



Natural and anthropogenic hazards in the karst of Jamaica.

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Approximately 65% of Jamaica, about 7500km², is karst landscape, and so karstic hazards affect much of the country, including about 50% of the population, mostly in rural areas. The karst is variable, but includes extensive areas of dolines and dry valleys, together with poljes and classical tropical tower and cockpit karst. As population and urbanization increase, and as infrastructure is developed, karstic hazards are becoming more prevalent and risks are increasing. Beyond the overall roughness of much of the limestone terrain, which makes access and construction challenging in general, one major problem remains that of drought and water supply within the karst, particularly in rural areas where groundwater utilization is limited by finances and logistics and there is still considerable dependence on rainwater and springs. Conversely, and perversely, flooding poses as great a hazard as drought, and has more serious short-term consequences, including human death, injury and displacement, and damage to homes and other structures. Ground surface collapse and/or subsidence represent an increasing threat to developing infrastructure, such as highways and public service facilities, plus a minor hazard to rural dwellings and livestock. There also exists the potential for karst-related deterioration or sudden karstic failure of facilities such as dams and retention ponds, including the storage facilities associated with bauxite mining and processing, although studies to date suggest that the probability of the latter is low. Slope failure also poses a minor to moderate hazard to buildings, roads and other structures, although one that is rarely recognized. Human impact on the Jamaican karst is also increasing, particularly via surface bauxite mining, quarrying, increased groundwater abstraction, and agricultural development. Ground and surface water contamination is also a serious hazard, particularly where industrial effluents and urban runoff enter underground drainage systems via point recharge. The

karstlands are also increasingly involved in ecotourism activities, but less than ten percent of the total karst area is afforded recognition in protected areas.