

Interactive comment on “Eddy covariance flux measurements confirm extreme CH₄ emissions from a Swiss hydropower reservoir and resolve their short-term variability” by W. Eugster et al.

K. Gerilowski

gerilows@iup.physik.uni-bremen.de

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Dear authors,

I would like to ask, if the authors have paid attention to the fact, that the eddy covariance measurements are performed only ~1000 m from the Teuftal landfill, which potentially is a strong local source for Methane emissions. Organic waste has been stored in that landfill until the year 2000 and perhaps beyond (see also: www.teuftal.ch/Geschichte.html, www.teuftal.ch/Portrait.html).

The landfill is equipped with an outgassing system (see also: www.teuftal.ch/Technik.html) and is not (or only temporally) covered. Nevertheless
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less CH₄ outgassing is expected to decline, the outgassing system will be active till 2030. It is known from literature, that similar types of landfills can produce emissions up to several kilotons of CH₄/Yr (see also: <http://prtr.ec.europa.eu>).

As the authors themselves mentioned that "Methane emissions from the lake (and from other potential sources in the valley) are strongly contained in the atmospheric boundary layer above the lake surface due to the relatively cold surface water (Fig. 3a; summer maximum 20 C), which limits convection during daytime, but enhances turbulent mixing during nighttime." my question is, how the authors can exclude interference of the eddy covariance measurements by the nearby landfill methane emissions. Can such interference be also a possible explanation for the effect, that higher CH₄ fluxes are observed at lower wind speeds (see also comments of reviewer #1) ?

Note that it is well known, that very high atmospheric CH₄ concentration values of up to some ppm (as reported in Fig. 4) can often be observed over and downwind of landfills (see also: A. Babilotte, Field Comparison of Methods for Landfill Fugitive Methane Emission Measurements, Veolia Final Report, Convention ADEME 07-74-C0034, 2008, www2.ademe.fr/servlet/getBin?name=103DFE1EB5CAB99FC11CE0008D08F6E51274800, and reviewer comments therein). My question to the authors is, if such concentrations have also been observed over and downwind of other hydropower reservoirs ?

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