

Heat and mass balance at snow surface of inland Dome Fuji Station, East Antarctica

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The meteorological observations near the snow surface were conducted at Dome Fuji Station (77°19'S, 39°42'E, 3810 m a.s.l.), East Antarctica in 1997. Observational components were air temperature (1m, 0.1m), wind speed (10m, 1m, 0.1m), air pressure, snow temperature (surface, 5, 10, 20, 50, 80 cm in depth), downward and upward short wave radiations, downward and upward long wave radiations. The amounts of precipitation, evaporation/condensation at snow surface were temporally measured.

The heat balance at the snow surface was calculated. $(\text{net short wave radiation}) + (\text{net long wave radiation}) + (\text{sensible heat flux}) + (\text{latent heat flux}) = (\text{conductive heat flux to snow cover})$. We applied bulk method for sensible and latent heat flux calculations. Conductive heat flux to snow cover was calculated by snow temperature profile.

Directions of each heat balance component are different in winter (polar night) and in summer (midnight sun). Though there are some periods with which the heat balance does not convergent yet, we would like to elucidate these reasons in our presentation. We will discuss the local circulation of water vapor in summer from snow layer to atmosphere during daytime and from atmosphere to snow surface during night time.