

# THE ENVIRONMENTAL VULNERABILITY OF CARIBBEAN ISLAND NATIONS\*

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**ABSTRACT.** Within the hazards- and disaster-research community consensus exists as to factors that magnify or attenuate the effects of extreme natural events on local places. But less agreement and understanding exist concerning the methods or techniques for comparing hazard vulnerability within or between places, especially small-island developing states. Using two Caribbean nations, Saint Vincent and Barbados, as study sites, we asked which island has the greater level of hazard vulnerability, and why. Results indicate that, although neither island has a large portion of its population living in extremely hazardous locations, Barbados has many more residents in risk-prone areas. The methods used in this research provide valuable tools for local emergency managers in assessing vulnerability, especially through the delineation of highly vulnerable hot spots. They can also help donor organizations interested in vulnerability reduction on islands use their resources more efficiently. *Keywords:* Barbados, hazards vulnerability, Saint Vincent, small island developing states.

The 2004 and 2005 hurricane seasons reinforced the potential catastrophic effects of hazards in risk-prone regions throughout the Caribbean Basin—the Yucatán Peninsula, the U.S. Gulf Coast, and Central America. Although many hard-hit areas are now rebuilding, those hurricane seasons produced record losses, not only for the United States but throughout the Caribbean region as well. High winds, storm surge, torrential rain, and severe flooding affected tens of thousands in the Caribbean Basin, resulting in more than 5,500 deaths (OFDA/CRED 2006). Estimates of losses from Hurricane Ivan on the island of Grenada alone reach U.S.\$3 billion (UNEP 2005); Hurricane Wilma caused an estimated U.S.\$700 million loss in Cuba (AFP 2005). Insured losses from the 2004 hurricane season (U.S.\$30 billion) nearly tripled the following year, with insured losses totaling U.S.\$83 billion, mostly due to Hurricane Katrina in the United States (MunichRe 2006). In total, insured losses for the Caribbean region (including Mexico) were estimated at U.S.\$4 billion. The 2004 and 2005 seasons provided a poignant reminder of the impacts of natural hazards on small island nations and the importance of hazard and disaster preparedness, the latter often making the difference between life and death.

We know that some places are more vulnerable to certain extreme natural events than others and, moreover, that the demographic characteristics of resident populations contribute to this vulnerability (Kasperson, Kasperson, and Turner 1995; ISDR 2004). Less clear are the mechanisms and methods for comparative assessments of vulnerability to multiple hazards within a place or between places. In this article we

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