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Radon potential determination by a combination of geological mapping, geochemistry, groundwater investigations and airborne geophysics

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During the nineties comprehensive Radon investigations were carried out in Austria to determine the Radon exposure of the population (Ditto et al., 1999, Friedmann et al.,1997 and Friedmann et al., 2007). Friedmann (2007, p 16-17) came to the result that indoor measurements can be better used than geological methods to pinpoint areas with a high Radon hazard. Contrary to this conclusion, in the current presentation we intend to show that geological factors are the most important parameters for Radon potential evaluation and we demonstrate a new mapping method for determining the spatial distribution of the Radon potential by means of geological and airborne geophysical investigations.

Within the last years, several test sites in the southern Bohemian Massive were investigated. Based on large scaled geological maps different types of Granites were analysed on Uranium content. Furthermore, in order to obtain the spatial distribution of Uranium, close-meshed airborne radiometric mapping was carried out. Additionally, ground water samples were analysed to derive representative Radon concentrations for the pore volume within the different Granite types. Final results concluded that there is a significant correlation between the Uranium content of the geological subsurface and the Radon concentration in the ground water (SCHUBERT et al., 2003, ALLETSGRUBER, 2007). As a consequence airborne radiometric mapping could be used as an effective tool to derive quick and detailed information on spatial distribution of the Radon potential. Furthermore this methodology could contribute to identify potential Radon hot spot areas as only airborne radiometric mapping could provide countrywide Uranium data coverage in high resolution.

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