Atmos. Meas. Tech. Discuss.,
doi:10.5194/amt-2018-171-AC2, 2018

Atmospheric Measurement Techniques Discussions

Interactive comment on "Quantifying methane point sources from fine-scale (GHGSat) satellite observations of atmospheric methane plumes" *by* Daniel J. Varon et al.

Daniel J. Varon et al.

danielvaron@g.harvard.edu

Received and published: 11 September 2018

We thank the reviewer for his comments and suggestions, which we address below. Page and line numbers in our response refer to the revised manuscript.

1. The paper does not yet provide convincing evidence that the proposed measurement will, in fact, meet its objectives. There are many questions still to be answered both about the measurement and its interpretation before we can say that. What is the role of pressure, elevation and scattering fluctuations on the mass estimates given that there is no oxygen measurement to normalize photon paths? What will happen when, inevitably, certain measurements are missing from a plume? What is the role

of correlated error in differentiating plume from background and calculating uncertainty in mass enhancement? How sensitive is the IME to uncertainties in wind speed and how confident can we be of the extrapolation from surface to effective wind speed in the many combinations of plume elevation and shear that obtain in the real world? the paper does not need to answer any of these but it should open the questions. I request therefore a significantly expanded discussion/conclusions section in which these questions (and I'm sure there are others) can be at least raised, preferably with some suggestions for how they can be addressed.

Response: Thank you for these thoughtful questions. We agree that an expanded discussion and conclusions section touching on these and other questions would be valuable to the reader. We have added discussion of these topics to the conclusions section (P13, L18-27).

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2018-171, 2018.