



# KMA'S BRIEFING ON CLIMATE CHARACTERISTICS

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## February 2010 and the winter 2009 climate

- ◇ The mean temperature for February and the winter season were warmer than normal by 1.7°C and 0.3°C, respectively.
- ◇ The mean precipitation for February and the winter season accounted for 227.2% and 152.8% , respectively, compared to normal.

- Climate characteristics of February 2010 and the winter 2009 (December 2009 through February 2010) and its long-term trends are analyzed based on 60 meteorological stations across Korea (national average) for the period of 1973-2010 (1908-2010 for Seoul).
- The climatological characteristics in February 2010 can be described as follows:
  - o For Korea (whole nation),
    - The mean temperature (2.5°C), the mean maximum temperature (7.3°C), and mean minimum (-1.8°C) were 1.7°C, 1.0°C and 2.2°C higher than normal, respectively.
    - Maximum depth of fresh snow cover (17.4cm) was 7.4cm more than normal, making it the third highest snowfall on record since 1973.
    - The amount of precipitation (85.2mm) was 227.2% of normal.
    - The average number of rainy days (10.1 days) increased by 3.0 day compared to normal.
  - o For Seoul,
    - The mean temperature (1.4°C), the mean maximum temperature (4.9°C), and mean minimum (-1.7°C) were 1.7°C, 0.8°C and 2.4°C higher than normal, respectively.
    - Maximum depth of fresh snow cover (15.0cm) was 7.3cm more than normal.
    - The amount of precipitation (55.3mm) was 234.3% of normal.
    - The average number of rainy days (8 days) increased by 2 day compared to normal.

□ **The climatological characteristics in the winter 2009 (December 2009 through February 2010) can be described as follows:**

o For Korea,

- The mean temperature ( $0.7^{\circ}\text{C}$ ) and the mean maximum temperature ( $-3.8^{\circ}\text{C}$ ) were  $0.3^{\circ}\text{C}$  and  $0.5^{\circ}\text{C}$  higher than normal, respectively, while the mean minimum temperature ( $5.7^{\circ}\text{C}$ ) was  $0.2^{\circ}\text{C}$  lower than normal.
- The amount of precipitation (147.3mm) was 152.8% of normal.
- The average number of rainy days (26.0 days) increased by 4.6 day compared to normal.

o For Seoul,

- The mean temperature ( $-1.4^{\circ}\text{C}$ ), the mean maximum temperature ( $2.2^{\circ}\text{C}$ ), and mean minimum ( $-4.7^{\circ}\text{C}$ ) were  $0.5^{\circ}\text{C}$ ,  $1.1^{\circ}\text{C}$  and  $0.1^{\circ}\text{C}$  lower than normal, respectively.
- Days with minimum temperature below  $-10^{\circ}\text{C}$  or equal (17 days) and days with maximum temperature below  $0^{\circ}\text{C}$  (36 days) increased by 5.3 and 14.4 day compared to normal, respectively.
- Maximum depth of fresh snow cover (47.8cm) was 19cm more than normal.
- The amount of precipitation (106.1mm) was 151.4% of normal.
- The average number of rainy days (26 days) increased by 5.6 day compared to normal.

□ **Long-term trend of February and the winter climate**

- o Korea's mean, mean maximum, and mean minimum temperatures of the February from 2001 to 2010 were  $1.5^{\circ}\text{C}$ ,  $1.8^{\circ}\text{C}$ , and  $1.4^{\circ}\text{C}$  higher than those of the 1970s, respectively.
- o For Seoul, days with minimum temperature below  $-10^{\circ}\text{C}$  or equal (1 days), days with maximum temperature below  $0^{\circ}\text{C}$  (4 days) of the February during 2001 and 2010 were 2.4 and 2.2 days less than those of the 1970s, respectively.
- o For Korea, all of the days with minimum temperature below  $-10^{\circ}\text{C}$  or equal (9.5 days) and days with maximum temperature below  $0^{\circ}\text{C}$  (7.5 days) of the winter during 2001 and 2010 were 6.7 days less than those of the 1970s, respectively.
- o For Korea, maximum depth of fresh snow cover (6.8cm) of the February during 2001 and 2010 were 4.4cm less than those of the 1970s, however, for Seoul, the figures(8.7cm) are 0.1cm more than those of the 1970s.

※ Normal: average from 1971 to 2000.

※ National average is used average values of 60 meteorological stations starting from 1973.

※ In Seoul, data are analyzed from 1908.

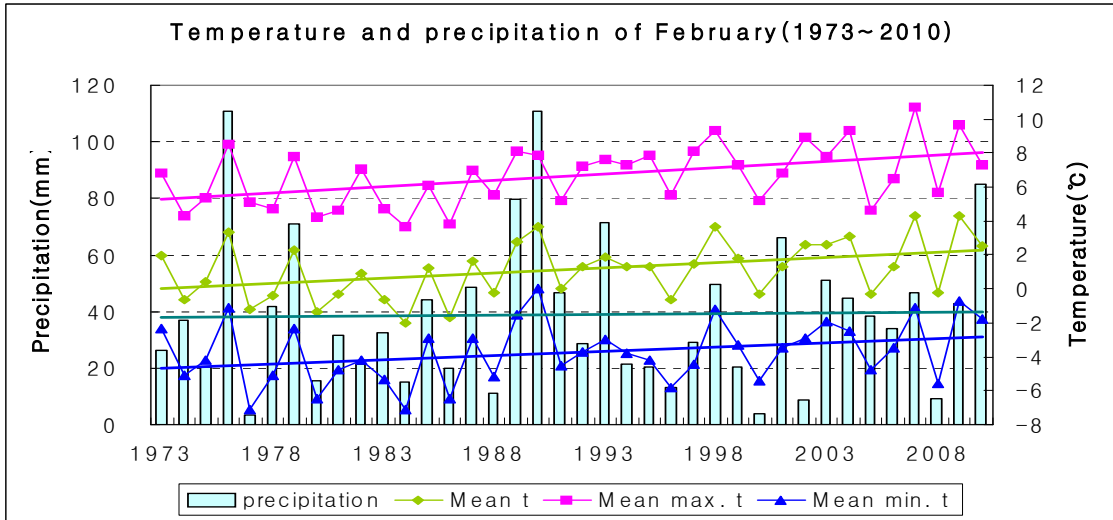
※ 1920s: average from 1921 to 1930

※ 1970s: average from 1973 to 1980

※ 2000s: average from 2001 to 2009

## Appendix 1. February, 2010 climate

**Fig. 1. Temperatures (mean, mean maximum, and mean minimum), and precipitation across South Korea during February (1973-2010)**



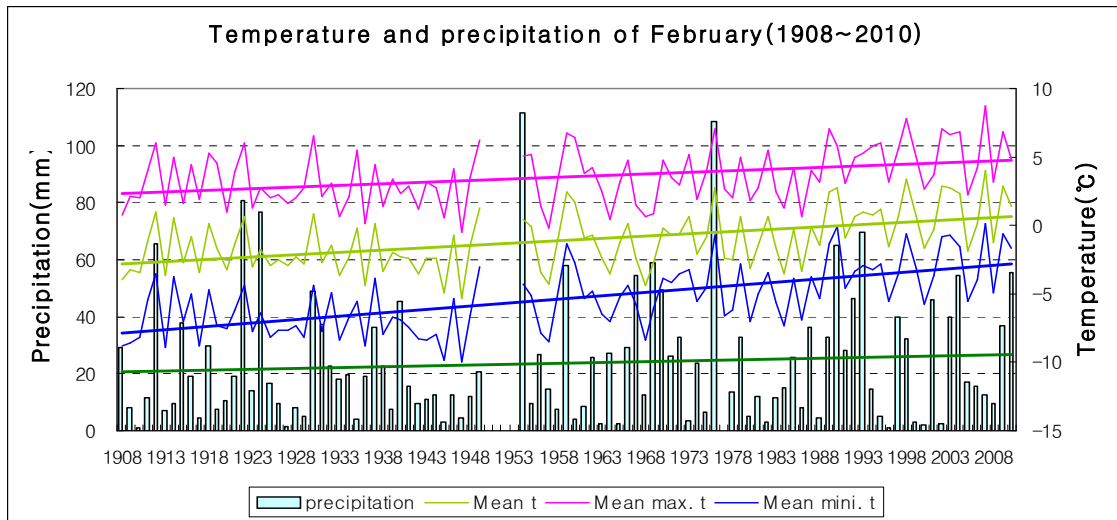
### □ Average values of meteorological elements across Korea (1973-2010)

Elements (National) average	February 2010 (a)	Normals of February (1971-2000) (b)	a-b	rank since 1973 (within 5th)
mean temperature (°C)	2.5	0.8	1.7	-
mean maximum t (°C)	7.3	6.3	1.0	-
mean minimum t (°C)	-1.8	-4.0	2.2	-
days with minimum t below -10°C	1.9	(3.7)	-1.8	-
days with maximum t below 0°C	1.6	(2.7)	-1.1	-
maximum depth of fresh snow cover (cm)	17.4	(10.0)	7.4	third highest
amount of precipitation (mm)	85.2	37.5	47.7(227.2%)	third highest
rainy days	10.1	7.1	3.0	fifth highest

### □ Average values of meteorological elements across Korea for each decade (1973-2010)

Year	Mean t (°C)	Mean Maximum t (°C)	Mean Minimum t (°C)	Days with minimum t below -10°C	Days with maximum t below 0°C	maximum depth of fresh snow cover (cm)	Precipitation (mm)	rainy days
1973-1980 (a)	0.6	5.9	-4.2	4.2	4.0	11.2	40.7	7.2
1981-1990 (b)	0.5	5.9	-4.0	3.9	3.0	10.6	41.5	7.7
1991-2000 (c)	1.2	7.1	-3.9	3.0	1.4	8.4	30.5	6.1
2001-2010 (d)	2.1	7.7	-2.8	2.1	1.3	6.8	42.7	6.3
d-a	1.5	1.8	1.4	-2.0	-2.7	-4.4	2.0	-0.9
d-b	1.6	1.8	1.2	-1.8	-1.7	-3.8	1.2	-1.4
d-c	0.9	0.6	1.1	-0.9	-0.1	-1.6	12.2	0.2

**Fig. 2. Temperatures (mean, mean maximum, and mean minimum), and precipitation across Seoul (1908-2010)**



**□ Average values of meteorological elements across Seoul during February (1908-2010)**

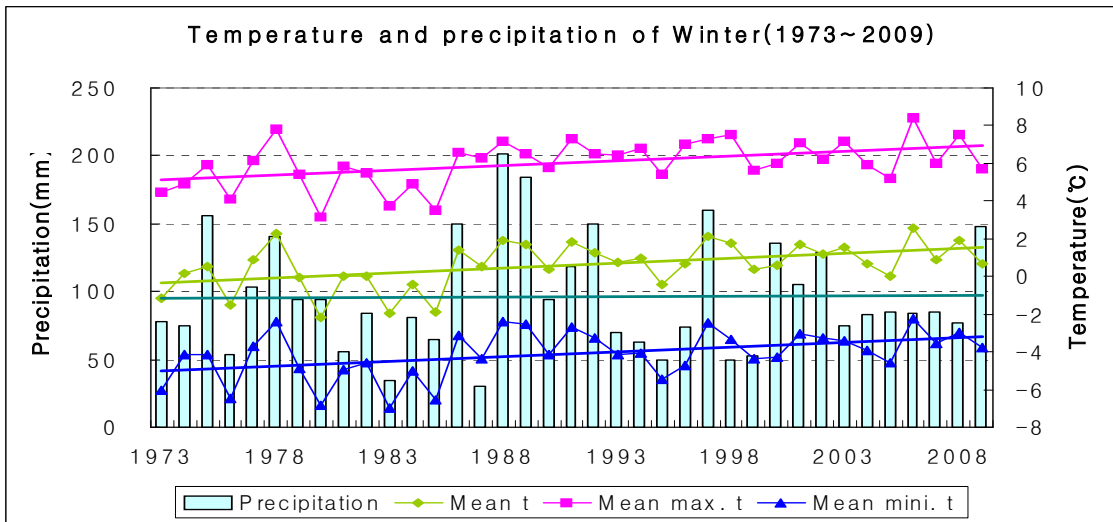
Elements (Seoul) average	February 2010 (a)	Normals of February (1971-2000) (b)	a-b	rank since 1908 (within 5th)
mean temperature (°C)	1.4	-0.3	1.7	-
mean maximum t (°C)	4.9	4.1	0.8	-
mean minimum t (°C)	-1.7	-4.1	2.4	-
days with minimum t below -10°C	1	2.7	-1.7	-
days with maximum t below 0°C	8	5.0	3.0	-
maximum depth of fresh snow cover (cm)	15.0	7.7	7.3	-
amount of precipitation (mm)	55.3	23.6	31.7(234.3%)	-
rainy days	8	6.0	2.0	-

**□ Meteorological elements across Seoul during February for each decade (1911-2010)**

Year	Mean t (°C)	Mean Maximum t (°C)	Mean Minimum t (°C)	Days with minimum t below -10°C	Days with maximum t below 0°C	maximum depth of fresh snow cover (cm)	Precipitation (mm)	rainy days
1911-1920	-1.5	3.5	-6.2	5.3	6.3	-	20.3	6.6
1921-1930	-1.8	3.1	-6.8	8.1	7.5	-	28.0	6.1
1931-1940 (a)	-2.2	2.5	-6.8	6.9	8.0	-	23.3	6.0
1941-1950	-2.4	2.6	-7.4	8.7	8.0	7.0	11.3	5.2
1954-1960	-0.6	4.0	-4.9	4.7	5.3	11.7	33.1	6.1
1961-1970	-1.8	2.7	-5.7	6.0	7.9	11.8	27.2	5.8
1971-1980 (b)	-0.8	3.6	-4.4	3.4	6.2	8.6	25.2	6.5
1981-1990	-0.6	3.7	-4.3	3.5	6.2	8.7	21.4	6.0
1991-2000	0.4	4.9	-3.5	1.1	2.5	5.9	24.2	5.6
2001-2010 (c)	1.3	5.4	-2.3	1.0	4.0	8.7	29.0	5.7
c-a	3.5	2.9	4.5	-5.9	-4.0	-	5.7	-0.3
c-b	2.1	1.8	2.1	-2.4	-2.2	0.1	3.8	-0.8

## Appendix 2. Winter, 2009 climate

**Fig. 1. Temperatures (mean, mean maximum, and mean minimum), and precipitation across South Korea during the winter seasons(1973-2009)**



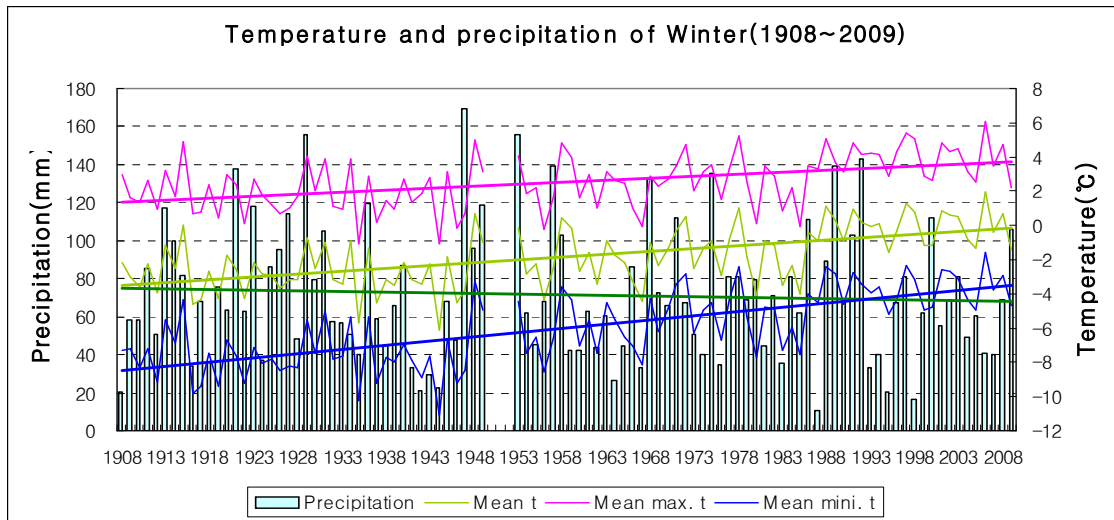
□ **Average values of meteorological elements during the winter seasons (1973-2009)**

Elements (National) average	Winter 2009 (a)	Normals of Winter (1971-2000) (b)	a-b	rank since 1973 (within 5th)
mean temperature (°C)	0.7	0.4	0.3	-
mean maximum t (°C)	5.7	5.9	-0.2	-
mean minimum t (°C)	-3.8	-4.3	0.5	-
days with minimum t below -10°C	13.1	(13.2)	-0.1	-
days with maximum t below 0°C	13.0	(10.6)	2.4	-
maximum depth of fresh snow cover (cm)	40.1	(32.5)	7.6	-
amount of precipitation (mm)	147.3	96.4	50.9(152.8%)	-
rainy days	26.0	21.4	4.6	third highest

□ **Average values of meteorological elements during the winter seasons for each decade (1973-2009)**

Year	Mean t (°C)	Mean Maximum t (°C)	Mean Minimum t (°C)	Days with minimum t below -10°C	Days with maximum t below 0°C	maximum depth of fresh snow cover (cm)	Precipit- ation (mm)	rainy days
1973-1980 (a)	-0.1	5.2	-4.8	16.2	14.2	38.9	99.1	21.9
1981-1990 (b)	0.2	5.6	-4.5	14.0	11.7	32.0	97.9	22.3
1991-2000 (c)	1.0	6.6	-3.9	10.1	6.7	27.9	92.2	19.4
2001-2009 (d)	1.2	6.6	-3.4	9.5	7.5	25.4	96.5	20.3
d-a	1.3	1.4	1.4	-6.7	-6.7	-13.5	-2.6	-1.6
d-b	1.0	1.0	1.1	-4.5	-4.2	-6.6	-1.4	-2.0
d-c	0.2	0	0.5	-0.6	-0.8	-2.5	4.3	0.9

**Fig. 2. Temperatures (mean, mean maximum, and mean minimum), and precipitation across Seoul during the winter seasons (1908-2009)**



**□ Average values of meteorological elements during the winter seasons across Seoul (1908-2009)**

Elements (Seoul) average	Winter 2009 (a)	Normals of Winter (1971-2000) (b)	a-b	rank since 1908 (within 5th)
mean temperature (°C)	-1.4	-0.9	-0.5	-
mean maximum t (°C)	2.2	3.3	-1.1	-
mean minimum t (°C)	-4.7	-4.6	-0.1	-
days with minimum t below -10°C	17	11.7	5.3	-
days with maximum t below 0°C	36	21.6	14.4	-
maximum depth of fresh snow cover (cm)	47.8	28.8	19.0	-
amount of precipitation (mm)	106.1	70.1	36.0(151.4%)	-
rainy days	26	20.4	5.6	-

**□ Meteorological elements across Seoul for each decade (1911-2009)**

Year	Mean t (°C)	Mean Maximum t (°C)	Mean Minimum t (°C)	Days with minimum t below -10°C	Days with maximum t below 0°C	maximum depth of fresh snow cover (cm)	Precipitation (mm)	rainy days
1911-1920	-2.7	2.1	-7.6	27.6	29.5	-	71.4	21.9
1921-1930	-2.8	1.8	-7.8	32.6	30.7	-	93.5	22.7
1931-1940 (a)	-2.9	1.7	-7.3	29.5	32.0	-	68.7	21.0
1941-1950	-2.8	1.8	-7.5	33.0	32.9	23.9	67.3	20.9
1954-1960	-1.8	2.5	-6.1	23.4	30.0	36.4	82.4	21.6
1961-1970	-2.2	2.1	-6.0	21.2	29.3	35.2	62.8	18.5
1971-1980 (b)	-1.3	3.0	-4.9	13.8	24.2	32.7	74.9	21.2
1981-1990	-1.3	2.8	-4.9	15.0	25.2	19.7	71.4	20.7
1991-2000	-0.1	4.0	-3.9	6.4	15.4	23.1	68.0	19.6
2001-2009 (c)	0.1	4.0	-3.4	6.9	19.6	20.3	63.3	18.8
c-a	3.0	2.3	3.9	-22.6	-12.4	-	-5.4	-2.2
c-b	1.4	1.0	1.5	-6.9	-4.6	-12.4	-11.6	-2.4