

Heat-related mortality in major cities of South Korea during 1991-2004

J. Kim, I.-S. Park, D.-G. Lee, and S.-Y. Bang

Meteorological Research Institute, Korea Meteorological Administration, Seoul 156-720, South Korea (jykim@kma.go.kr/ Fax: +82-2-846-2851)

The effect of elevated temperature on mortality has been a public health threat of considerable magnitude. The issue also has some implication of its potential risk due to global warming and amplifying global climate variability including extreme weather events. Mortality in six major cities (Seoul, Busan, Daegu, Daejeon, Gwangju, and Incheon) of South Korea during 1991-2004 was investigated to understand its association with the regional meteorological conditions such as ambient temperatures, humidity, wind, and synoptic flow patterns. In particular, case studies in abnormally hot summer months of 1994 were carried out to compare and differentiate the characteristics of heat-related mortality between hot and normal summer. The higher death rates were occurred in persons aged 65 years or more. Daily mortality was exponentially increased with daily maximum, mean, and minimum temperatures. For the episodic hot summer season of 1994 in Seoul, the relationship between mortality and maximum temperature was successfully fitted with analytical exponential fitting function as a form of mortality (M) = $95.7 + 0.000062 * \exp(0.363 * T_{max})$ with $N = 92$ and $r = 0.67$. Based on the fitting curve, the net increase of mortality due to temperature increase of 1 degree C was also estimated.