

## Characteristic features of infrasound waves observed at Antarctica

KANAO, Masaki<sup>1\*</sup> ; MURAYAMA, Takahiko<sup>2</sup> ; YAMAMOTO, Masa-yuki<sup>3</sup> ; ISHIHARA, Yoshiaki<sup>4</sup> ; KAKINAMI, Yoshihiro<sup>3</sup> ; OKADA, Kazumi<sup>5</sup> ; MATSUSHIMA, Takeshi<sup>6</sup>

<sup>1</sup>National Institute of Polar Research, <sup>2</sup>Japan Weather Association, <sup>3</sup>Kochi University of Technology, <sup>4</sup>Japan Aerospace Exploration Agency, <sup>5</sup>Hokkaido University, <sup>6</sup>Kyushu University

Characteristic features of infrasound waves observed at Antarctica reveal the physical interaction involving surface environmental variations in the continent and surrounding Southern Oceans. A single infrasound sensor has been continuously recorded since 2008 at Syowa Station (SYO; 39E, 69S), the Lutzow-Holm Bay (LHB), East Antarctica. The continuously recording data clearly represent a contamination of the background oceanic signals (microbaroms) during whole seasons. In austral summer in 2013, several field stations by infrasound sensors are established along the coast of the LHB. Two infrasound arrays with different diameter size are installed at both SYO (by 100 m spacing triangle) and S16 area on continental ice sheet (by 1000 m spacing triangle). Besides these arrays, two isolated single stations are deployed at two outcrops in LHB. These newly established arrays clearly detected the propagating directions and frequency contents of the microbaroms from Southern Ocean. Microbaroms measurements are a useful tool for characterizing ocean wave climate, complementing other oceanographic and geophysical data in the Antarctic. Moreover, several kind of remarkable infrasound signals are demonstrated, such as regional earthquakes, together with a detection of the airburst shock waves generated from meteorite injection at the Russian Republic on 15 February 2013. Detail and continuous measurements of the infrasound waves in Antarctica could be a new proxy for monitoring a regional environmental change as well as temporal climate variations in high southern latitude.

Keywords: infrasound, array observations, Lutzow-Holm Bay, East Antarctica, microbaroms, surface environment