



# KMA'S BRIEFING ON CLIMATE CHARACTERISTICS

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## Monthly (July 2011) Climate Summary

◇ **Temperatures and precipitation were above-normals for July 2011.**

- Climate features in July 2011 and their long-term trends are analyzed using 47 meteorological stations over Korea (the national average) during 1973-2011 (1908-2011 for Seoul).
- **The climatological features in July 2011 can be described as follows:**
  - o Korea (whole nation)
    - The mean temperature (25.1 °C), the mean maximum temperature (29.0 °C) and the mean minimum temperature (22.2 °C) were 0.6 °C, 0.2 °C and 1.0 °C above normal, respectively.
    - The monthly amount of precipitation (474.8 mm) was 158 % of normal, making it the second highest July value in a record extending back to 1973.
    - The monthly average of rain day(19.1 days) was more than 4.8 days of normal.
    - Days with heavy precipitation above 150 mm/day (0.6 day) was the first highest in a record extending back to 1973 (1st 0.6 day in 2011; 2nd 0.6 day in 2006; 3rd 0.5 day 1987; 4th 0.4 day in 2009; 5th 0.2 day in 2008)
  - o Seoul
    - The mean temperature (24.6 °C) and the mean maximum temperature (28.0 °C) were 0.3 °C and 0.6 °C below normal, respectively. the mean minimum temperature (22.0 °C) was 0.1 °C above normal.
    - The monthly amount of precipitation (1131.0 mm) was 287 % of normal, making it the second highest in a record extending back to 1908.
    - The number of rainy days (21.0 days) was more than 4.7 days of normal.
    - Days with heavy precipitation above 150 mm/day (2.0 day) was the third highest in a record extending back to 1973 (1st 3.0 day in 2006; 2nd 3.0 day in 1925; 3rd 2.0 day 2011; 4th 2.0 day in 1940; 5th 2.0 day in 1935)

□ **Long-term trend of July climate**

- o The precipitation amount for July 2000s in Korea was 107.4 mm, 47.4 mm, and 91.3mm higher than that of the 1970s, 1980s and 1990s, respectively; in contrast, the mean temperatures exhibited no changes over the years.

※ Normal: average from 1981 to 2010.

※ National average indicates average values of 47 meteorological stations starting from 1973.

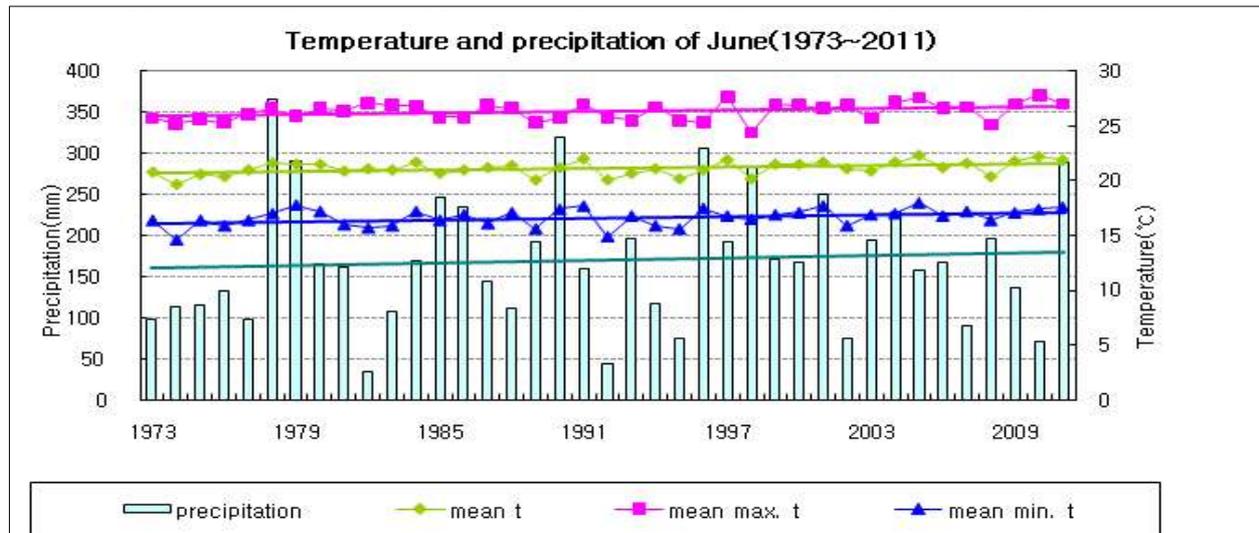
※ In Seoul, data are analyzed from 1908.

※ 1920s: average from 1921 to 1930

※ 1970s: average from 1973 to 1980

※ 2000s: average from 2001 to 2010

## Appendix. July 2011 climate



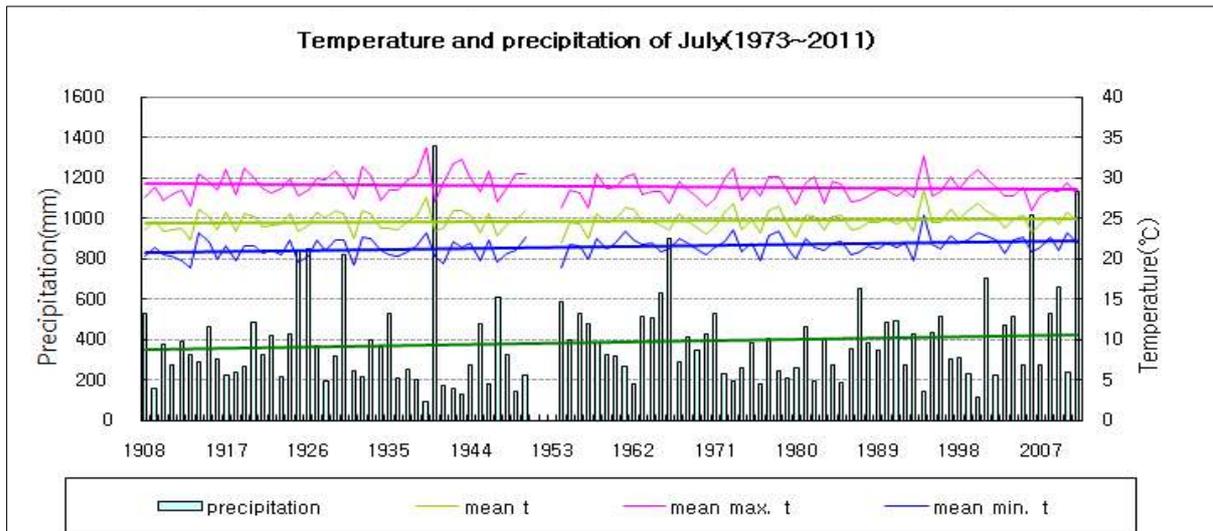
**Fig. 1. Temperatures (mean, mean maximum, and mean minimum), and precipitation in South Korea during July 1973-2011.**

### □ Average values of meteorological elements in Korea during July (1973-2011)

| statistics for climate elements (national) | July 2010 | July 2011 (a) | normals of July (1981-2010) (b) | a-b         | rank since 1973 (within 5th) |
|--|-----------|---------------|---------------------------------|-------------|------------------------------|
| mean temperature (°C)                      | 25.4      | 25.1          | 24.5                            | 0.6         | -                            |
| mean maximum t (°C)                        | 29.6      | 29.0          | 28.8                            | 0.2         | -                            |
| mean minimum t (°C)                        | 22.3      | 22.2          | 21.2                            | 1           | -                            |
| Days with max. temp.(≥30°C)                | 15.5      | 12.7          | 12.5                            | 0.2         | -                            |
| amount of precipitation (mm)               | 258.9     | 474.8         | 289.1                           | 185.7(158%) | the second                   |
| days of rain                               | 16.0      | 19.1          | 14.3                            | 4.8         | the fourth                   |
| days with precip. greater than 30mm/hour   | 0.6       | 1.3           | 0.7                             | 0.6         | the third                    |
| days with precip. greater than 80mm/day    | 0.8       | 1.4           | 0.7                             | 0.7         | the fourth                   |
| days with precip. greater than 150mm/day   | 0.1       | 0.6           | 0.1                             | 0.5         | the first                    |

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

| year          | mean temp (°C) | mean maximum temp. (°C) | mean minimum temp. (°C) | days with max. temp. (≥30°C) | amount of rain (mm) | days of rain(≥0.1mm) | days with precip. ≥30mm/h | days with precip. ≥80mm/d | days with precip. (≥150mm/d) |
|---------------|----------------|-------------------------|-------------------------|------------------------------|---------------------|----------------------|---------------------------|---------------------------|------------------------------|
| 1973-1980 (a) | 24.5           | 28.7                    | 21.1                    | 12.5                         | 227.9               | 13.8                 | 0.4                       | 0.3                       | 0.0                          |
| 1981-1990 (b) | 24.4           | 28.6                    | 21.0                    | 12.1                         | 287.9               | 14.3                 | 0.6                       | 0.6                       | 0.1                          |
| 1991-2000 (c) | 24.7           | 29.1                    | 21.2                    | 13.2                         | 244.0               | 12.9                 | 0.5                       | 0.6                       | 0.1                          |
| 2001-2010 (d) | 24.5           | 28.6                    | 21.3                    | 12.1                         | 335.3               | 15.8                 | 0.9                       | 0.9                       | 0.2                          |
| d-a           | 0              | -0.1                    | 0.2                     | -0.4                         | 107.4               | 0.1                  | 0.5                       | 0.5                       | 0.2                          |
| d-b           | 0.1            | 0                       | 0.3                     | 0                            | 47.4                | 1.5                  | 0.3                       | 0.3                       | 0.1                          |
| d-c           | -0.2           | -0.5                    | 0.1                     | -1.1                         | 91.3                | 2.9                  | 0.2                       | 0.3                       | 0.1                          |



**Fig. 2. Temperatures (mean, mean maximum, and mean minimum), and precipitation in Seoul during July 1908-2011**

**□ Average values of meteorological elements in Seoul during July (1908-2011)**

| statistics for climate elements (Seoul)  | July 2010 | July 2011 (a) | normals of July (1981-2010) (b) | a-b         | rank since 1908 (within 5th) |
|--|-----------|---------------|---------------------------------|-------------|------------------------------|
| mean temperature (°C)                    | 25.8      | 24.6          | 24.9                            | -0.3        | -                            |
| mean maximum t (°C)                      | 29.3      | 28.0          | 28.6                            | -0.6        | -                            |
| mean minimum t (°C)                      | 23.1      | 22.0          | 21.9                            | 0.1         | -                            |
| Days with max. temp.(≥30°C)              | 13.0      | 8.0           | 10.7                            | -2.7        | -                            |
| amount of precipitation (mm)             | 239.2     | 1131.0        | 394.7                           | 736.3(287%) | the second                   |
| days of rain                             | 17.0      | 21.0          | 16.3                            | 4.7         | -                            |
| days with precip. greater than 30mm/hour | -         | 4.0           | 1.1                             | 2.9         | the third                    |
| days with precip. greater than 80mm/day  | 1.0       | 4.0           | 1.2                             | 2.8         | the second                   |
| days with precip. greater than 150mm/day | -         | 2.0           | 0.3                             | 1.7         | the third                    |

**□ Meteorological elements in Seoul during July for each decade (1911-2010)**

| year         | mean temp. (°C) | mean maximum temp. (°C) | mean minimum temp. (°C) | days with max. temp. (≥30°C) | amount of rain (mm) | days of rain(≥ 0.1mm) | days with precip. ≥30mm/h | days with precip. ≥80mm/d | days with precip. (≥150mm/d) |
|--------------|-----------------|-------------------------|-------------------------|------------------------------|---------------------|-----------------------|---------------------------|---------------------------|------------------------------|
| 1911-1920(a) | 24.4            | 29.1                    | 20.8                    | 12.7                         | 326.2               | 14.9                  | -                         | 0.9                       | 0.2                          |
| 1921-1930    | 24.7            | 29.2                    | 21.2                    | 13.0                         | 477.0               | 17.4                  | -                         | 1.5                       | 0.6                          |
| 1931-1940    | 24.6            | 29.4                    | 21.2                    | 13.2                         | 384.1               | 16.3                  | -                         | 1.1                       | 0.4                          |
| 1941-1950(b) | 24.8            | 29.9                    | 21.1                    | 15.6                         | 268.2               | 15.7                  | 0.4                       | 0.2                       | 0.1                          |
| 1954-1960    | 24.0            | 28.2                    | 21.1                    | 10.6                         | 429.1               | 19.1                  | 0.7                       | 0.3                       | 0.1                          |
| 1961-1970    | 24.6            | 28.4                    | 21.7                    | 10.0                         | 446.3               | 18.1                  | 1.9                       | 1.4                       | 0.2                          |
| 1971-1980(c) | 24.7            | 28.8                    | 21.7                    | 11.2                         | 288.2               | 15.2                  | 0.6                       | 0.5                       | 0.2                          |
| 1981-1990    | 24.6            | 28.4                    | 21.5                    | 9.4                          | 372.8               | 16.5                  | 0.8                       | 1.1                       | 0.1                          |
| 1991-2000    | 25.4            | 29.2                    | 22.2                    | 13.2                         | 322.7               | 14.7                  | 1                         | 0.9                       | 0.1                          |
| 2001-2010(d) | 24.8            | 28.3                    | 22.0                    | 9.5                          | 488.6               | 17.6                  | 1.7                       | 1.7                       | 0.6                          |
| d-a          | 0.4             | -0.8                    | 1.2                     | -3.2                         | 162.4               | 2.7                   | -                         | 0.8                       | 0.4                          |
| d-b          | 0               | -1.6                    | 0.9                     | -6.1                         | 220.4               | 1.9                   | 1.3                       | 1.5                       | 0.5                          |
| d-c          | 0.1             | -0.5                    | 0.3                     | -1.7                         | 200.4               | 2.4                   | 1.1                       | 1.2                       | 0.4                          |