Testimony of Sanaa A. Burke
In Support of Bill No. 36-0026 – Establishing the Virgin Islands Meteorological Office
May 20, 2025

Good day. My name is Sanaa Burke, and I am honored to provide testimony in support of Bill No. 36-0026, which proposes the establishment of the Virgin Islands Meteorological Office under the Virgin Islands Territorial Emergency Management Agency (VITEMA). I appear before you today as both a lifelong resident of the Virgin Islands and a committed student of atmospheric science.

I will be graduating on May 22 with a Bachelor of Science in Meteorology and Climate Science with a minor in Geography from the University of Delaware. I have recently been accepted into the graduate program in Meteorology and Atmospheric Science at The Pennsylvania State University, where I have been awarded a full assistantship. This opportunity will allow me to pursue research on tropical cyclone formation and intensification in a warming climate, with a particular emphasis on the Caribbean region, as it is my home and the area to which I am devoted professionally and personally.

The need for a local meteorological office is no longer a matter of convenience or academic interest. It is a necessity. The Virgin Islands continue to face the escalating impacts of climate change, including increasingly powerful hurricanes, erratic rainfall, extended drought periods, and rising sea levels. These conditions are not distant threats. They are active realities that threaten our infrastructure, our food supply, our public safety, and our economic stability.

This issue is deeply personal to me. When I began high school, Hurricanes Irma and Maria devastated the Virgin Islands. My family, like many others, was left without electricity for months. Our schools were damaged, and my peers and I were placed on double-session schedules, dramatically reducing instructional time. These storms disrupted education, displaced families, and left lasting psychological impacts. I have often wondered whether better localized forecasting, earlier warnings, or more effective public communication could have softened these impacts. I believe they could have.

Bill No. 36-0026 seeks to address these vulnerabilities by equipping our territory with tools and expertise tailored to our unique environmental conditions. The proposed Doppler radar station is a particularly critical component. Radar remains one of the most essential technologies in meteorology. It enables the detection of storm rotation, intensity, rainfall rates, and wind fields in real time. According to Eling and colleagues, radar continues to be indispensable for improving lead times in severe weather forecasting and filling observation gaps in underserved regions. Without radar coverage centered over our territory, we are left to rely on data from distant sources that often do not capture the nuances of our localized weather patterns.

Moreover, this investment in infrastructure will enhance forecasting not only for emergency response, but also for daily applications such as aviation, marine operations, and agriculture. Localized radar and sensor data allow meteorologists to produce high-resolution forecasts that improve accuracy and public trust. This is especially relevant in regions with complex terrain and variable microclimates, such as our islands. Hyper-local observation networks dramatically improve responsiveness to sudden weather shifts and short-term hazards.

In addition to enhancing public safety, a territorial meteorological office would provide substantial benefits to the agricultural sector. Our farmers face significant challenges due to shifting rainfall patterns, extreme heat, and the unpredictability of seasonal storms. According to the University of Delaware Cooperative Extension, real-time local weather data improves agricultural planning for irrigation, pest control, and harvesting. These systems help reduce losses and boost yield, thereby strengthening food security in a territory that heavily depends on imported goods.

Furthermore, hyper-local forecasting is critical to the accuracy and relevance of public warnings. As highlighted by meteorologist Scott Dimmich, neighborhood-scale data can detect fast-developing storms and localized threats that broader forecasting systems may miss. In a place like the Virgin Islands, where one community can experience torrential rainfall while another remains dry, this level of precision is essential.

I have had the privilege of exploring these topics through my academic research. In my senior thesis, I utilized the Weather Research and Forecasting (WRF) model to simulate the potential impacts of a 2°C increase in sea surface temperatures on Hurricane Katrina. The results demonstrated significant storm intensification—lower central pressure, stronger winds, and substantially higher rainfall totals. These findings underscore the urgency of preparing for stronger and wetter storms in the Caribbean.

This past Friday, I presented research at my university's symposium titled "Investigating the Spatiotemporal Evolution of Pre-Landfall Rainfall in Gulf Coast Tropical Cyclones." This study analyzed 252 historical U.S. landfalling hurricanes and found that many produced substantial rainfall days before landfall, with ring-shaped precipitation structures extending hundreds of kilometers from the storm center. These features are often overlooked in operational forecasting and can result in unexpected inland flooding. Improved local analysis capabilities would allow us to anticipate such impacts more effectively and issue earlier warnings.

The establishment of a meteorological office would also contribute meaningfully to the territory's intellectual and economic development. It would provide employment opportunities for local scientists and technicians, promote STEM education, and foster partnerships with national and international research institutions. As a young Virgin Islander pursuing a career in atmospheric science, I know firsthand how rare it is to find professional opportunities in this

field within the territory. This legislation signals to students like me that our expertise is valued here at home.

Finally, this bill aligns with broader national efforts to invest in regional resilience. As noted by Chakraborty and colleagues in Public Health Reports, strengthening local climate infrastructure in underserved communities enhances long-term public safety and fosters the next generation of climate professionals. A permanent meteorological presence in the Virgin Islands may also encourage visiting researchers, intergovernmental partnerships, and media coverage, positioning our islands as a Caribbean leader in tropical meteorology.

Chairman Lewis, members of the Committee, I commend Senator Ray Fonseca for his foresight in introducing this bill. I respectfully urge you to support its passage. The Virgin Islands must be equipped to meet the challenges of a changing climate with foresight, preparedness, and resilience. Bill No. 36-0026 provides the structure and support needed to do just that.

Thank you for your time and consideration. I am happy to answer any questions.

Respectfully,
Sanaa A. Burke
13-36 Estate Sion Hill, Christiansted, USVI 00820
sanaaab@icloud.com
340-514-4513

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