



NATIONAL CLIMATE REVIEW OF KMA (total 4 pages)

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Monthly (December) 2013 Climate Summary

- ◇ The mean temperature (1.5 °C) and the monthly precipitation (21.0 mm) of December 2013 nationwide are nearly normal.
- Climate features and long-term trends of December 2013 have been analyzed with the data collected at the 45 meteorological stations throughout Korea (national average) from 1973 to 2013 (1908-2013 for Seoul).
 - ※ Normal : Average value of climatic element data collected from 1981 to 2010
- **The climatic characteristics of December 2013 are described as follows:**
 - o For Korea (whole country),
 - The mean temperature (1.5 °C) and the mean maximum temperature (6.4 °C) were 0.0 °C, 0.3 °C above normals. The mean minimum temperature (-2.9 °C) was 0.6 below normal.
 - ※ First day of frozen river in 2013
: Cheorwon(Dec. 15), Sokcho·Chuncheon(Dec. 28), Seoul·Geochang(Dec. 29)
 - The nationally-averaged precipitation was 21.0 mm, which was 83.9% of normal. The number of the days of rain was 7.0 days, which was 0.4 days more than normal.
 - ※ Updated in maximum new snowfall extremes during December (5th largest ranked)
: Chuncheon(15.8 cm/Dec. 12), Pohang(3.6 cm/Dec. 20), Heuksando(5.0 cm/Dec. 28), Cheonan(18.2 cm/Dec. 11)
 - The total number of the hours of sunshine was 182.9 hours, which was 108.0% of normal.
 - o For Seoul,
 - The mean temperature (-0.2 °C), the mean maximum temperature (3.5 °C), the mean minimum temperature (-3.5 °C) were 0.6 °C, 0.8 °C, 0.3 °C below normals, respectively.
 - ※ First day of frozen river in 2013 is Dec. 29 (normal : Jan. 13, 2012 : Dec. 24).
 - The amount of precipitation was 24.6 mm, which was 114.4% of normal.
 - The number of the days of rain was 8.0 days, which is 0.6 days more than normal.
 - The total number of the hours of sunshine was 184.4 hours, which was 120.8% of normal.

□ **Long-term trend of December 2013 climate**

o For Korea (whole country),

- The national mean temperatures of December 2000s (2001-2010) is 0.5 °C above those of the same month of 1970s.
- The nationally-averaged precipitation of December 2000s (2001-2010) is 5.7 mm less than that of the same month of 1970s.
- The number of the days of rain of December 2000s are 0.1 days less than those of the same month of 1970s.
- The total sunshine of December 2000s (2001-2010) is 2.2 hours less than that of the same month of 1970s.

o For Seoul,

- The mean temperatures of December 2000s (2001-2010) are 0.6 °C above those of the same month of 1970s.
- The precipitation of December 2000s (2001-2010) is 10.3 mm less than that of the same month of 1970s.
- The number of the days of rain of December 2000s are 0.2 days more than those of the same month of 1970s.
- The total sunshine of December 2000s (2001-2010) is 8.2 hours more than that of the same month of 1970s.

Appendix 1 Climate features of December 2013 (Nationwide)

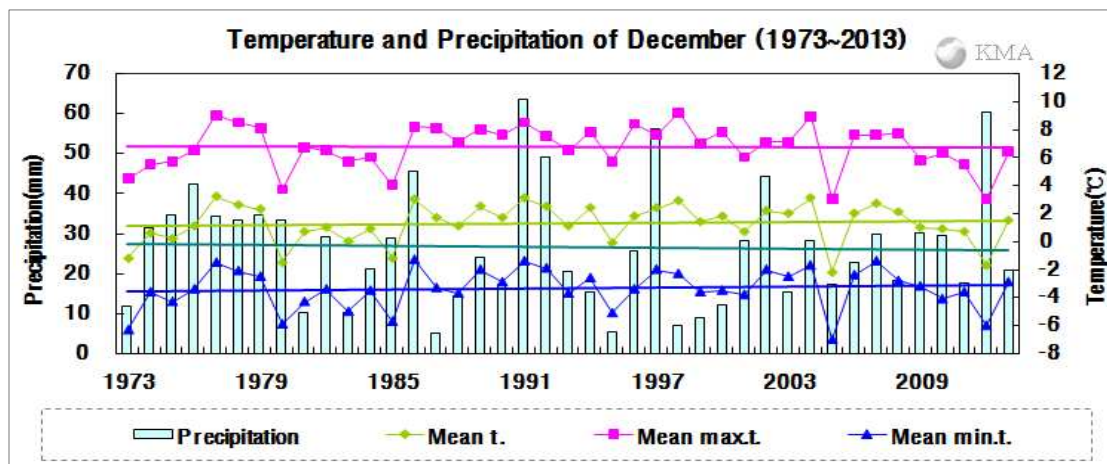


Fig 1. Temperatures (mean, mean maximum, and mean minimum) and precipitation in South Korea during December (1973–2013).

□ Average values of meteorological elements across Korea during December (1973-2013)

Elements (whole country)	Dec. 2013(a)	Dec. 2012(b)	Normals of Dec. (1981-2010) (c)	a-b	a-c	Rank since 1973 (within 5th)
Mean temperature (°C)	1.5	-1.7	1.5	3.2	0.0	
Mean maximum temp. (°C)	6.4	3.0	7.0	3.4	-0.6	
Mean minimum temp. (°C)	-2.9	-6.0	-3.2	3.1	0.3	
Precipitation (mm)	21.0	60.4	24.5	-39.4(40.5%)	-3.5(83.9%)	
Days of rain (day)	7.0	11.2	6.6	-4.2	0.4	
Sunshine duration (hour)	182.9	175.7	169.4	7.2(104.1%)	13.5(108.0%)	
Mean cloud amount (1/10)	4.0	4.2	3.9	-0.2	0.1	
Days of minimum temperature less than -10°C (day)	1.4	7.2	2.5	-5.8	-1.1	
Days of maximum temperature less than 0°C (day)	1.8	7.6	2.3	-5.8	-0.5	
Days of snow (day)	7.2	10.1	5.0	-2.9	2.2	

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

Year	Mean temp. (°C)	Mean max. temp. (°C)	Mean min. temp. (°C)	Prep. (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)	Days of snow (day)
1973-1980(a)	0.9	6.4	-3.7	32.1	7.1	169.5	3.9	3.5	3.1	5.4
1981-1990(b)	1.2	6.8	-3.5	20.7	6.7	173.4	3.9	2.8	2.6	5.3
1991-2000(c)	1.9	7.6	-3	26.4	6.0	167.4	3.7	2.0	1.7	4.2
2001-2010(d)	1.4	6.7	-3.1	26.4	7.0	167.3	3.9	2.5	2.6	5.4
2013(e)	1.5	6.4	-2.9	21.0	7.0	182.9	4.0	1.4	1.8	7.2
d-a	0.5	0.3	0.6	-5.7	-0.1	-2.2	0.0	-1.0	-0.5	0.0
d-b	0.2	-0.1	0.4	5.7	0.3	-6.1	0.0	-0.3	0.0	0.1
d-c	-0.5	-0.9	-0.1	0.0	1.0	-0.1	0.2	0.5	0.9	1.2
e-d	0.1	-0.3	0.2	-5.4	0.0	15.6	0.1	-1.1	-0.8	1.8

Appendix 2 Climate features of December 2013 (Seoul)

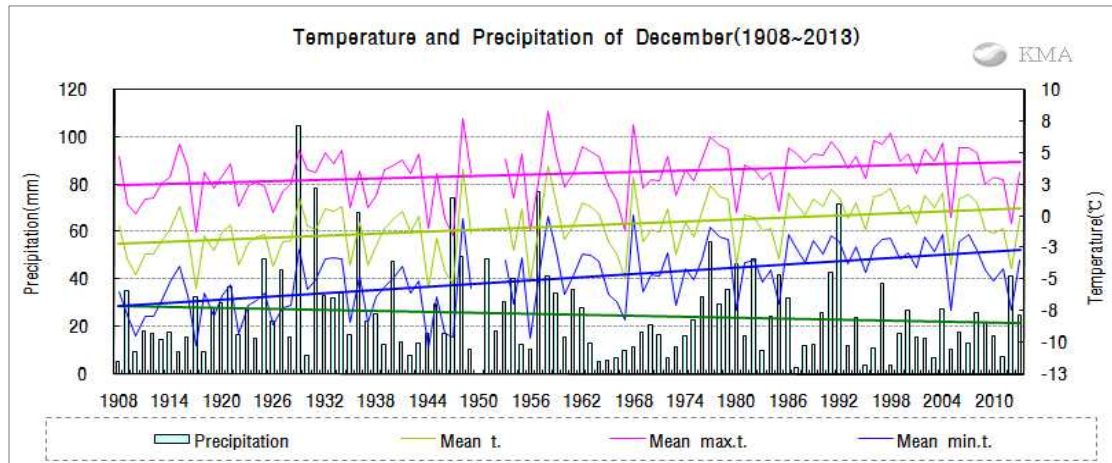


Fig 2. Temperatures (mean, mean maximum, and mean minimum) and precipitation in Seoul during December (1908-2013).

□ Average values of meteorological elements in Seoul during December (1973-2013)

Elements (Seoul)	Dec. 2013(a)	Dec. 2012(b)	Normals of Dec. (1981-2010) (c)	a-b	a-c	Rank since 1908 (within 5th)
Mean temperature (°C)	-0.2	-4.1	0.4	3.9	-0.6	
Mean maximum temp. (°C)	3.5	-0.5	4.3	4.0	-0.8	
Mean minimum temp. (°C)	-3.5	-7.4	-3.2	3.9	-0.3	
Precipitation (mm)	24.6	41.4	21.5	-16.8(59.4%)	3.1(114.4%)	
Days of rain (day)	8.0	10.0	7.4	-2.0	0.6	
Sunshine duration (hour)	184.4	193.6	152.6	-9.2(95.2%)	31.8(120.8%)	
Mean cloud amount (1/10)	4.0	3.5	3.9	0.5	0.1	
Days of minimum temperature less than -10°C(day)	0.0	13.0	2.3	-13.0	-2.3	
Days of maximum temperature less than 0°C(day)	6.0	17.0	5.8	-11.0	0.2	
Days of snow (day)	8.0	11.0	6.1	-3.0	1.9	

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

Year	Mean temp. (°C)	Mean max. temp. (°C)	Mean min. temp. (°C)	Prep. (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)	Days of snow (day)
1911-1920(a)	-2.1	2.6	-6.8	19.1	7.9	175.2	4.3	7.6	9.1	8.4
1921-1930	-1.7	2.6	-6.5	33.7	9.2	150.7	4.6	7.7	8.4	8.5
1931-1940(b)	-1.1	3.2	-5.3	37.0	8.7	158.3	4.5	5.6	6.5	6.4
1941-1949	-1.7	2.7	-6.3	25.8	9.1	170.0	4.4	8.4	9.6	8.7
1954-1960	-0.6	3.4	-4.7	33.0	7.7	146.8	4.3	5.4	9.0	7.1
1961-1970	-0.8	3.4	-4.6	15.3	6.4	141.1	4.5	4.5	7.7	8.7
1971-1980(c)	-0.4	3.8	-3.9	27.2	8.0	146.0	4.2	2.9	6.9	7.4
1981-1990	0.0	3.9	-3.6	22.5	7.3	154.9	4.2	2.9	6.1	7.2
1991-2000	1.1	5.0	-2.6	25.0	6.7	148.7	3.8	1.4	4.5	5.8
2001-2010(d)	0.2	4.0	-3.3	16.9	8.2	154.2	3.6	2.5	6.9	5.4
2013(e)	-0.2	3.5	-3.5	24.6	8.0	184.4	4.0	0.0	6.0	8.0
d-a	2.3	1.4	3.5	-2.2	0.3	-21.0	-0.7	-5.1	-2.2	-3.0
d-b	1.3	0.8	2.0	-20.1	-0.5	-4.1	-0.9	-3.1	0.4	-1.0
d-c	0.6	0.2	0.6	-10.3	0.2	8.2	-0.6	-0.4	0.0	-2.0
e-d	-0.4	-0.5	-0.2	7.7	-0.2	30.2	0.4	-2.5	-0.9	2.6