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Radon in soil gas at the Ravne fault in NW Slovenia

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The Ravne tectonic fault in north-west Slovenia is one of the faults in this region, responsible for the elevated seismic activity at the Italian-Slovene border. At 18 points along five profiles, four perpendicular and one parallel to the fault, the following measurements have been carried out: radon activity concentration in soil gas, using an AlphaGuard radon monitor and alpha scintillation cells, radon exhalation rate and soil permeability, using the AlphaGuard equipment, and gamma dose rate, using GammaTracer. The ranges of the obtained results are as follows: (0.9–33.9) kBq m^{-3} for radon concentration, (1.1–41.9) mBq m^{-2} s^{-1} for radon exhalation rate, (0.5–7.4)$\times 10^{-13}$ m^2 for soil permeability, and (86–138) nSv h^{-1} for gamma dose rate. Dependence of radon concentration and exhalation rate on the distance from the fault has been sought but not univocally understood. At three perpendicular profiles, values of both parameters increase when approaching the fault, while the opposite was found at one. At the very centre of the fault, both values were lowest at one profile, but at another, radon activity was highest and exhalation rate lowest. At all points, permeability may be considered as medium and gamma dose rate as similar to other places in Slovenia.