

Interactive  
Comment

***Interactive comment on* “Methane and nitrous oxide emissions in The Netherlands: ambient measurements support the national inventories” by S. van der Laan et al.**

**Anonymous Referee #2**

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General comments The paper uses the ratio of methane and Nitrous oxide to radon to estimate emission of methane and nitrous oxide, assuming a release rate for radon. The paper in general appears well argued written, and well thought out.

Specific comments

Three significant issues arose for me: Firstly, in section 2.2 it is not clear how often samples are actually measured, so the temporal resolution of the initial dataset is not clear. This then made me less certain of the analysis methods.

The second issue is with the choice of a regression coefficient of 0.7 (Section 3.2). It is not clear how dependent the analysis is on this assumption. How sensitive are the

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final estimates (uncertainties) to this assumption.

The third issue is the comments on the comparison between a log-normal distribution and Gaussian-based mean and median (Section 3.2). The text implies the median is a “Gaussian” product, whereas it is the basis of a number of non-parametric statistical analyses for the very reason that it does not assume a distribution. It is not true that it is sensitive to a few outliers (Section 4.1.1). The use of a log-normal distribution may well be justified (and there are statistical tests available to demonstrate the effectiveness of “renormalization”). I would recommend clarifying the difference between these models, and probably based on the statistical evidence not report the mean, but report the median and log-normal results.

Minor points:

Section 1 (line 4) temperature increases, which are inevitable. Later in the paragraph all units should be  $W m^{-2}$ . At least in my version the “2” is missing on some.

Para2, Section 1, line 7 (e.g. cattle, ...) (shift the parenthesis).

Para 3, line 1 the Netherlands (removal capital on T)

Section 3.1, line 5. Via the soil air, radon (add the comma and replace “it”)

Section 4.1.1 , paragraph 2, line y. Remove “yet”.

Section 4.2, para 1, line 12 “seems” means what? Please clarify.

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Interactive comment on Atmos. Chem. Phys. Discuss., 9, 18867, 2009.

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