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Atmospheric Measurement Techniques Discussions

Interactive comment on "Inferring ^{222}Radon soil fluxes from ambient ^{222}Radon activity and eddy covariance measurements of CO_2" *by* S. van der Laan et al.

Anonymous Referee #1

Received and published: 1 June 2016

GENERAL COMMENT:

The manuscript discusses a method of estimation of radon-222 flux from the ground that is representative for an area within several tens kilometers and results of its application. The methods is interesting and remarkable because of its reversed viewpoint. It treats radon flux as a bound variable to be estimated from a flux of other gas, while radon flux is traditionally applied as a free variable, or even a constant, to estimate a flux of other gaseous/airborne material emitted from the ground. The method seems to work.

SPECIAL COMMENTS:

Page 5 Line no. 62, The 4-hour accumulation with the soil chamber seems to be enough to increase water content (moisture) of surface soil and to suppress radon exhalation from the ground surface, because the studied areas have so shallow water table less than 1 m depth. Are there any observation, analysis or discussion about the effect of this phenomenon in the referred material (Manohar et al.)? If not, it should be noted that the results of radon flux measured by the chamber method would be possibly underestimated.

Table 1 The error of radon flux excluded 12 values by SPOT-EC in LUT site might be 0.02 atoms cm-2 s-1, as written in the pages 8 and 15.

Discussion about Fig. 7 Each "event" has different but not independent footprint from the others'. The footprints with longer fetches as well as shorter ones contain information about the flux from the ground just under, or closer to, the towers to different degree. Thus, is there any possibility that the estimated radon fluxes for more distant areas from the towers are, in the cases of this study, underestimated? The authors might be recommended to clarify this attention in this manuscript. It is agreed that the tendency of radon flux distributions expressed in Fig. 7 is qualitatively correct.

Page 14 Line no. 24: Typing mistakes break the sentence.

TECHNICAL CORRECTIONS:

Page 2 Line no. 21: The notation of "222Radon" and "226Radium" should be as "Radon-222" and "radium-226", respectively.

Figure 1 Some expression of the scale of the map is desired.

Page 4 Line no. 22: "Point" would be "Pair", as the authors call it in the abstract and the conclusion.

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