

2. Measurements of Drifting Snow on the Route between Syowa Station and Mizuho Camp, 1973

Shun'ichi KOBAYASHI* and Kotaro YOKOYAMA**

Drifting snow occurs perpetually in such a strong katabatic slope as Mizuho Plateau. Measurements of snow transport under different wind regime are very important to the studies of the snow cover formation and mass budget of the ice sheet. To measure the amount of drifting snow under the severe conditions in Mizuho Plateau, a handy collector, a chest with 10 drawers, was devised (Kobayashi, 1975). The collector with collection efficiency of about 0.23 can measure the mass flux at ten levels up to 1 m above the surface. Measurements of snow transport were made at the following three stations. Wind speed profiles were measured at the same time.

Station	Latitude (S)	Longitude (E)	Altitude (meters)
Mizuho Camp	70°41.9'	44°19.9'	2,230
Z60	70°24.3'	43°50.5'	2,100
H90	69°15.5'	41°14.6'	1,260

The annual net accumulation at Mizuho Camp, Z60 and H90 in 1973 was about 10 cm, 5 cm, and 30 cm in snow, respectively (Yokoyama, 1975). The amount of snow drift at H90 was much larger than at other two sites. Data of mass flux at various heights were listed in Table 1 together with the wind speed at 1 m height.

References

- Kobayashi, S. (1975): Saikuron-kata jifubuki-kei to hikidashi-kata jifubuki-kei no hikaku (A comparison between cyclone-type and chest-of-drawer-type drift collectors). *Teion Kagaku (Low Temp. Sci.), Ser. A*, **32**, 89 - 95.
- Yokoyama, K. (1975): Net accumulation by stake measurements. *JARE Data Rep.*, **28 (Glaciol.)**, 62 - 82.

* The Institute of Low Temperature Science, Hokkaido University, Sapporo 060
 ** Disaster Prevation Research Institute, Kyoto University, Uji 611.

Table 1. Mass flux ($\text{g} \cdot \text{m}^{-2} \cdot \text{sec}^{-1}$) of drifting snow and data of wind.

Observation No.	Station	Date	Time of exposure (min)	Mass flux ($\text{g} \cdot \text{m}^{-2} \cdot \text{sec}^{-1}$) of various heights (cm)										Wind speed at 1 m, u_1 (m/s)	Friction velocity, u_* (cm/s)	Roughness parameter, Z_0 (cm)
				0-5	10-15	20-25	30-35	40-45	50-55	60-65	70-75	80-85	90-95			
1	Mizuho Camp	17 Apr.	33	233	47	18	11	7	11	9	3	3	3	10.5	53.9	0.04
2	"	18 Apr.	30	222	166	88	55	23	33	23	16	16	19	12.5	69.6	0.065
3	"	21 Apr.	32	262	87	78	42	23	48	31	30	17	15	13.5	74.8	0.072
4	"	22 Apr.	32	267	105	63	42	23	25	18	14	14	17	11.0	64.3	0.092
5	Z60	26 Apr.	49	139	33	10	6	4	5	1	2	1	2	11.0	—	—
6	"	"	30	188	77	48	28	22	20	16	15	10	10	"	—	—
7	H90	28 Apr.	30	477	352	257	255	253	250	250	241	231	226	12.0	71.3	0.82
8	"	"	"	497	294	290	255	245	239	236	236	231	229	"	"	"
9	"	"	"	390	332	294	253	244	241	235	233	233	231	"	"	"
10	"	"	"	372	292	329	276	254	250	237	237	233	236	"	"	"
11	Mizuho Camp	8 Sep.	30	226	121	19	28	19	19	12	11	18	15	12.0	55.7	0.033
12	"	17 Sep.	"	227	102	14	6	18	18	16	13	12	14	12.5	73.0	0.10
13	"	"	"	164	68	19	16	14	15	10	9	10	12	11.0	71.3	0.10
14	"	18 Sep.	"	109	33	20	7	10	10	6	6	6	9	8.5	57.4	0.25
15	"	19 Sep.	"	24	2	4	5	3	4	5	3	4	3	6.5	57.4	0.80
16	"	21 Sep.	"	217	116	68	44	25	17	16	13	14	12	9.5	53.9	0.04
17	"	22 Sep.	"	15	5	4	6	1	3	2	2	2	2	7.0	53.9	0.45

* The values of mass flux corrected by the value of collection efficiency 0.23.