

P. 2, lines 15-17: I would emphasize the role of oxygen on N<sub>2</sub>O production and consumption processes. Given the fact that oxygen concentrations show strong gradients and a large variability during the Major Baltic Inflow event, the sensitivity of N<sub>2</sub>O production of nitrification and denitrification should be discussed more detailed.

> *We will revise the text accordingly and add more detail about the role of oxygen in N<sub>2</sub>O production.*

P. 3, lines 16-17 & P. 4, lines 1-4: please explain in more detail how the samples were drawn from the Niskin bottles and transferred into the Exetainers. Were the syringes directly connected to the Niskin bottles? How was the system flushed to enable bubblefree sampling of the Niskin bottles? How exactly were the samples transferred to the Exetainers and how was air contamination prevented?

> *Syringes were connected directly to the Niskin bottle bottom valve with a short rubber tube. Prior to connecting the syringe, the tube was flushed several times its volume with sample water and care was taken to squeeze out any visible bubbles from the tube.*

*After equilibration, the original sampling syringe was connected to a dry syringe via a 3-way stopcock and from the dry syringe gas injected to an exetainer with a short needle. The syringes were always kept closed with a stopcock to minimise air contamination.*

*More detail about the sampling process will be included in the revised version of the manuscript.*

P. 4, line 23: Equation (1) is not entirely correct:  $P_{atm}$  in the first term of the equation has to be given in Pascal since this term represents the ideal gas law.

> *All units of the equation will be converted to SI units in the revised version of the manuscript.*

P. 9, lines 14-15: please add Löscher et al. (2012) as a reference for the oxygen dependency of N<sub>2</sub>O production by nitrifying archaea: Löscher, C. R., Kock, A., Könneke, M., Laroche, J., Bange, H. W. and Schmitz, R. A.: Production of oceanic nitrous oxide by ammonia-oxidizing archaea, *Biogeosciences*, 9(7), 2419–2429, 2012.

> *Text will be revised accordingly and the reference will be added.*