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Occurrence, frequency, duration of heat waves in South Korea and impacts on human health

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In order to investigate the impacts of heat wave on human health, occurrence, frequency, and duration of heat waves which is defined by daily maximum temperature greater than the threshold temperature (i.e., 31.2ąÉ) was investigated during the past 30 years (1971-2000). The result shows that the frequency and duration of heat waves at Seoul are increasing during the past 30 years. In addition, the increasing trend of the frequency and duration clearly appears in late spring and early autumn as well as summer. Cluster analysis of meteorological elements (e.g., temperature, dewpoint, sea level pressure, visibility, cloud amount, and wind components) for identifying offensive synoptic air masses is also employed. Factor analysis shows that 65.1% of the total variance can be explained by 4 components which are linearly independent. Eight clusters (or synoptic air masses) were classified and found to be optimal for representing the summertime air masses at Seoul, Korea. The results exhibit that cluster-mean values of meteorological variables of an offensive air mass (or cluster) are closely correlated with the observed and standardized deaths.