

## ***Interactive comment on “Identifying ‘persistent temperature inversion’ events in a Subalpine Basin using Radon-222” by Dafina Kikaj et al.***

**Anonymous Referee #1**

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I had the same objection on the precipitation influence as Dr. Salzano, but the authors' reply was acceptable to me on a first approximation, given the limited precipitation of the period in which the experiment was carried out (use of a seasonal average and inherent smoothing in radon emission) though I agree that assessment in flux variability would be necessary in case of higher precipitation rates. I agree with Dr. Salzano also with the use of a more rigorous terminology: 222Rn instead of radon. I'd like to point out however that the use of Alphaguard contains implicitly the fact that this instrument works on alpha spectrometry enabling the measurement of 222Rn and 220Rn separately though this is possible in the indoor or in soil radon assessment, while the device is not the best for atmospheric observation as commented by the authors. In this experiment therefore Radon is 222Rn, and Alphaguard (which is one of the most worldwide

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popular instruments in radon monitoring) does not yield thoron data for the insufficient detection limits in air; in any case if measurable it would be resolved. An example of "atmosphere oriented" radon instruments with similar physical principle is the following: Tositti, L., Pereira, E.B., Sandrini, S., Capra, D., Tubertini, O., Bettoli, M.G. Assessment of summer trends of tropospheric radon isotopes in a coastal Antarctic station (Terra Nova Bay) (2002) International Journal of Environmental Analytical Chemistry, 82 (5), pp. 259-274. In this work not only radon main isotopes are obviously resolved based on the use of a home-made instrument lodging a highly sensitive silicon detector for alpha spectrometry, but both isotopes may be suitably applied for air masses identification even at extremely low concentration levels such as in Antarctica.

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