# Remote Sensing-Based Urban Heat Risk Assessment in Philippine Cities

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More than half of the world’ s population today live in urban areas and are particularly at risk from the combined effects of the urban heat island phenomenon and heat increases due to climate change. Advances in remote sensing technology, including the increasing availability of remotely sensed thermal data, have been helpful in urban ecological studies, including the study of the urban heat island phenomenon. In this study, focusing on the dry season, we examined the potential of remotely sensed surface temperature as a proxy indicator for heat hazard as we assessed the current heat health risk in Philippine cities, whose population accounts for over 40% of the country’ s total population. The assessment was based on the risk framework of the Intergovernmental Panel on Climate Change, in which risk is expressed as a function of hazard, exposure and vulnerability. The assessment produced an overall heat health risk index which was validated by comparing it with heat-related mortality data. Results revealed that the overall heat health risk index had a positive and statistically significant relationship with heat-related mortality, indicative of the potential of remotely sensed surface temperature as a proxy indicator for heat hazard. This is important especially for the developing regions where data on air temperature is scarce. Empirically, the assessment revealed that the cities that were at high and very high risk were found in Metro Manila where levels of heat hazard and exposure were higher. The most vulnerable cities were, however, found mainly outside the national capital region where sensitivity was higher and capacity to cope and adapt was lower. The cities with high levels of vulnerability and exposure to heat need to be prioritized for adaptation. The results contribute to the risk profiling endeavor in the country and to the understanding of city-level heat health risks in the developing region of the Asia-Pacific.

Keywords: heat risk, land surface temperature, remote sensing, heat health risk index, urban heat island, adaptation

 