

Simultaneous observation of cosmic rays with muon detector and neutron monitor at the Syowa station in the Antarctic

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Since 2018.2, simultaneous observation of cosmic ray muon and neutron is continued. These detectors are showing their usefulness by responding to, for example, a peculiar CME event in August 2018. The operation is quite stable and its duty cycle is higher than 95%. Data is available on the web page;

<http://polaris.nipr.ac.jp/~cosmicrays/>

Users can 1) Display counts of Syowa MD(V) and NM for selected period, 2) Download data as text file, 3) Plots of solar wind parameters on the web page.

There is another interesting event in September 2019. A Sudden Stratospheric Warming (SSW) was observed and muon counts responded to the SSW. This response is caused by that muon counts on the ground are affected by high altitude temperature, which is called temperature effect.

Temperature effect on CR muon now can be corrected with high altitude temperature data. There is, however, some matter of research about how the method works. We derived atmospheric temperature and pressure coefficients in two ways and compare the results. Although further study is required, it seems that how to apply atmospheric coefficients alpha and beta gives slight different result. This type of atmospheric event gives us opportunities to improve correction method.