

## A Preliminary Report on Balloon Observation of Auroral X-Rays at Syowa Station, Antarctica

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### 昭和基地におけるオーロラ X 線の気球観測

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#### 要 旨

1969年1月14日から2月14日までの1カ月間に、昭和基地でオーロラ X 線を観測するための気球観測が計10回行なわれた。飛揚はほぼ正

常に行なわれ、1回あたり平均約20時間の観測に成功した。その間オーロラ X 線強度の顕著な増加現象が多数検出された。気球飛揚成績の結果だけを速報する

A series of balloon flights for measurements of auroral X-rays have been carried out at Syowa Station (69°00'S, 39° 35'E), Antarctica, for a month from January 14, 1969, the period when the solar activity culminates. The instrument used in the balloon experiment consists of a NaI crystal (2' dia. × 1/2' length) and four channels of energy discriminators; >25keV, >50keV, >100keV and >200keV. Digital intensity from each channel was recorded by means of the ordinary FM/FM telemetering. The total weight of the instrument, including batteries and the antenna, amounts to about 4.4kg, which was lifted by a plastic balloon (2,000m<sup>3</sup>, 22kg) filled with helium gas. Balloon launching was successfully performed on the sea ice around the station.

Table 1 shows a summary of preliminary results of actual ten flights. Since the flight experiment was performed in midsummer, a comparatively long time was available for observation of each flight, averaging about twenty hours a day, with low winds at the balloon altitude. Details of the observation results obtained

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Table 1 Summary of balloon flights carried out at Syowa Station, Antarctica, in 1959

Flight	Date	Launch	Max alt	Fade-out	Results
1	Jan 14	1700UT	23mb	1245UT	Background intensity
2	Jan 18	1832	12	0327	2320-0157UT, X-ray events, short communication due to instrumental failure
3	Jan 24	1831	11	1325	0048-0144UT on Jan, 25, two events of 3-fold flux associated with magnetic bay
4	Jan 26	1857	11	1705	2223UT, 3-fold flux associated with magnetic pulsation
5	Feb 2	1647	10	3rd 1634	1830-1845UT, 3-fold flux associated with intense negative bay, pulsative variation on 0750-1100UT, four hours floating at 10 mb, gradually comes down to final level of 25 mb
6	Feb 5	1749	12	6th 2237	Amplifier unstable, 10-fold flux on 0353UT, 19 mb in night, 40mb in final
7	Feb 9	2041	10	10th 2328	5-fold flux on 0040UT, 2-fold flux on 1041UT, 36 mb in final
8	Feb 11	107	10	2345	0652UT, 10-fold flux with Pc 5 pulsation, signal stop after 1140UT
9	Feb 12	1444	11	13th 1826	Four hours floating in 12 mb, remains in 20-40 mb, several events of small X-ray flux
10	Feb 13	1905	(12)	1558	Baroswitch failure after 2048UT, a few events of 3-fold flux on 0220-1000UT, scaler unstable after 1429UT

at Syowa Station will be published in the near future

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