

南極昭和基地における大気境界層バイオエアロゾル観測

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The observation of bioaerosol in the boundary layer at Syowa Station, Antarctica

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Bioaerosols may consist of viruses, bacteria, fungi, pollen, plant fibers and are airborne particles that are biological in origin. The bioaerosol over the Antarctica is getting a lot of attention as meteorology, cloud physics, phylogeography, phylogeny, extremophile, environmental medicine, etc. The study of atmospheric bioaerosol over the Antarctic will be focused on because it is attracting attention to find the microorganism in the Antarctic ice cores, investigate the long-range transport of atmospheric bioaerosol, and be starting the worldwide bioaerosol observations. However, there are hardly any researches about bioaerosols over Antarctica.

During the 54th Japanese Antarctic Research Expedition (2012-2013), the bioaerosols in the atmospheric boundary layer were observed at Syowa Station, Antarctica. We carried out the sampling of bioaerosols using our bioaerosol sampler¹⁾ at C-heliport (from December 26, 2012, to January 10, 2013) and at container yard (from January 11 to January 21 and from February 2 to 8, 2013) in Syowa Station. DNAs were extracted from membrane filter sample and 16S rRNA gene was sequenced using the illumina-MiSeq platform. The bacterial diversities varied with the day (Fig.2). It may suggest that bioaerosols in the atmospheric boundary layer at Syowa Station are affected by the weather conditions, such as wind direction, wind speed, etc.

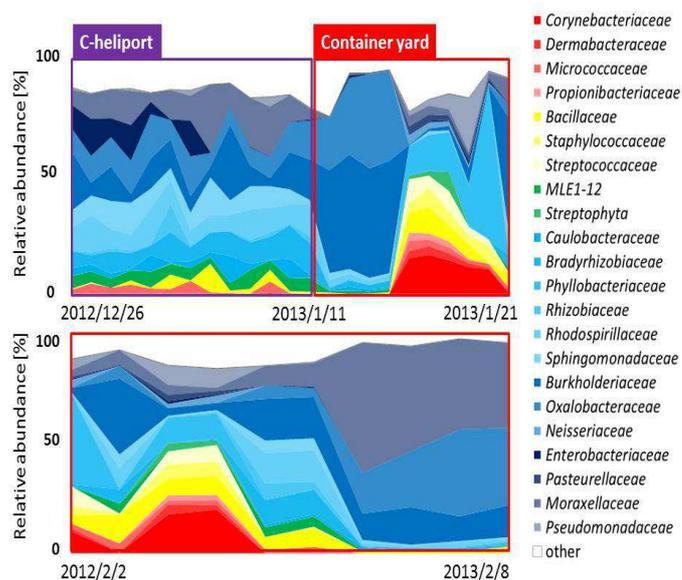
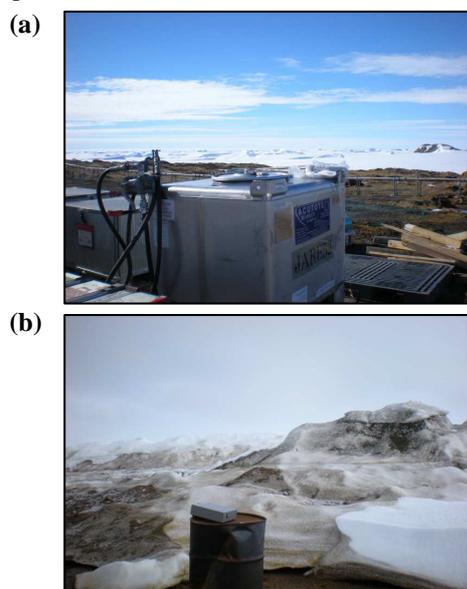


Fig.1 The sampling at C-heliport (a) and container yard(b).

Fig.2 The daily variations of bacterial diversity in the boundary layer at Syowa Station.

References

1) Kobayashi, F., *et al.*, Study on atmospheric diffusion of bioaerosols in a KOSA source region, *Eurozoru Kenkyu*, **22**, 218-227 (2007)