

## ***Interactive comment on “Nitric oxide (NO) in the Bohai and Yellow Seas” by Ye Tian et al.***

**Carolin Löscher (Referee)**

cloescher@biology.sdu.dk

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Review of 'Nitric oxide (NO) in the Bohai and Yellow Seas' by Ye Tian et al

The manuscript by Ye Tian et al on NO distribution in the Bohai and Yellow Sea is a first report on the distribution of this intermediate of the nitrogen cycle, complemented with a model on production sources and pathways. The paper is well-written and straight forward to understand, it will certainly be interesting to the readers of Biogeosciences. I have some comments of rather technical nature, as well as some questions to the authors, which I hope to be perceived constructive for the quality of the manuscript.

Generally, I am wondering why there hasn't been any discussion of the NO<sub>x</sub> rates from anthropogenic sources as they were mentioned three times in the paper. This would possibly be important to do, particularly in the context of production pathways, which leads me to my second point. Most of the production seems to be photochemical in

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surface waters. A possible change in dust particles or a change in UV intensity could both alter this production, I assume, to a more or less significant extent- could that be discussed? In addition, there is this mysterious pathway producing NO during dark periods. One option would be nitrification, which is in some steps light sensitive- this needs to be discussed from my perception. The obvious pathway, denitrification, does not seem to contribute anything here- why is that?

Technical considerations:

P1

L. 12 change 'pathways' to 'turnover'

L. 17 and throughout the text: There is a dot between mol and L, please remove

L. 21 and throughout the text, the commas are incorrect. Replace 'unknown' by 'unidentified'.

L. 23 The last sentence is repeated later in the manuscript and is not particularly informative as part of the abstract, I recommend removing it, here.

p. 2

L. 3 What would be the impact of NO in the atmosphere?

L. 14 'The current understanding...'

P. 3

L 13 ff. Please remove this list and show the stations on the map in Figure 1.

L. 22 Please explain what those chemicals are added for.

p. 4

l. 1 replace 'were' by 'was'

L. 3 the statement of the precision sounds weird, rephrase please.

p. 5

I. 16 This could still be explained, here and not only presented as a table, also the table content should be submitted to PANGAEA and a doi should go into the text, here.

Fig. 2 The panels could be smaller and shown side by side, also a colored figure would be beneficial, here.

L. 26 How would a correlation to depth make sense if we are talking about surface samples?

p. 7

L. 11 replace 'was' by 'were'

L. 13 Here, a discussion on the different biological pathways would fit in well.

L. 19 dot after ) is missing.

p. 8

L. 17/ 18 Awkward sentence, please rephrase

L. 21, same comma situation as in the abstract. Again, it's only unidentified, but possibly known. As no genetic or biological data is presented such a statement is not possible.

I. 24 This is the same sentence as in the abstract, the whole idea should be discussed, before, otherwise the statement is somewhat unfounded.

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