



²²²Rn concentrations in soil gas of Izera Block, (Sudetes, Poland)

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Soil gas ²²²Rn concentrations were measured at 17 locations in the Izera Block in SW Poland. Measurements were carried out in surface air and at sampling depths of 10, 40 and 80 cm. Surface air ²²²Rn concentrations ranged from 4 to 2160 Bqm⁻³. The concentrations for 10 and 40 cm varied from 142 Bqm⁻³ to 63 kBqm⁻³ and 222 Bqm⁻³ to 801 kBqm⁻³, respectively. At 80 cm ²²²Rn concentrations varied from 155 Bqm⁻³ to higher than 1 MBqm⁻³. Negative correlations were found between atmospheric air temperature, relative humidity and ²²²Rn concentrations at specified depths. The highest correlations between ²²⁶Ra activity concentrations and soil gas ²²²Rn concentrations were observed at a depth of 10 cm ($r = 0.95$) and in the surface air ($r = 0.77$) whereas these correlations were significantly lower in the 40 and 80 cm profiles ($r = 0.26$ and 0.34 , respectively).

This paper addresses potential geophysical applications of the results in identifying fault zones and uranium deposits and in distinguishing between them. The concentration versus depth profiles of ²²²Rn differed for soils developed on fault zones (exponential curve), bedrock with uranium mineralization (linear) and both (polynomial).