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**Biogeosciences Discussions**

# *Interactive comment on* "Detection and phylogenetic analysis of coastal bioaerosols using culture dependent and independent techniques" *by* R. Urbano et al.

**R. Urbano et al.**

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General Response: The authors are aware that determining the fraction of viable vs. non-viable is important for assessing the potential of microorganisms to affect atmospheric processes. However, our study is mostly concerned with the identification of microbes. We use the culture-dependent approach as a way to further validate our culture-independent data. The organisms found using plates are very similar to the ones found using the cascade impactor. This suggests that among our data sets many organisms are found in viable states (e.g. live cells or spores). Quantitative determination of viable vs. non-viable fractions is beyond the scope of our study and potential



subject of future research.

Response to Specific comments: 1.The question in the part Material and Methods "What is the height of the pier from the ocean?" should be removed.

Response: This question will be removed and we will state in the revised manuscript that the sampling site is about 12 meters above the ocean.

2.Towards which direction has the sampler been positioned? Or did the authors change the position to gain different sources?

Response: The cascade impactor and sampling plates faced up.

3. Which diameter do the filters have?

Response: Filter diameters are $\sim$5cm.

4. What is meant by control filters? Were they kept blank?

Response: Control filters were treated in a similar fashion to sampling filters, except air was not sampled. The control filters were basically blanks where we attempted DNA extraction and PCR amplification to detect any positive artifacts associated with our methods. Our DNA extraction protocol yielded DNA below our detection levels and no PCR amplification signal was detected.

5. Please indicate the names of the primers for 18SrRNA and 16SrDNA (page 5936, line 24 and page 5937, line 13-14, respectively). Please add accession numbers to the clones. The abbreviations in the figures 2 and 3 are not clear. Please indicate them in the text or legend. The reader is virtually kept in the dark when it comes to the conclusion about the sandy beaches as origin of the organisms. It would help much more if at least references could be given which species can be possibly found in this environment. The fact that marine planktonic organisms are nearly missing in the sampling is nearly a paradox on at this air/land/ocean interface. It is stressed very much at the entrance but not dealt sufficiently.

Response: A)Names of primers and accession numbers will be provided in the revised manuscript. We will also clarify each abbreviation that is in figure 2 and 3. B) Most of our detected strains are ubiquitously found in soils and terrestrial sources; within these, several have been previously associated with marine or marine sediment type environments as indicated with asterisks in the phylogenetic trees. We suggest that the association of terrestrial and marine sediment strains in our aerosols is suggestive that aerosols might be originating in coastal regions (e.g. beaches, which are subject to erosion processes).

Response to technical corrections: 6. page 5932, line 3: place space between "climate" and "by" page 5933, line 1: Matthias- Maser instead of Matthia-Maser page 5933, line 15: write ...such "as" mannitol...

Response: Corrections will be made in revised manuscript.

7.References: References seem to be a bit sloppy: page 5940, line 25: Elbert was indicated in text with 2006, in reference list it appears as 2007.

Response: The reference has been revised to reflect the correct year, which is 2007.

8. page 5943, line 29: reference Cheng, 2005: does not appear in text.

Response: Reference will be removed

9. page 5945, line 14: Matthias-Maser in reference list appears of the year 1999, however, in text with 1998

Response: This has been revised to show the correct year (1999).

10. page 5945, line 17: reference Matthias-Maser 2000 is missing in the text

Response: Matthias-Maser 2000 appears in the text in page 5933 line 1

11. 5945, line 26: Möhler 2008 is missing in text

Response: This reference will be added in text to page 5933 line 20



12. 5945, line 30: Moon-van der Staay, 2000, is missing in text, unless indicated as Staay, 2000, page 5936, line 24

Response: in text correction will be made to read as Moon-van der Staay rather than Staay

13. Wu, 2003: is indicated in text as Zhihong Wu, 2003, page 5935, line 8.

Response: “Zhihong” has been removed.

14. It is not clear to me when the terminology "et al." is required and when it is omitted

Response: Manuscript will be revised to include “et al.” only in cases when we refer to the research group; “et al.” will be removed from citations located within the body of the manuscript.

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Interactive comment on Biogeosciences Discuss., 7, 5931, 2010.