Interactive comment on “Estimation of waste water treatment plant methane emissions: methodology and results from a short campaign” by C. E. Yver-Kwok et al.

Anonymous Referee #3

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The paper addresses methodological aspects of the determination of CH4 emissions of a waste water treatment plant in Valence, France. These systems have a minor contribution (roughly 2%) to the national methane sources, but are poorly constrained. The paper presents different methods to get a better estimate of the sources related to waste water treatment plants.

Already the first sentence of the abstract shows that the paper is a “potpourri” of methodological ideas to quantify the sources with a lack of coherence. It is well known that state of the art analyzers such as FTIR and CRDS do measure precisely with a high temporal resolution. But they measure concentrations and not fluxes. The issue
is do use them in a proper way to estimate emission fluxes.

The presented methods with a variety of chambers and C2H2 tracer release are individually interesting and demonstrate the potential to get ideas on emission strength of the different compartments within the plant.

To assess the CH4 source strength on a regional scale the 222Rn tracer method is applied. I am not too familiar with this approach, but I can follow the approach for e.g. stable nocturnal boundary conditions where both 222Rn and CH4 are accumulating and from the ratio of the increase the CH4 source can be estimated in case the 222Rn source is known. The application in neutral and instable conditions is less convincing, especially in case the CH4 source is extremely inhomogeneous and a superposition of many individual plumes. A time interval from 12pm (noon?) to 8pm on 18th September was used. In opposition to the statement on lines 5 and 6 page 9203 the wind is coming from roughly 200° thus not from north. The explanation why the station is sampling along a transect of 90km is missing.

The bombastic introduction is not balanced by the content of the rest of the paper. It is a compilation of several pilot studies over a very short time to identify CH4 sources in the treatment plant. Unfortunately the main sources was not properly identified and it remains a hypothesis that the solid sludge pile is the main contributor. It seems not a big effort to directly measure this e.g. with a chamber.

I cannot recommend the paper for acceptance in AMT, but suggest to resubmit a better structured version.

Interactive comment on Atmos. Meas. Tech. Discuss., 6, 9181, 2013.