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Long-term Changes in the Properties of Precipitation in Seoul

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Local heavy rainfall events often occur in the metropolitan cities of Korea. Sometimes, these rainfall events bring about severe disasters. Some studies introduce that global and local climate changes may cause long-term changes in the frequency and intensity of heavy rainfall events. In this study, changes in the properties of precipitation for the period of 1961 to 2003 (over 43 years) in the Seoul using the surface meteorological station data and 31 Automatic Weather System (AWS) stations data. Our results show that the ratio of heavy precipitation to the total amount has increased, although the total amount itself has not changed significantly. The urban heat island is occurred in Seoul, corresponding to the changes in the precipitation properties. Case studies of the 31 AWSs show stronger convergence of the horizontal wind and result in precipitation enhancement. The changes in the precipitation properties may have been caused by stronger cumulus convection over the urban area resulted from the strengthening of the urban heat island.

Keywords: Precipitation; Urban heat island; Heavy rainfall; Seoul.

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References

[1] J.-J. Baik Y.-H. Kim, and H.-Y. Chun, Dry and moist convection forced by an urban heat island, *J. Appl. Meteor.,* **40**, 1462-1475 (2001).
[2] E. Jauregui and E. Romales, Urban effects on convective precipitation in Mexico city, *J. Atmos. Environ.,* **30**, 3383-3389 (1996).
[3] Y.-H. Kim and J.-J. Baik, Maximum urban heat island intensity in Seoul, *J. Appl. Meteor.,* **41**, 651-659 (2002).
[4] N. Sato and M. Takahashi, Long-term changes in the properties of summer precipitation in the Tokyo area, *Tenki*, **47**, 304-308 (2000).