

SYNOPTIC CHARACTERISTICS OF EXTREME WEATHER IN JULY AT SYOWA STATION (ABSTRACT)

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The 31st Japanese Antarctic Research Expedition wintering over party was in residence at Syowa Station in Antarctica from February 1990 to January 1991. Many meteorological records (since the beginning of observations at Syowa Station) were set during this period. Especially, July 1990 was the month when the most significant weather occurred.

The extreme records in July 1990 are the following.

Number of blizzards	9 times, most frequent
Days of blizzards	18 days, most frequent
Monthly mean temperature	-11.0 °C, warmest
Maximum temperature	-2.5 °C, warmest
Monthly mean wind speed	12.0 m/s, strongest

The weather in July 1990 was characterized by strong wind and high temperature. Strong wind was brought by cyclones and fronts which approached and passed Syowa Station one after another. High temperature was associated with strong wind which destroyed the surface inversion layer.

Why did cyclones and fronts approach Syowa Station so frequently? Judging from the southern hemispheric monthly mean chart of 500 hPa height in July, the circulation with a wave number of three prevailed; one of the three vortices was just west of Syowa Station. The monthly mean chart of surface pressure in July shows a low pressure field under the polar vortex of 500 hPa. Syowa Station was in this low pressure field, so cyclones and fronts easily invaded high latitude.

Under such synoptic circumstances, cyclones and fronts approached and passed Syowa Station frequently.

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