



NATIONAL CLIMATE REVIEW

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Division	Meteorological Resources Division
Contact	LEE Jae-Won
Phone/email	+82-2-2181-0882/ 2seun@korea.kr
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Monthly (February) and Seasonal (December-February) 2013 Climate Summary

- ◇ The mean temperature (0.7 °C) for February 2013 nationwide was nearly normal and the monthly amount of precipitation (50.4 mm) was larger than normal.
- ◇ The mean maximum temperature (4.0 °C) for Winter 2012 nationwide was the fourth lowest and the days of rain were the third largest in a record extending back to 1973.

- Climate features and long-term trends of February 2013 and Winter 2012 are analyzed by using 45 meteorological stations in Korea (the national average) from 1973 to 2013 (1908-2013 for Seoul).

※ Normal : average from 1981 to 2010.

- **The climatological characteristics in February 2013 can be described as follows:**

o For Korea (whole nation),

- The mean temperature (0.7 °C) and the mean minimum temperature (-4.2 °C) were nearly normals, and the mean maximum temperature (5.8 °C) was 1.0 °C lower than normal.
- The days of daily minimum temperature below -10 °C were 2.9 days, which were 0.1 days above normal. The days of daily maximum temperature below 0 °C were 2.3 days, which were 0.5 days above normal.
- The nationally-averaged precipitation was 50.4 mm, which was 149% above normal. The days of rain were 8.1 days, which were 1.6 days above normal.
- Total hours of sunshine were 179 hours, which was 104% above normal.

o For Seoul,

- The mean temperature (-1.2 °C) and the mean maximum temperature (2.8 °C) and the mean minimum temperature (-4.9 °C) were lower than normals, 1.6 °C, 1.9 °C, 1.5 °C, respectively.
- The amount of precipitation was 74.6 mm, which was 298% above normal. The days of rain were 8 days, which were 2.2 days above normal.
- Total hours of sunshine were 187 hours, which were 115% above normal.

□ **The climatological characteristics in Winter 2012 can be described as follows:**

- o For Korea (whole nation),
 - The mean temperature (-1.0 °C) and the mean maximum temperature (4.0 °C) the mean minimum temperature (-5.7 °C) and were lower than normals, 1.6 °C, 2.1 °C, 1.6 °C, respectively.
 - The nationally-averaged precipitation was 139.3 mm, which was 162% above normal. The days of rain were 25.5 days, which were 5.7 days above normal.
 - Total hours of sunshine were 536 hours, which was 104% above normal.
- o For Seoul,
 - The mean temperature (-2.9 °C) and the mean maximum temperature (0.9 °C) and the mean minimum temperature (-6.3 °C) were lower than normals, 2.5 °C, 2.7 °C, 2.2 °C, respectively.
 - The amount of precipitation was 138.1 mm, which was 203% above normal. The days of rain were 25 days, which were 5.3 days above normal.
 - Total hours of sunshine were 549 hours, which were 115 % above normal.

□ **Long-term trend of February 2013 and Winter 2012 climate**

- o For Korea (whole nation),
 - National mean temperatures of February and Winter 2000s (2001-2010) were higher than 1.6 °C and 1.2 °C those of the 1970s.
 - The Nationally-averaged precipitation in February 2000s was larger than 1.2 mm and that of Winter was less than 2.4 mm that of the 1970s. And the days of rain in February and Winter 2000s were less than 0.9 days and 1.8 days those of 1970s.
 - Total hours of sunshine in February and Winter 2000s were smaller than 3.4 hours and 11.4 hours those of the 1970s.
- o For Seoul,
 - The mean temperatures of February and Winter 2000s (2001-2010) were higher than 1.2 °C and 1.1 °C those of the 1970s.
 - The amount of precipitation in February 2000s was larger than 4.3 mm and that of Winter was smaller than 11.9 mm that of the 1970s. And the days of rain in February and Winter 2000s were smaller than 0.8 days and 2.6 days those of 1970s.
 - Total hours of sunshine in February 2000s were nearly those of the 1970s and those of Winter were smaller than 23.3 hours those of the 1970s.

Appendix 1 Climate features in February 2013(Nation)

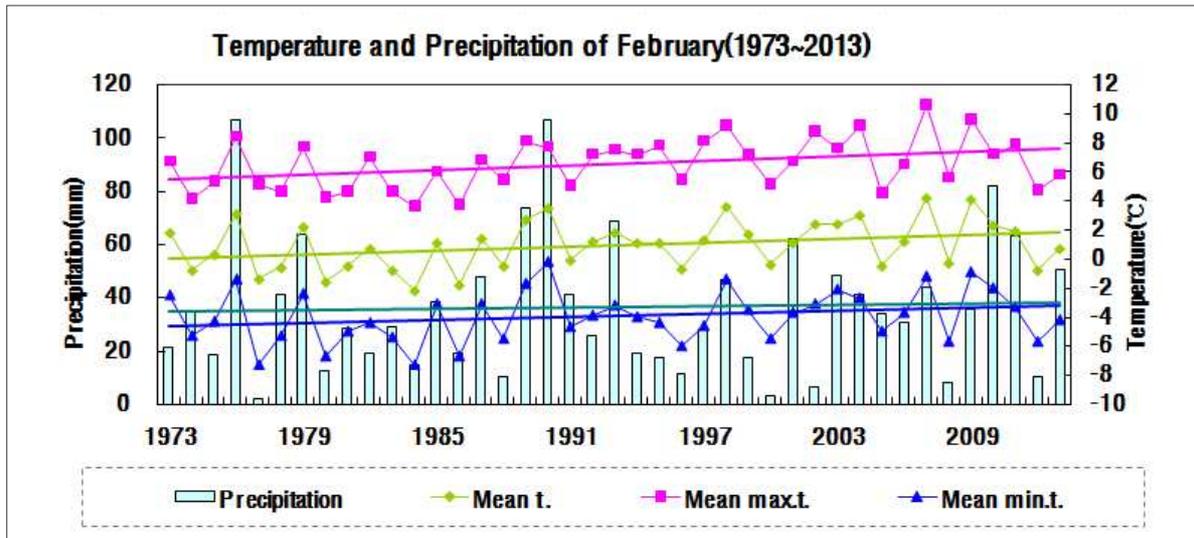


Fig 1. Temperatures (mean, mean maximum, and minimum), and precipitation in South Korea during February (1973~2013).

□ Average values of meteorological elements across Korea during February (1973~2013)

Elements (National) average	February 2013(a)	February 2012(b)	Normals of February (1981-2010)(c)	a-b	a-c	Rank since 1973 (within 5th)
Mean temperature (°C)	0.7	-0.8	1.1	1.5	-0.4	-
Mean maximum temp. (°C)	5.8	4.7	6.8	1.1	-1.0	-
Mean minimum temp. (°C)	-4.2	-5.7	-3.8	1.5	-0.4	-
Amount of precipitation (mm)	50.4	10.4	35.5	40.0	14.9(149%)	-
Days of rain (day)	8.1	5.2	6.5	2.9	1.6	-
Sunshine duration (hour)	179.4	185.6	171.9	-6.2	7.5(104%)	-
Mean cloud amount (1/10)	4.6	4.4	4.2	0.2	0.4	-
Days of minimum temperature less than -10°C (day)	2.9	5.7	2.8	-2.8	0.1	-
Days of maximum temperature less than 0°C (day)	2.3	4.2	1.8	-1.9	0.5	-

□ Average values of meteorological elements across Korea during February for each decade (1973~2010)

Year	Mean temp. (°C)	Mean max. temp. (°C)	Mean min. temp. (°C)	Amount of precipitation (mm)	Days of rain (day)	Sunshine duration (hour)	Mean cloud amount (1/10)	Days of minimum temperature less than -10°C (day)	Days of maximum temperature less than 0°C (day)
1973-1980(a)	0.4	5.8	-4.4	38.1	7.1	170.8	4.4	4.0	4.0
1981-1990(b)	0.4	5.7	-4.2	38.9	7.4	167.0	4.7	3.7	2.9
1991-2000(c)	1.1	7.0	-4.1	28.4	5.9	181.4	3.7	2.7	1.2
2001-2010(d)	2.0	7.6	-3.0	39.3	6.2	167.4	4.2	1.9	1.2
2013(e)	0.7	5.8	-4.2	50.4	8.1	179.4	4.6	2.9	2.3
d-a	1.6	1.8	1.4	1.2	-0.9	-3.4	-0.2	-2.1	-2.8
d-b	1.6	1.9	1.2	0.4	-1.2	0.4	-0.5	-1.8	-1.7
d-c	0.9	0.6	1.1	10.9	0.3	-14.0	0.5	-0.8	0.0
e-d	-1.3	-1.8	-1.2	11.1	1.9	12.0	0.4	1.0	1.1

Appendix 2 Climate features in February 2013(Seoul)

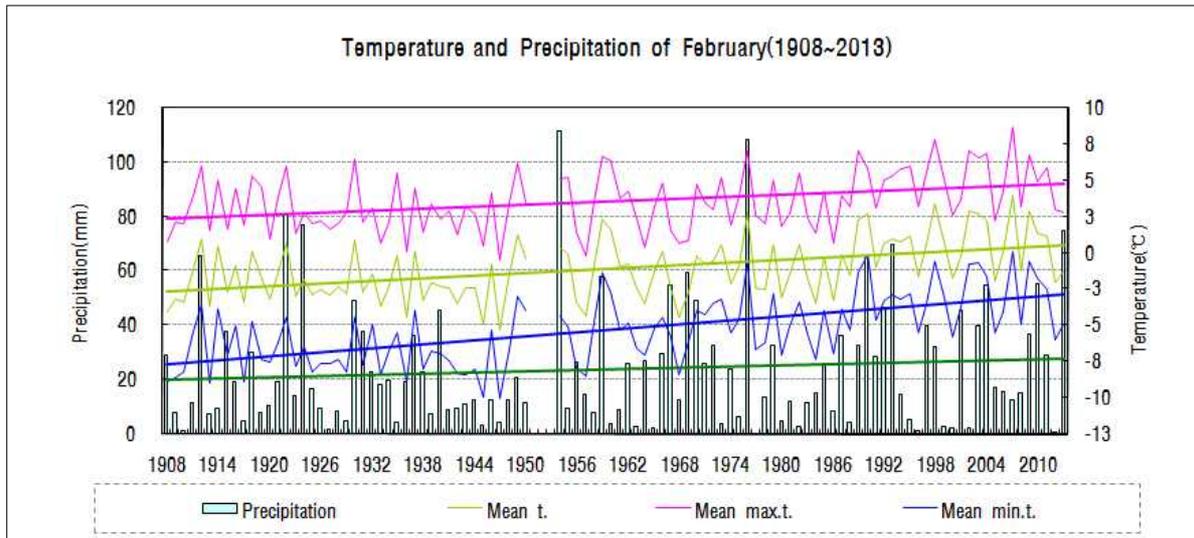


Fig 2. Temperatures (mean, mean maximum, and minimum), and precipitation in Seoul during February (1908-2013).

□ Average values of meteorological elements across Seoul during February (1973-2013)

Elements (Seoul) average	February 2013(a)	February 2012(b)	Normals of February (1981-2010)(c)	a-b	a-c	Rank since 1908 (within 5th)
Mean temperature (°C)	-1.2	-2.0	0.4	0.8	-1.6	-
Mean maximum temp. (°C)	2.8	3.0	4.7	-0.2	-1.9	-
Mean minimum temp. (°C)	-4.9	-6.0	-3.4	1.1	-1.5	-
Amount of precipitation (mm)	74.6	0.8	25.0	73.8	49.6(298%)	-
Days of rain (day)	8.0	4.0	5.8	4.0	2.2	-
Sunshine duration (hour)	187.2	224.9	163.3	-37.7	23.9(115%)	-
Mean cloud amount (1/10)	4.7	3.4	4.0	1.3	0.7	-
Days of minimum temperature less than -10°C (day)	4.0	5.0	1.8	-1.0	2.2	-
Days of maximum temperature less than 0°C (day)	7.0	8.0	4.2	-1.0	2.8	-

□ Average values of meteorological elements across Seoul during February for each decade (1911-2010)

Year	Mean temp. (°C)	Mean max. temp. (°C)	Mean min. temp. (°C)	Amount of precipitation (mm)	Days of rain (day)	Sunshine duration (hour)	Mean cloud amount (1/10)	Days of minimum temperature less than -10°C (day)	Days of maximum temperature less than 0°C (day)
1911-1920(a)	-1.5	3.5	-6.2	20.3	6.6	182.2	4.5	5.2	6.3
1921-1930	-1.8	3.1	-6.8	28.0	6.1	181.0	4.4	7.9	7.5
1931-1940(b)	-2.2	2.5	-6.7	23.3	6.0	182.0	4.3	6.8	8.0
1941-1949	-2.4	2.6	-7.4	10.5	5.1	194.4	3.8	9.3	8.4
1954-1960	-0.6	4.0	-4.9	33.1	6.1	166.9	4.4	4.6	5.3
1961-1970	-1.8	2.7	-5.7	27.2	5.8	176.6	4.3	5.6	7.9
1971-1980(c)	-0.8	3.6	-4.4	25.2	6.5	151.5	4.5	3.3	6.2
1981-1990	-0.6	3.7	-4.3	21.4	6.0	167.1	4.5	3.4	6.2
1991-2000	0.4	4.9	-3.5	24.2	5.6	171.2	3.4	1.1	2.5
2001-2010(d)	1.3	5.4	-2.3	29.5	5.7	151.5	4.0	1.0	4.0
2013(e)	-1.2	2.8	-4.9	74.6	8.0	187.2	4.7	4.0	7.0
d-a	2.8	1.9	3.9	9.2	-0.9	-30.7	-0.5	-4.2	-2.3
d-b	3.5	2.9	4.4	6.2	-0.3	-30.5	-0.3	-5.8	-4.0
d-c	2.1	1.8	2.1	4.3	-0.8	0.0	-0.5	-2.3	-2.2
e-d	-2.5	-2.6	-2.6	45.1	2.3	35.7	0.7	3.0	3.0

Appendix 3 Climate features in Winter 2012(Nation)

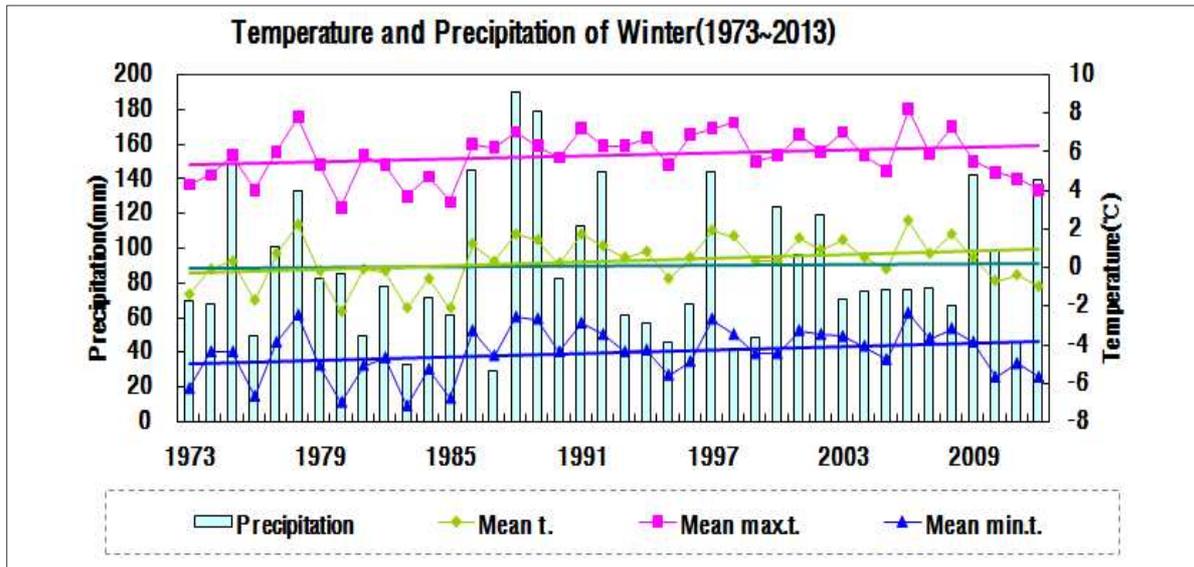


Fig 3. Temperatures (mean, mean maximum, and minimum), and precipitation in South Korea during Winter (1973~2013).

□ Average values of meteorological elements across Korea during Winter (1973~2013)

Elements (National) average	Winter 2013(a)	Winter 2012(b)	Normals of Winter (1981-2010)(c)	a-b	a-c	Rank since 1973 (within 5th)
Mean temperature (°C)	-1.0	-0.4	0.6	-0.6	-1.6	-
Mean maximum temp. (°C)	4.0	4.6	6.1	-0.6	-2.1	forth lowest
Mean minimum temp. (°C)	-5.7	-5.0	-4.1	-0.7	-1.6	-
Amount of precipitation (mm)	139.3	45.6	88.5	93.7	50.8(162%)	-
Days of rain (day)	25.5	18.4	19.8	7.1	5.7	third largest
Sunshine duration (hour)	535.6	535.2	513.5	0.4	22.1(104%)	-
Mean cloud amount (1/10)	4.3	4.3	4.0	0.0	0.3	-
Days of minimum temperature less than -10°C (day)	18.4	14.7	10.6	3.7	7.8	-
Days of maximum temperature less than 0°C (day)	17.0	11.7	8.4	5.3	8.6	-

□ Average values of meteorological elements across Korea during Winter for each decade (1973~2010)

Year	Mean temp. (°C)	Mean max. temp. (°C)	Mean min. temp. (°C)	Amount of precipitation (mm)	Days of rain (day)	Sunshine duration (hour)	Mean cloud amount (1/10)	Days of minimum temperature less than -10°C (day)	Days of maximum temperature less than 0°C (day)
1973-1980(a)	-0.3	5.1	-5.0	92.2	20.8	521.6	4.1	15.5	14.1
1981-1990(b)	0.0	5.5	-4.7	91.9	21.5	518.7	4.2	13.4	11.6
1991-2000(c)	0.8	6.5	-4.1	84.7	18.6	515.2	3.8	9.4	6.3
2001-2010(d)	0.9	6.3	-3.8	89.8	19.0	510.2	4.0	9.8	8.4
2013(e)	-1.0	4.0	-5.7	139.3	25.5	535.6	4.3	18.4	17.0
d-a	1.2	1.1	1.2	-2.4	-1.8	-11.4	-0.1	-5.7	-5.7
d-b	0.9	0.8	0.9	-2.1	-2.5	-8.5	-0.2	-3.6	-3.2
d-c	0.1	-0.2	0.3	5.1	0.4	-5.0	0.2	0.4	2.1
e-d	-1.9	-2.3	-1.9	49.5	6.5	25.4	0.3	8.6	8.6

Appendix 4 Climate features in Winter 2012(Seoul)

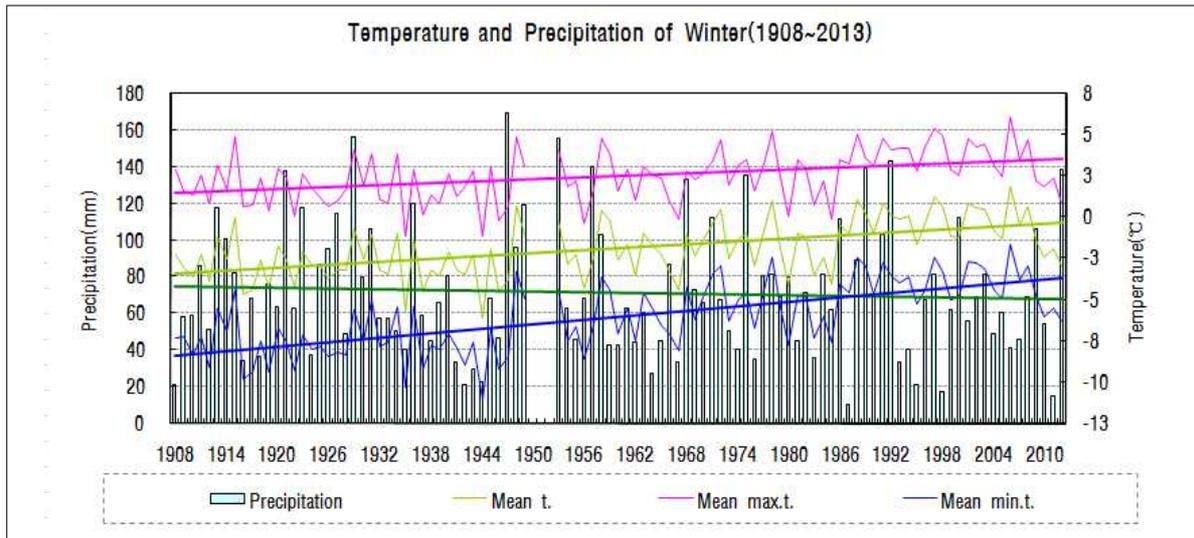


Fig 4. Temperatures (mean, mean maximum, and minimum), and precipitation in Seoul during Winter (1908~2013).

□ Average values of meteorological elements across Seoul during Winter (1973~2013)

Elements (Seoul) average	Winter 2013(a)	Winter 2012(b)	Normals of Winter (1981-2010)(c)	a-b	a-c	Rank since 1908 (within 5th)
Mean temperature (°C)	-2.9	-1.9	-0.4	-1.0	-2.5	-
Mean maximum temp. (°C)	0.9	2.4	3.6	-1.5	-2.7	-
Mean minimum temp. (°C)	-6.3	-5.5	-4.1	-0.8	-2.2	-
Amount of precipitation (mm)	138.1	14.6	67.9	123.5	70.2(203%)	-
Days of rain (day)	25.0	16.0	19.7	9.0	5.3	-
Sunshine duration (hour)	548.5	611.0	475.4	-62.5	73.1(115%)	-
Mean cloud amount (1/10)	4.1	3.7	3.9	0.4	0.2	-
Days of minimum temperature less than -10°C (day)	26.0	13.0	9.4	13.0	16.6	-
Days of maximum temperature less than 0°C (day)	36.0	27.0	20.1	9.0	15.9	-

□ Average values of meteorological elements across Seoul during Winter for each decade (1911-2010)

Year	Mean temp. (°C)	Mean max. temp. (°C)	Mean min. temp. (°C)	Amount of precipitation (mm)	Days of rain (day)	Sunshine duration (hour)	Mean cloud amount (1/10)	Days of minimum temperature less than -10°C (day)	Days of maximum temperature less than 0°C (day)
1911-1920(a)	-2.7	2.1	-7.6	71.4	21.9	539.2	4.3	27.2	29.5
1921-1930	-2.8	1.8	-7.8	93.5	22.7	498.2	4.5	31.7	30.7
1931-1940(b)	-2.9	1.7	-7.3	68.0	20.9	532.3	4.1	29.1	32.0
1941-1949	-2.8	1.8	-7.5	67.2	21.0	556.6	3.9	32.3	32.9
1954-1960	-2.0	2.3	-6.3	72.0	21.0	479.4	4.2	23.1	30.0
1961-1970	-2.2	2.1	-6.0	62.8	18.5	485.5	4.2	20.4	29.3
1971-1980(c)	-1.3	3.0	-4.8	74.9	21.2	454.1	4.3	13.3	24.2
1981-1990	-1.3	2.8	-4.9	71.4	20.7	490.2	4.2	14.9	25.2
1991-2000	-0.1	4.0	-3.8	68.0	19.6	465.4	3.7	6.3	15.4
2001-2010(d)	-0.2	3.8	-3.7	63.0	18.6	477.4	3.7	8.7	21.8
2013(e)	-2.9	0.9	-6.3	138.1	25.0	548.5	4.1	26.0	36.0
d-a	2.5	1.7	3.9	-8.4	-3.3	-61.8	-0.6	-18.5	-7.7
d-b	2.7	2.1	3.6	-5.0	-2.3	-54.9	-0.4	-20.4	-10.2
d-c	1.1	0.8	1.1	-11.9	-2.6	23.3	-0.6	-4.6	-2.4
e-d	-2.7	-2.9	-2.6	75.1	6.4	71.1	0.4	17.3	14.2