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

*Fumihisa Kobayashi1, Yohei Kumamoto1, Teruya Maki1, Makiko Kakikawa2, Maromu Yamada3, Atsushi Matsuki2, Takeshi Naganuma4, Yasunobu Iwasaka5
1Graduate School of Natural Science & Technology, Kanazawa University
2Institute of Nature and Environmental Technology, Kanazawa University, 3National Institute of Occupational Safety and Health, 4Graduate School of Biosphere Science, Hiroshima University, 5University of Shiga Prefecture

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, 2013, to January 10, 2014) and at container yard (from January 11 to January 21 and from February 2 to 8, 2014) 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).](image1)

![Fig.2 The daily variations of bacterial diversity in the boundary layer at Syowa Station.](image2)

References