavily loaded trucks. Rattling of dishes, windows, doors; glassware and crockery clink and clash. Creaking of walls. Hanging objects swing, in numerous instances. Disturbed liquids in open vessels slightly.

MM V. Felt indoors by practically all, outdoors by many or most. Awakened most. Frightened few - a few ran outdoors. Buildings trembled throughout. Broke dishes, glassware, to some extent. Cracked windows - in some cases, but not generally. Overturned small or unstable objects. Hanging objects, doors, swing generally or considerably. Knocked pictures against walls, or swung them out of place. Opened or closed doors and shutters, abruptly. Moved small objects, furniture, the latter to slight extent. Spilled liquids in small amounts from well-filled open containers.

MM VI. Felt by all, indoors and outdoors. Frightened many, excitement general, some alarm, many ran outdoors. Awakened all sleepers. Liquid set in strong motion. Small bells rang -church, chapel, school etc. Damage slight in poorly built buildings. Fall of plaster in small amount. Cracked plaster somewhat, especially fine cracks in chimneys. Broke dishes, glassware, in considerable quantity, also some windows. Fall of knick-knacks, books, pictures. Overturned furniture, in many instances. Moved furniture of moderately heavy kind.

MM VII. Frightened all - general alarm, all ran outdoors. Some found it difficult to stand. Waves on ponds, lakes, and running water. Damage slight to moderate in well-build ordinary buildings, Cracked chimneys to considerable extent, walls to some extent. Fall of plaster in considerable to large amount, also some stucco. Broke numerous windows. Broke weak chimneys at the roofline. Dislodged bricks and stones. Overturned heavy furniture, with damage from breaking.

MM VIII. Fright general - alarm approaches panic. Trees shaken strongly - branches, trunks, broken off, Damage slight in structures built especially to withstand earthquakes. Considerable damage in ordinary substantial buildings. Fall of walls. Twisting, fall, of chimneys, columns, monuments. Very heavy furniture overturned.

MM IX to X. Panic general. Cracked ground up to widths of several inches; fissures up to a yard in width ran parallel to canal and stream banks. Landslides considerable from river banks and steep coasts. Damage serious to dams, dikes, embankments. Severe damage to well-build wooden structures and bridges: some collapse in large part; or wholly shifted frame buildings off foundations; dangerous cracks in excellent brick walls. Serious damage to reservoirs; underground pipes sometimes broken.

MM XI to XII. Damage total. Practically all works of construction damaged greatly or destroyed. Broad fissures, earth slumps, and landslides, falls of rock of significant character, slumping of river banks, numerous and extensive. Fault slips in firm rock, with notable horizontal and vertical offset displacements.

Source: Simplified from Wood, H.O., and F. Neumann, 1931. Modified Mercalli Intensity Scale of 1931. *Bulletin of the Seismological Society of America*, 21, 277-283.