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Abstract

An accurate and precise understanding of rainfall and erosion patterns with high spatial and temporal resolution is critical to a broad spectrum of the public sector, private sector, and academic projects of great interest to Caribbean prosperity, yet such data are only now becoming available in the USVI through our 2011-12 funded VI-WRRI grant, ``High-Resolution Mapping of Rainfall Rates Across the St. Thomas Microclimates". Moreover, a unified approach to understanding the precipitation and erosion indicators on St. Thomas will provide valuable insight to a variety of topics including the water cycle of Caribbean islands, changes to the coral habitat, and the influence of land use patterns on erosion rates. While some historical data are available online through the US Geological Survey website, these data are, themselves, derived from only a few collection sites and are only now being updated through our ongoing research. As climate change modifies weather patterns across the Caribbean, a high-resolution database of precipitation and erosion indicators that accurately portrays the current water cycle behavior across the region will be critical to the next generation of construction and development planning as well as ongoing studies of coral habitats and fisheries. The response of the scientific community to our ongoing program has been enthusiastic and has led to collaborations between UVI and other research institutions (College of Charleston, University of South Carolina). We seek to capitalize on the work already completed and the investment already made by extending operations of our existing rainfall sensor network, enhancing its data products, and developing a unified model for the rainfall and erosion patterns across the varied microclimates of St. Thomas. In this follow-up proposal, we seek funding 1) to maintain operation of the existing suite of sensors through the 2013-14 funding cycle, 2) to add erosion measurement stations to several of our rainfall sensors around St.

Thomas, 3) to extend the sensor network to include 3 rainfall-erosion stations on St. John, and 4) to tie precipitation observations to existing radar precipitation image archives.