AOGS 2005

Characteristics of Sunshine and Cloudiness in Seoul

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The characteristics of sunshine duration and cloudiness in Seoul are investigated for the period of 1970 to 1999. A simple empirical model is set up to evaluate monthly sunshine duration on the basis of the daily averaged cloudiness. Annually averaged sunshine duration in Seoul is about 2,150 hours for the period of 1970-1999. Seasonal averaged sunshine duration is the minimum in summer while mean cloudiness is the maximum in summer. Daily averaged sunshine duration indicated the maximum at noon and minimum in sunrise and sunset. Over this 30-year period, linear regression analysis indicated a 12.5 % decrease in cloudiness, but 5.3 % increase in sunshine. Changes of cloudiness in Seoul during this period are greater in autumn and winter than in spring and summer. Percent of sunshine indicated the maximum changes in summer and minimum in spring. There is a significant correlation of –0.86 between monthly cloudiness and sunshine duration trends during the 30 years. This correlation is showed high in winter and relatively low in spring because dust, smoke and haze may have a large effect on sunshine duration. A linear regression on monthly sunshine versus the number of clear, partly cloudy, cloudy and overcast days was fitted by a least-squares method for 30 years of observation in Seoul. A very good agreement between observed and calculated values of sunshine duration was found. The method seems a suitable tool for evaluating actual sunshine in similar climate.

Keywords: sunshine duration cloudiness, linear correlation, empirical method

Acknowledgement

This study was supported by the project “Prediction of the Urban Atmospheric Characteristics and Development of Their Applied Techniques” of the Meteorological Research Institute/KMA.

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