

Interactive comment on “Coupling of fog and marine microbial content in the near-shore coastal environment” by M. E. Dueker et al.

Anonymous Referee #2

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General comments:

This manuscript presents a taxonomic identification of culturable bacteria sampled in the near-shore coastal environment. This work complete the bacterial aerosol analysis previously published by the authors (Dueker et al., 2011, Environ. Sci. Technol.) for the same sampling period. The cells culturable on LB media were compared for clear and foggy conditions, and correlated with sequences from oceanic origin. The scientific objectives of this work are relevant and the results are interesting in the aerobiological sciences. However, interpretations of these results are over-assessed in view of the lack of analysis, and the association of “culturability” and “viability” is inadequate in this context.

Specific comments:

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Some data is missing from this work:

- Did you observed the presence of fungal colonies during incubation?
- Could you specify the percentage of pigmented bacterial strains for each event.
- In Dueker et al., 2011 (Environ. Sci. Technol.), total bacterial concentrations in fog sample were given. Here, the authors should give the proportion of culturable bacteria in fog samples.
- Quantitative and qualitative intra-variability of culturable bacteria should be presented for fog events (n= 21) on the one hand, and for clear conditions (n=9) on the other hand.

More cultivable cells in the samples do not indicate that there are more cells viable in these. The difference of percentage of culturable cells between foggy and clear conditions can give a little information to compare the difference of viability.

It's difficult to correctly estimate the “microbial fallout rate” with the sampling conditions presented in this study. Generally, at least two altitude collections are required to evaluate it. For example, see: - Lighthart, B., and Shaffer, B.: Viable bacterial aerosol particle size distributions in the midsummer atmosphere at an isolated location in the high desert chaparral, *Aerobiologia*, 11, 19-25, 1995; - Lindemann, J., Constantinidou, H. A., Barchet, W. R., and Upper, C. D.: Plants as sources of airborne bacteria, including ice nucleation-active bacteria, *Appl. Environ. Microbiol.*, 44, 1059, 1982.

Technical comments:

p. 9610, l. 17: maybe replace “sequence” by “isolates”.

p. 9611, l. 16: add reference of this article, concerning the potential implication of microbes in atmospheric chemistry: Vaitilingom, M., Charbouillot, T., Deguillaume, L., Maisonobe, R., Parazols, M., Amato, P., Sancelme, M., and Delort, A.-M.: Atmospheric chemistry of carboxylic acids: microbial implication versus photochemistry,

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Atmos. Chem. Phys., 11, 8721-8733, doi:10.5194/acp-11-8721-2011, 2011.

p. 9613, l. 4-6: this sentence is not correct; delete this word "genetically".

p. 9617, l. 17-19: replace "55%" by 54% (if 7 strains/13: 53.84%) and "45%" by 46% (if 6 strains/13: 46.15%).

p. 9618, l. 10: just rewrite "Pseudoalteromonas".

p. 9620, l. 9: "Amato et al. (2005)" replace 2005 by 2007.

p. 9621, l. 17-18: "This study confirmed . . . viability . . . environment.", this interpretation is incorrect in view of the results presented here.

Interactive comment on Biogeosciences Discuss., 8, 9609, 2011.