

ANNUAL REPORT

Bermuda 2017-2018

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INTRODUCTION

In 2014, the U.S. Consulate signed an agreement between the National Aeronautics and Space Administration (NASA) and Bermuda's Ministry of Education and Economic Development to provide support for teachers conducting science activities and data collection through the Globe Learning and Observations to Benefit the Environment (GLOBE) Program.

Over the past three years, the U.S. Consulate has partnered with Paget Primary School to support activities organized by the GLOBE Coordinator. Students in Grade 4 and 5 conducted weekly GLOBE activities and measurements using protocols with tools specified by GLOBE to analyze atmospheric conditions, identify cloud formations, collect hydrosphere data and monitor surface temperatures and moisture levels to identify characteristics of soil formation. Some of the data is uploaded into the online GLOBE website.

The Consulate has partnered with Paget Primary to host a number of activities including movie screenings about protecting the environment and annual Earth Day celebrations. As a part of the school's Earth Day celebration in April, the Consulate arranged a virtual discussion with Research Scientist, Dr. Elizabeth Macdonald from NASA Goddard Space Flight Center. Dr. Macdonald gave an interactive presentation about space weather and her extensive research of aurora's – most commonly known as the Northern Lights. She also talked about her educational background and what inspired her to become a scientist.

In May training was provided for the Mosquito Protocol. Bermuda has a very stringent entry process and visitors to the island are vetted before they are allowed entry. We also have a rigorous Health Department which sends officials into communities to monitor stagnant water. Based on shared information from the Mosquito protocol training, 5th grade students were given the opportunity to prepare a public broadcast educating the community about mosquitos.

In collaboration with NASA and the State Department, the Consulate recently received a small amount of equipment and resources to help expand the program into other schools. Promoting GLOBE is not our challenge. Our challenge is to provide the resources for teachers. We've made strides with aligning the standards and demonstrating the relevance to the science curriculum, however without



THE GLOBE PROGRAM

resources, teachers were apprehensive about including GLOBE protocols into their daily teaching and learning. In November the presentation of GLOBE instruments will be made to the Ministry of Education at Cooper's Island where a very small NASA satellite station will be reopened. This is the first time that I, as Co-Country Coordinator, have seen a shift in teachers' interest.

One of our main student goals is to participate in the virtual science fair. The GLOBE students discussed a problem or issue they wanted to explore relating to the school field. They want to understand why the grass grows much thicker, fuller and faster on one section of the field and why other parts of the field lack grass. This is a very basic concern, but a stepping stone into the process of solving a problem that is relevant to the students.

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EDUCATION

Developing and supporting activities for teachers and trainers, inquiry-focused and based on Earth system science and Science Technology, Engineering and Mathematics (STEM) educational needs.

Students shared with non- GLOBE teacher the activities and the hydrology protocol. The purpose was to demonstrate to teachers how GLOBE protocols fit seamlessly into the curriculum. The hydrology protocol involved a number of sample testing in diverse water settings. The first sample was a salt water sample taken from the Atlantic Ocean. The second sample was taken from brackish pond. The next few samples were from 2 different local ponds. Students engaged in the process of collecting water to assess for transparency.

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Students also paired with non-GLOBE students to engage them in GLOBE activities and protocols.

Communicating with teachers, sharing best practices and providing tools to facilitate student learning and collaboration with the broader GLOBE community.

Teachers had the opportunity to learn about GLOBE protocols during hourly sessions held monthly for 4 months at school. They engaged in activities in preparation for implementing GLOBE during the 2018/1019 school year.

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SCIENCE

Recruiting STEM professionals engaged in relevant research to the GLOBE International Science, Technology.

Students had the opportunity to make connections with GLOBE activities and science curriculum out in the community with a scientist.

For example, the science unit “Food chains” the students had the opportunity to use the expert of a local scientist in identifying and connecting creatures in their habitat to a specific food chain. The connection to GLOBE was similar to the macro invertebrates protocol and testing the salinity and pH of water. While this data was not inputted into the GLOBE it was part of the process of making connections for future GLOBE protocol activities. During the visit to the brackish pond students were able to measure salinity, take a water sample and net mosquito fish as a precursor to hydrology and



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COMMUNITY and Communication

CG2. Increase interactions and collaborations among local, regional and international GLOBE Communities through events and activities.

CMG3. Increase the promotion of GLOBE to new audiences

Based on the LAC Regional Training in May, students were given a research activity using GLOBE resources for the purpose of preparing presentations to the school community. Several presentations were made throughout the school; however time did not permit for a more public presentation. Selected completed presentations will be presented to our Health Department during this school year. In a separate **attachment are a couple of the student presentations.**

Students had the opportunity to meet virtually with a science. To stretch knowledge of the atmosphere, Auroras, was the topic. The presenter, Liz MacDonald presented interactively with the students. Their knowledge of clouds, the atmosphere and their understanding of particles in the air allowed students to make connections.



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