

## Toward construction of comprehensive proton and electron auroral substorm model: Ground-based observation at Syowa

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National Institute of Polar Research (NIPR) has been constructing an auroral optical observation system at Syowa Station during the 8th project term of 6 years of the Japanese Antarctic Research Expedition (JARE) program. Instruments categorized in the "Monitoring observation" are (1) 4 sets of All-sky monochromatic digital CCD imagers (427.8, 557.7, 485.0, 481.0 nm) and (2) All-sky color digital camera, and those categorized in the "Specific purpose observation" are (1) All-sky TV camera and (2) 8-color Scanning Photometer (SPM). Simultaneous observations with 2 electron and 2 proton CCD monochromatic imagers will be carried out in 2014. Interval of the 4 imagers are the same as each other, 15 sec, although the spatial resolution of the 2 proton imagers are reduced into 64x64, comparing with the full resolution of 512x512 of the electron imager.

Center (FWHM) wavelengths of the SPM are 482.5(0.6), 483.5(0.6), 484.5(0.6), 485.5(0.6), 486.5(0.6), 487.5(0.6), 670.5(5.0), 844.6(0.6) nm.

Scanning speed and sampling rate are 180 deg/10 sec and 20 Hz, respectively.

Using these electron and proton auroral data observed with all-sky imager and scanning photometer, we would like to construct a comprehensive model of substorm including the information on energy characteristics of precipitating auroral electrons and protons.

Keywords: aurora, substorm, ground-based observation, Syowa Station