



Extraterrestrial influence on Radon – statistical criteria in long and high resolution time series

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Extraterrestrial influence on radon in air, in subsurface and above surface situations, were first proposed based on geological observations, and following this on results from simulation experiments using the Enhanced Confined Mode (ECM) configuration. The proposition is based on statistical features of the periodic components of variation of radon - in the diurnal (24-hour), solar (~30 days) and annual (365 days) periodicity bands. Experience gained from gamma and alpha time series of radon indicates the following criteria:

- a. Occurrence of a large annual variation and an associated semi-annual periodicity.
- b. Summer peak time (SPT) of the annual variation which is different for alpha and gamma radiation, and also different from that of atmospheric parameters (P, T).
- c. Annual co-modulation of amplitude and phase of the diurnal constituents S1, S2 and S3.
- d. Occurrence of Solar Rotation (SR) periodicity, with a wavelength around 30 days, which is related to the rotation of Sun around its axis. Imperative is that SR is independent of the rotational relations of the Earth-Sun system. Thus, this is an independent indication of an extraterrestrial influence.
- e. Using the 24-hour time window as reference for demonstrating long term patterns of variation – of: 1) in the time domain: average count rate; 2) in the frequency domain.
- f. Observation of side bands at diurnal constituents S1 and S2 due to non-linear interaction between annual and diurnal periodicities in radon.
- g. Directionality, associated to global orientation.

These statistical features are observed in long time series obtained at a time resolution of 15-minutes.

Interpreting these as due to an extraterrestrial influence is in accordance and in addition to the frequently observed disparity between radon phenomena and local atmospheric influences, both at geologic situations as well as in ECM simulations.

Verification of these findings, among other by interaction with nuclear physicists, has important implications for physics, geophysics, solar physics, and astrophysics.