

しらせ船上サンプリングによる南極海上大気バイオエアロゾル観測

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The observation of atmospheric bioaerosol on the Antarctic Ocean by sampling on the icebreaker Shirase

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Bioaerosols may consist of viruses, bacteria, fungi, pollen, plant fibers. The bioaerosol over the Antarctica is getting a lot of attention as phylogeography, phylogeny, extremophile, meteorology, 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 few researches about bioaerosols suppling there ecosystems in Antarctica.

In this study, bioaerosols on the surface of the sea were directly sampled over the Antarctic Ocean during the 54th Japanese Antarctic Research Expedition (2012-2013). We carried out the sampling using the bioaerosol sampler in the observation room at the top of the icebreaker Shirase (Fig.1). The sampling performed on the outward journey, from November 30 to December 15, 2012, and the return journey, from February 16 to March 16, 2013. The rout was from Freemantle in Australia to off the coast of Syowa station on the outward journey and from off the coast of Syowa station to Sydney in Australia on the return journey. The change of filter membrane was carried out at 8:00 and 20:00 (Local Time). DNAs extracted from membrane filter samples were analyzed using the MiSeq sequencer as next-generation sequencing technologies.

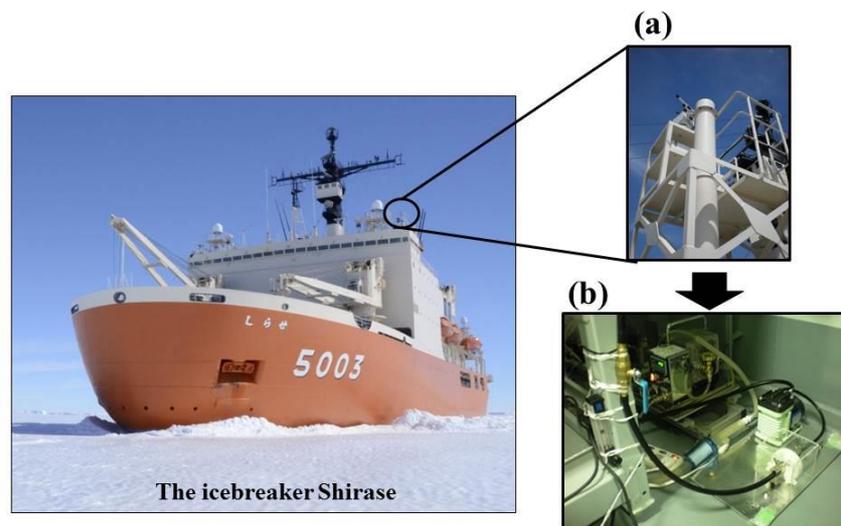


Figure 1. The inlet on the top of the ship (a) and bioaerosol sampler in observation room (b).

References

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