

## Response to editor and reviewer comments

We thank all reviewers and the editor for their effort again. All of their comments and suggestions led to an improved manuscript. We considered all suggested changes and replied only to comments that were not simply done (see below).

The changes are highlighted in font color orange in the manuscript.

**Associate Editor Decision: Publish subject to minor revisions (Editor review)** (23 Jul 2015) by Tina Treude

Comments to the Author:

Dear Susan and Co-workers,

the final reviews are back. The manuscript was sent to two former reviewers. As you can see, one reviewer accepted your manuscript as is. The other reviewer has only some minor points (an edited PDF is attached), which should be very easily accomplishable for you.

I am looking forward to receive the revised manuscript. There will be no new rounds of reviews (just editor review).

Best wishes

Tina

BG Editor

Report #1

Submitted on 13 Jul 2015

Anonymous Referee #3

**Anonymous during peer-review:** Yes No

**Anonymous in acknowledgements of published article:** Yes No

## Recommendation to the Editor

### 1) Scientific Significance

Does the manuscript represent a substantial contribution to scientific progress within the scope of this journal (substantial new concepts, ideas, methods, or data)?

Excellent Good Fair Poor

### 2) Scientific Quality

Are the scientific approach and applied methods valid? Are the results discussed in an appropriate and balanced way (consideration of related work, including appropriate references)?

Excellent Good Fair Poor

### 3) Presentation Quality

Excellent Good Fair Poor

Are the scientific results and conclusions presented in a clear, concise, and well structured way (number and quality of figures/tables, appropriate use of English language)?

For final publication, the manuscript should be

**accepted as is**

accepted subject to **technical corrections**

accepted subject to **minor revisions**

reconsidered after **major revisions**

I would like to review the revised paper

I would NOT be willing to review the revised paper

**rejected**

Please note that this rating only refers to this version of the manuscript!

**Suggestions for revision or reasons for rejection (will be published if the paper is accepted for final publication)**

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Report #2

Submitted on 23 Jul 2015

Referee #6: Ira Leifer, ira.leifer@bubbleology.com

**Anonymous during peer-review:** Yes No

**Anonymous in acknowledgements of published article:** Yes No

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Grammar needs to be thoroughly reviewed, especially for split verbs, I made many edits of a nature in the pdf, but may have missed a few. There also are a number of comments on needing to caveat. The biggest drawback is that there is no treatment of uncertainty, and it references another paper that I do not have time to read, and neither will readers of this article. Please put a discussion of uncertainty as appropriate to this data set in the supplemental material and summarize it in the main text in a sentence or two,.

Reply 1: We checked the grammar and included the suggested changes. We caved the comments that were pointed out. We agree that the discussion of the uncertainty is essential to be presented in this manuscript and, thus, included all uncertainties associated with measurements and estimations in the method section and stated the overall uncertainty in the discussion.

Comment page 6, line 201: UWMS – explain acronym

Reply 2: The acronym UWMS is explained in the header, see page 6, line 201.

Comment page 10, line 335: not really. it shows depth independent in the bottom layer in summer and then decreasing exponentially in the upper layer. not what you said.

Reply 3: The data show most obvious higher methane concentrations in the bottom water and lower in the water above. The distribution that you mention is not as obvious. Therefore, we did not rewrite this section.

Comment page 16, line 532: not central north sea (its a bank), comment on how this might affect residence time

Reply 4: The bank is situated in the central North Sea and, thus, the water which circulates around the bank and moves across the bank is referred to as central North Sea water. The cited publications do not differ between water above and surrounding the bank. In addition, the seeps are located near the bank, but not on the sandbank.

Comment page 17, line 588: you MUST Caveat this. It depends if it is transported horizontally to areas where there is no stratification

Reply 5: The estimates are for the study area. We don't know how the methane plume looks like near the Dogger Bank where the thermocline breaks.

Comment page 17, line 589: thi however, has the wrong implication. It implies that MOx is higher than diffusion. But there is a third component, accumulation.

Reply 6: Sorry, we don't understand what is meant, since we are using methane concentration in all our estimates.

Comment Fig. 6: since you are defining variables elsewhere, why not z for depth

Reply 7: We used depth in all figures and think it is most convenient for the readers.

Referee Report: [bg-2014-506-referee-report.pdf](#)