

Interactive comment on “Technical Note: Possible errors in flux measurements due to limited digitalization” by Thomas Foken et al.

Thomas Foken et al.

thomas.foken@uni-bayreuth.de

Received and published: 15 November 2018

Thank you very much for your comment. We presume your assumption was that different sensors and combination of sensors were available to investigate the influence of the digitalization error on carbon flux measurements. For this case a list of different sensor combinations and technical parameters would be necessary. But our paper is addressed only to the first carbon flux measurements in networks like AMERIFLUX or EUROFLUX in the middle of the 1990s. At this time several institutional developments of sensors to measure the carbon dioxide concentration with a high resolution in time (10-20 Hz) were available and are listed in Foken et al. (1995). But these sensors never were used in these networks. Only the Li-Cor 6262 closed path IR gas analyzer was applied with a 12-bit digitalizaton. This sensor combination was replaced at the

C1

beginning of the 2000s by open and closed path sensors with 16-bit digitalization. For this new generation of sensors the physical resolution of the sensor (the same for all sonic anemometers) was the limiting factor, but not the digitalization. Hence the focus on the effects of digitalization on the first generation of sensors. We will follow the reviewer and add some relevant parameters of the Li-Cor 6262 sensor in the paper and we will add the reference Moncrieff et al. (1997) where this system is partly described. See also answer to reviewer #2.

Foken, T., Dlugi, R., and Kramm, G.: On the determination of dry deposition and emission of gaseous compounds at the biosphere-atmosphere interface, *Meteorol. Z.*, 4, 91-118, 1995.

Moncrieff, J. B., Massheder, J. M., DeBruin, H., Elbers, J., Friborg, T., Heusinkveld, B., Kabat, P., Scott, S., Søgaard, H., and Verhoef, A.: A system to measure surface fluxes of momentum, sensible heat, water vapor and carbon dioxide, *J. Hydrol.*, 188-189, 589-611, 1997.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2018-150, 2018.

C2