



Describing the soil radon dynamics with two different time series analysis methods

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This study reports the results of the comparison of the wavelet analysis and the conventional time series analysis (TSA) for the temporal pattern of high sampling frequency (15 min) soil radon. Both methods delivered good modeling results. The main achievement of the wavelet method is the identification and numerical characterization of the small but obvious semi-diurnal (12 h) periodicity. This semi-diurnal periodicity is the only temporal feature which is the same in the summer and winter seasons. In contrast, other time series components (cycle, diurnal periodicity etc.) vary over the considered seasons. This shows that the semi-diurnal periodic process is independent from atmospheric conditions and it is purely guided by the tidal gravitational forces causing soil gas partial pressure changes through the periodic contraction of the soil pore space.