

Interactive
Comment

***Interactive comment on* “Succession of the sea-surface microlayer in the Baltic Sea under natural and experimentally induced low-wind conditions” by C. Stolle et al.**

Anonymous Referee #1

Received and published: 23 June 2010

Review of Ms: bg-2010-90 "Succession of the sea-surface microlayer in the Baltic Sea under natural and experimentally induced low-wind conditions" by C. Stolle, K. Nagel, M. Labrenz, and K. Jürgens

Recommendation: Publish after revision along lines indicated below.

Overview: The work presented in this manuscript is an investigation on influence of minimizing wind influence on organic matter and bacteria abundance and productivity succession in the sea-surface microlayer. To accomplish that, the authors performed few samplings in the Baltic Sea and in the mesocosms. The work may be important for the theoretical predictions of influence of moderate to low wind speed on SSM OM

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concentrations and bacterial processes therein. Although mesocosm experiment gave similar results as those observed for the day 2, with slick formation and lowest wind, the authors should be aware that mesocosm prevent horizontal OM dilution or lose, leading to higher OM enrichment. I assume that simulation of moderate wind in the mesocosm would not disrupt SSM.

2. Methods Para 2.1. P5, lines 6-8. The authors cite: “However, there is evidence that glass-plate samples underestimate concentrations of parameters in the SML due to dilution with bulk water (CunliñĀe et al., 2009a).” However I do not agree with that, it is more question of selectivity than dilution. Also, in a light of reported actual thickness of the SML of to be $50 \pm 10 \mu\text{m}$ (Zhang et al., 2003). (Zhang, Z., Cai, W., Liu, L., Liu, C., Chen, F., 2003. Direct determination of thickness of sea-surface microlayer using a pH microelectrode at original location. Sci. China. Ser. B 46, 339–351.). Para 2.3 Line 15: bracket is missing after: 0.05% ĩñĀnal concentration)

Para 2.5. P9, line 14: which pore size?

3. Results Para 3.1.1. P 10, line 24-p11, lines 1-2: Authors obviously took PN as organic N form i.e. PON, which is small part of POC. Therefore contribution of PN to total organic matter pool may not exceed contribution of POC to TOC. The same is for dissolved fraction. Aren't there dissolved N nutrients (inorganic N) measured in DN fraction? If not, it is not clear from the methods section 2.5. Para 3.1.2. For the no specialist please define better: 16S rRNA and 16S rRNA gene fingerprints are written in the text while in the Fig 2a it is written 16S rRNA and 16S rDNA. P12, lines 3-4. The sentence “(1) the dissimilarities in the 16S rRNA gene ĩñĀngerprints were higher than in the corresponding 16S rRNA ĩñĀngerprints, except on day 1;” is not clearly written. Please rewrite it. Para 3.2.1. The authors did not present data on the TOC, POC and DOC from the mesocosm experiments, apart from the discussion on EF. I think those data are important. Ranges of the concentrations would be fine.

4. Discussion First paragraph should be removed as it is already conclusion. Para 4.1.

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First sentence is not enough accurate. Maybe instead of “living cells as well as detritus” (what about exudates?) authors may say OM “is mainly autochthonous”. P16, line 21 – Please remove word “finally” P16, para 3 – Whole discussion on OM contribution would be much stronger if authors would present Chl a data. Para 4.2. P18, lines 10–12. The authors state: “This was also true for cell-specific activity in the SML of the mesocosm experiments, except on the third day of each experiment (data not shown). This might have been at least partially due to a smaller inhibitory influence of UV radiation in the mesocosm experiments, as samples were taken shortly after sunrise.”. I assume that cell-specific activity in mesocosm experiments might be lower also due to the fact that these experiments were performed in November–December during much lower sun irradiance than in May.

5. Conclusions Conclusions should not have referencing.

Tables Table 2: type mistakes in column 4, rows 7 and 9 (pj001 and pj0.001) Table 3. Sentence “values in parentheses indicate contribution of the particulate matter to the total organic matter pool (%)” Should be moved to the upper part of table caption, after: “. . . ., samples were only taken on the last day of each experiment.”

Figures I strongly suggest symbols to be coloured. Font size at all the figs should be increased as much as possible. Please uniform letter “a” in the text and in figs, Upper or lower-case. Fig. 4. The bands are not mentioned in the fig caption. Please add appropriate text.

General comment: Authors too many times cite “data not shown”

Interactive comment on Biogeosciences Discuss., 7, 3153, 2010.

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