

Cosmic ray observations at Syowa Station in Antarctica for space weather study

*Kazuoki Munakata¹, Chihiro Kato¹, Satoru Uchida¹, Sou Kaimi¹, Akira Kadokura², Ryuho Kataoka², Paul Evenson³

1. Department of Physics, Faculty of Science, Shinshu University, 2. National Institute of Polar Research, 3. Bartol Research Institute, University of Delaware

A solar disturbance propagating away from the Sun causes dynamic variations in the near-Earth solar wind plasma. This space weather can be studied by measuring the directional anisotropy of high-energy cosmic ray intensity which dynamically changes responding to variations of the large-scale magnetic near the Earth. The Global Muon Detector Network (GMDN) currently consisting of four multidirectional ground-based muon detectors has been precisely measuring the anisotropy utilizing its global coverage of the sky. We recently started a NIPR project for installing a new pair of neutron monitor and muon detector at Syowa-base in Antarctica which has been in operation since February, 2018. In this talk, we will show these cosmic ray data for the first time. We will also report the “Cosmic Ray Burst” observed by the GMDN, which was first observed by the GRAPES-3, a large single muon detector in India in June 2015. We will address the scientific significance of the global observations with the GMDN.

Keywords: Space weather study using cosmic ray observations, Cosmic ray observations at Syowa, Antarctica, Global network observations