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Health vulnerability assessment of heatwave and projections of future impacts under climate change in South Korea

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Heatwaves are well known to be associated with increases in mortality and the burden of heat-related illness in the population. The health effects due to heatwaves appear differently depending on the population characteristics and regions. However, there is limited regional information available to guide the public health adaptation plan and climate change decision-making. Therefore, regional health vulnerability of heat waves is assessed in this study. Health vulnerability related to heatwaves is determined based on three components; climate change exposure, sensitivity, and adaptive capacity. Vulnerability index (VRI) for each region was calculated based on values of variables identified for three components with weights and was mapped for entire Korean peninsula from the 2000s to 2010s, applying RCP 8.5 scenario. Assessment units are 232 local governments and results units are 16 aggregated areas. The contribution analyses of VRI were performed to grasp attributable variables. Climate change vulnerabilities related to heat waves showed large regional variations. The VRI of the region with the highest value was 0.2081, while the lowest was 0.0419. The contribution of three components, climate change exposure, sensitivity and adaptive capacity, were 0.28, 0.28 and 0.33, respectively. Sensitivity was the highest in region M because of the large distribution of vulnerable populations, and adaptive capacity was the highest in region A where health-related infrastructure is well built. The overall vulnerability is predicted to be increasing over time. It varies by region; however, currently vulnerable areas appear to stay or be more vulnerable in the future. Vulnerable areas are mostly distributed southern part of South Korea in the 2000s and tend to be gradually moving northward in the future. Socio-demographic characteristics and healthcare access conditions are important to lower the vulnerability of heat waves. Mapping for Results visualizes the locations of relatively vulnerable regions for better monitoring of climate impact, sensitive subpopulation distribution, and adaptive capacity.

Biography

Satbyul Kim received her PhD from Seoul National University. Her research focuses how human health is affected by weather and air pollution. Her research interests also include impacts of climate change on human health, with a particular focus on vulnerability assessment.

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