

# ロングイアビン・オーロラスペクトログラフによるオーロラ・大気光の長期分光観測

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## Long-term spectral observations of aurora and airglow in Longyearbyen, Svalbard

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Auroral/airglow spectrograph (ASG) observations in Longyearbyen Svalbard have been conducted since October 2000. The ASG consists of a large fish-eye lens, a slit which passes the light from the sky along geomagnetic meridian direction, a grism with 600 gr/mm, and a cooled CCD camera. The ASG covers a wavelength of about 420-760 nm with spectral bandwidth of 1.5-2.0 nm. Analysis of the ASG data over 1 solar cycle shows that intensity of 630.0 nm emission exceeds that of 557.7 nm around 12 MLT during high solar activity, whereas intensity of 630.0 nm emission is weaker than that of 557.7 nm even in the dayside during low solar activity. They would be related to the relative locations of the cusp and ASG. In addition, weak emissions of 427.8 nm ( $N_2^+$ ), 486.1 nm ( $H_\beta$ ), 519.8/520.0 nm (NI), 589 nm (Na), 656.3 nm ( $H_\alpha$ ), 673 nm ( $N_2$ ), and 732/733 nm (OII) wavelengths were occasionally obtained with the ASG. In this paper, we give an overview of the spectral observations and statistical results of auroral intensity at each wavelength over 1 solar cycle.

Table 1. Summary of the auroral spectrograph observations in Longyearbyen, Svalbard.

Start year & month	End year & month	Number of images	Wavelength (nm)
2000-10	2001-01	26317	450-760
2001-10	2002-03	33407	450-760
2003-01	2003-03	20889	425-735
2004-01	2004-02	15846	450-760
2004-12	-	1578	450-760
2005-11	2005-12	8067	450-760
2007-12	2008-03	50206	420-730
2008-11	-	3929	420-730
2009-12	2010-03	43170	430-746
2010-10	2011-03	54370	420-730
2011-10	2012-03	78571	420-730
2012-10	2013-03	99335	420-730
2013-10	2014-03	81940	420-730
2014-10	2015-03	91926	420-730

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