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Radon, pressure and temperature variability at Enot Zukim, NW Dead Sea, Israel

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In the frame of the IGRnP (Israel Geodynamic Radon Project), detailed radon monitoring is being carried out along the western margin of the central segment of the active Dead Sea Transform (DST), separating the Sinai subplate from the Arabian plate. At site 17W in the Enot Zukim zone (NW Dead Sea), radon flux in gravel (depth 1.2m) was measured with a gamma (NaI) detector every 10-min (and resampled to a 15min rate). Furthermore, environmental parameters (pressure and temperature) were recorded, at the same site and with the same temporal resolution. In this work, this high-resolution and high-quality dataset of Rn and environmental time series, covering nearly two years, is analysed. Due to the nonstationary nature of Rn time series, the analysis is carried out in non-overlapping segments of 3-weeks. For each segment, the data are decomposed via a multiresolution analysis based on the maximal overlap discrete wavelet transform. The wavelet-based decomposition retrieves high-frequency, half-day, daily and multi-day signals. These components are analysed separately for both Rn and environmental time series. In contrast with pressure and temperature, the strength of the periodic signals in Rn changes considerably through time. Furthermore, the relation between Rn, pressure and temperature depends on the analysed time-scale and is not constant in time.