

# (On the Siting of the Surface Meteorological Observation Field)

( )

1. (同級) (精度) (meteorological 가 가 observation field) , WMO(1996) 100km Murayama(1983) WMO ( , 2002b; WMO, WMO 1 150-200km , 2 50-60km , 30km 1/2 10 ( ) ( 32km) , 10 ( 35km) , ( 95km) 가 ( 110km) , (WMO, ( 40km) ( 35km) 1971). (WMO, 1980). 가

(U.S.EPA, 1976).

(, 2002b;  
, 1986; , 1999)

2.

가.

가

I

가

가

( )

가

가

1.5m

10m

(WMO, 1996; , 2002b).

1.5m

(U.S.EPA,

1976).

가

(1994)

5m

가

10.3

가

WMO(1971)

(5m/s

0.5m/s,

± 10%,

±

5 )

8.8

가

가

WMO(1996)

10

(WMO 1996).

(仰角) 5

10

(視角, visual angle)

angle)

6

(U.S.EPA, 1976)

6

가 4

가

( ) 10

10m

10

10m

(WMO, 1996),

10m

가

(wake)

Fig. 1

가

가

가

10

가

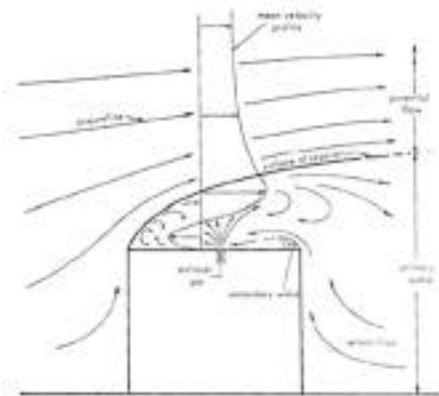


Fig. 1. Typical airflow pattern around a cube with one face normal to the wind (After J. Halisky, 1962).

가

1 1.5 가 25.0m  
Miyazawa (1982) ( )  
74.6m(  
) 가  
가 (geostrophic wind speed)  
가 80%  
40%  
(1973)  
1500m ( ) 7.5-12.5m/s  
40%  
( 2-3m/s  
40%  
, 2002a) Table 1 가  
61%  
10m 가 Counihan(1975)

Table 1. Heights of wind measurement above ground at the manned stations of Korea Meteorological Administration in 2001.

Height above ground	No. of synop. stations	%	No. of manned stations	%
6-8m	-	0	2	2
9-11m	17	41	51	62
12-14m	7	17	10	12
15-17m	6	15	7	8
18-20m	8	20	8	10
21-23m	2	5	4	5
24-26m	1	2	1	1
Total	41	100	83	100

Table 2. Relative wind speed(%) at each height above the ground with respect to the geostrophic wind speed at the top of the planetary boundary layer(PBL).

Height above ground	Rural area ( $m = 0.143$ )	Suburban area ( $m = 0.22$ )	Urban area ( $m = 0.143$ )
	PBL top: 600m	PBL top: 800m	PBL top: 1000m
200m	85.5%	73.7%	63.7%
150m	82.0	69.2	58.8
100m	77.4	63.3	52.5
90m	76.2	61.8	51.0
80m	75.0	60.3	49.3
70m	73.6	58.5	47.5
60m	71.9	56.6	45.5
50m	70.1	54.3	43.2
40m	67.9	51.7	40.6
30m	65.1	48.6	37.5
20m	61.5	44.4	33.4
10m	55.7	38.1	27.5

$$\frac{u(Z)}{u(Z_1)} = \left(\frac{Z}{Z_1}\right)^m$$

$m$   
 0.21 ~ 0.23, 0.143, 0.28  
 PBL  
 600m, 800m, 1000m 가

Table 2  
 Table 2 10m  
 55.7%, 38.1%, 27.5%가  
 10m  
 50-60m  
 120-130m

50m  
 가 10m

tower

tower

Gill et. al.(1967) , open tower(

) (wake) 가  
 (moderate) ~ (strong) , solid  
 tower( )  
 (extreme) 가

Moses & Daubek(1961)

(light wind)  
 50% ,  
 4.5 ~ 6.3m/s 25%  
 tower  
 20 ~ 49  
 30%

tower  
 1  
 가 가  
 tower  
 tower  
 10m

가  
 (minimum tower density)

tower D  
 가 1D ~ 2D ±5%  
 tower  
 가  
 2 set

180°

가 (U.S.EPA, 1976).

가 (louvered thermometer screen)

가 가 (熱源)

30m(100ft)

150m(500ft)

(U.S.EPA, 1976).

4 ( )

(U.S.EPA, 1976).

가

1.2m(4ft) 가

1.5m(5ft) 가 (Byers, 1959).

8cm(3in) (Landsberg, 1966).

10m 20m-30m (U.S.EPA, 1976).

가 shield( 가 ) metal tower 가 tower tower

가 (aspirated radiation shield, ARS)

가 (thermistor) ARS (thermocouple)

3~5m/s 가

3m/s

( )

2

4

가

(U.S.EPA, 1976).

20cm

( )

가

가

가

가

(WMO, 1996).

20cm

가

(wind shield)

가

가

가

(亂流)

가

20cm

(空氣軌跡, air

trajectory)

가

가

3.

가

가

(windbreak) 1)

가

)  
1996).

(  
10  
(WMO,

5)

4  
(U.S.EPA, 1976).

2)

1)

4

10m

(wake)

area)

50m

3)

( ) ( )

(visual angle) 6

가

가

4)

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