

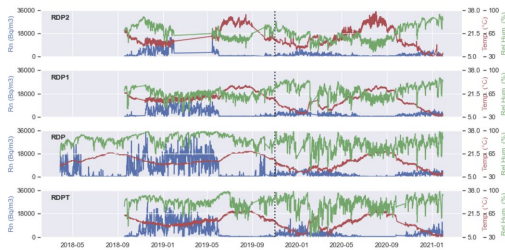
Multi-level continuous monitoring of indoor radon activity in the museum of Rocca di Papa (Rome, Italy)

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We present the results of an experiment conducted in the geophysical museum of Rocca di Papa (Rome, Italy), where the high radon levels detected might pose a risk to the health of workers and public audience. Four active sensors were installed at different floors of the building (from the basement to the second floor), in order to continuously monitor radon exhalation from the soil and its transport from the ground up to elevated floors. Collecting more than 3 years of data of radon concentration (Figure 1) enables us to identify fluctuations over both short and seasonal scale and to elucidate the relation between radon variations and changes of internal temperature and relative humidity. The analysis of such dataset reveals how the healthiness of indoor environments in terms of radon concentration is controlled by a number of factors, including the environmental conditions and the use of heating and ventilation systems. Finally, the continuous radon monitoring at different levels of the building provides a unique chance to trace the vertical radon diffusion, allowing to make a first-order estimate of upward radon velocity.



Radon concentration (Bo/m3, blue), temperature (°C, red) and relative humidity (%), green) recorded by 4 radon detectors placed at different floors of the museum of Rocca di Papa. RDP1 and RDP are both located in the basement, RDP2 a little lower (1.5 m) than RDP; RDP1 and RDP2 are installed at the first and second floor.