for this difference seems to be due to the shallowness of the boundary layer and probably to the existence of the subsidence flow which occurs from the predominant wind system at Mizuho Station, which is the katabatic wind.

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## RADIATION BUDGET AND SURFACE INVERSION AT MIZUHO STATION, ANTARCTICA (Abstract)

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The relation between the strength of the surface temperature inversion and the radiation budget was examined using the results of measurement at Mizuho Station in the katabatic wind zone, Antarctica. This relation expressed in other words was, what was the surface temperature $T_s$ when the temperature distribution in the free atmosphere was given.

The radiation budget $R_n$ was related to the temperature difference of $T_s$ and $T_a$, where $T_a$ was defined as the equivalent blackbody temperature for the downward longwave and net shortwave radiative flux. From the monthly averages of the measured value, $R_n$ was approximated by a simple quadratic formula of $(T_s-T_a)$.

In order to maintain the heat equilibrium at the ground surface, there should be another heat flux(es) $H$ $(=-R_n)$ to compensate for the net radiation. From the measured monthly averages, $H$ was found to be highly correlated to the strength of the inversion $\Delta T$, which was defined as the temperature difference of $T_s$ and $T_x$ ($T_x$: maximum temperature of the free atmosphere, represented by the temperature of 700 mb level, which was about 300 m above the surface. Actually, $T_x$ was substituted for by 700 mb temperature at Syowa Station). $H$, namely $-R_n$, increased against $\Delta T$, and this dependence was opposite to the dependence of the net longwave flux on $\Delta T$. $H$ might be mostly composed of the sensible heat, *i.e.*, mechanical mixing of the inversion layer through the katabatic wind which also had a relation to $\Delta T$. $H$ was approximated by the linear function of $\Delta T$. The function for $H$ was different from that at other stations where the wind condition was different.

When the temperature distribution in the free atmosphere was given, the surface temperature $T_s$ would be determined between $T_x$ and $T_a$ so as to realize the heat equilibrium under the radiative cooling situation $(T_x>T_a)$.

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## PRELIMINARY ESTIMATE OF THE RADIATION BUDGET OF THE ANTARCTIC ATMOSPHERE FROM SATELLITE AND GROUND-BASED OBSERVATIONS (Abstract)

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The albedo and upward longwave radiation flux at the top of the atmosphere