

The development and verification of Accumulated Heat stress Index (AHI)

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Abstract

Heat stress will be accumulated in the human body not in short time but for a long time during heat wave. However, it is very hard to find any indexes related to this accumulated heat stresses. After paying attention to this phenomenon, Accumulated Heat stress Index (AHI) was developed. For this index, the hourly heat stresses were accumulated for 72 hours using time-weighted function. After that the accumulated heat stresses were normalized using equiprobability transformation with Weibull distribution.

The criteria of AHI value was categorized on its danger possibility by comparing with the Excess mortality by Indirect effect of Heat wave and the Mortality by Direct effect of it.

The sensitivity of categorized AHI on the heat danger was compared with the one of other public-oriented indexes (so to speak, Humidex, Heat index, Wet-Bulb Globe temperature). Finally, it is found that the AHI made by accumulated Humidex was better than the one made by other heat related indexes, and also AHI is more sensitive in detecting the heat related danger.

Key words: Heat wave, Accumulated Heat stress Index (AHI), Weibull distribution, Heat Index, Humidex, Wet-Bulb Globe Temperature