Collaboration: Water, A GLOBE Program Intensive Observation Period and Worldwide Cooperative Project

Bourgeault Jennifer[1], O'Connor Kevin[2], Wigbels Lyn[3], and Wegner Kristin[3]

[1]University of New Hampshire Main Campus
[2]Mount Royal University
[3]The GLOBE Program/UCAR

November 16, 2022

Abstract

Students K-16 in the United States and Canada joined their GLOBE Program peers from across the world in collecting water quality measurements during a week-long data-collection period in September, led by the GLOBE Africa Regional Coordination Office. The project was built off of other GLOBE collaborations around spring phenology measurements (Europe) and expeditions to Mt. Kilimanjaro and Lake Victoria (Africa). The efforts and resulting analysis of Collaboration: Water were supported by an international team of scientists, faculty and education professionals. The GLOBE Program Country Coordinators from the U.S. and Canada share the project goals, discuss the results of the September data challenge and how these lead into the community-based collaboration projects being developed between schools. Some of the projects will be presented during the International Virtual Science Symposium and Student Research Symposia in spring 2020. This project works on several levels. It creates resiliency locally through community-based inquiry, supports the development of 21st Century critical thinking, collaboration and communication skills and places the community investigations into the global context of the United Nations Sustainable Development Goal 6 (Clean Water and Sanitation). Along with tools, templates and the benefits of participation, the presenters will share how other communities can be involved in the March data collection event.

Collaboration: Water, A GLOBE Program Intensive Observation Period and Worldwide Cooperative Project

Jennifer Bourgeault, Kevin O'Connor, Lyn Wigbels and Kristin Wegner
University of New Hampshire, Mount Royal University, The GLOBE Program/UCAR

Introduction

Students K-16 in the United States and Canada joined their GLOBE Program peers from across the world in collecting water quality measurements during a week-long data-collection period in September 2019, led by the GLOBE Africa Regional Coordination Office.

The project was built off of other GLOBE collaborations around spring phenology measurements (Europe) and expeditions to Mt. Kilimanjaro and Lake Victoria (Africa).

The efforts and resulting analysis of **Collaboration: Water** were supported by an international team of scientists, faculty and education professionals including the GLOBE Program Country Coordinators from the U.S. and Canada.
Some of the projects will be presented during the *International Virtual Science Symposium* and *Student Research Symposia* in spring 2020.

Purpose

- The increase school participation and collaboration
- To take a Geographic snapshot of water conditions
- Interaction with scientists before, during, after data collection

Methods

During the one week (Sept 23-27, 2019), schools across the world collected data using selected protocols that required little or no equipment about the condition of water in their communities.
The following Research Questions were explored:

1. **What is the state of your water source/body in your community/neighbourhood?**

Protocols: 3 selected that all students should do at all sites. Additional protocols are encouraged.

- Macroinvertebrates – ID charts online
- pH (paper or pen)
- Water temperature

1. ***What does the environment around your water source/body look like?***

- Participants take record of what the surroundings of the water source/body look like (e.g soils, vegetation, settlement, land cover, land uses, tributary, degradation)
- Make a cloud cover observation to support the water source catchment.
- A land cover observation (GLOBE observer app).
- A tree observation (GLOBE observer app)
- Document site using photographs.
- Create a study site map.

1. *What can your community do about the state of the water body and its environment*

Students ask community 3-5 Qs such as:

- How is my community using the water body?
- How is my community managing the water source?
- Is there a water user association with in the community and how does it operate?

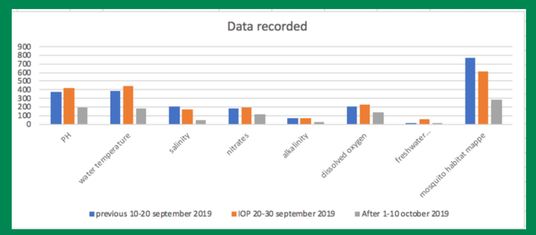
Results

ALL REGIONS PARTICIPATED

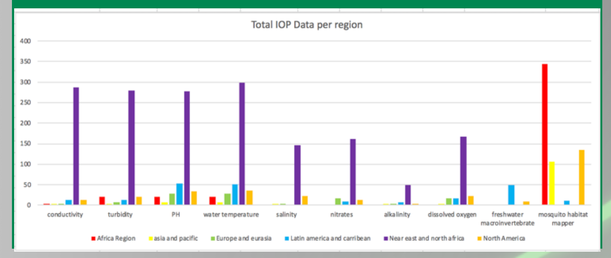
REGIONAL FOCUS:

- AFRICA- 2 schools (South Africa)
- ASIA & PACIFIC- 4 schools (Japan, Korea, Taiwan)
- EUROPE & EURASIA- 2 schools (Croatia, Lithuania)
- LATIN AMERICA & CARRIBEAN- 11 schools (Argentina, Dominican Rep, Columbia, Uruguay, Paraguay, Peru)
- NENA- 18 schools (Oman, Saudi Arabia)
- **NORTH AMERICA- 16 schools (USA, Canada)**

TOTAL DATA RECORDED



IOP METRICS



Conclusion

This project works on several levels:

- It creates resiliency locally through community-based inquiry;
- supports the development of 21st Century critical thinking, collaboration and communication skills, and:
- places the community investigations into the global context of the United Nations Sustainable Development Goal 6 (Clean Water and Sanitation).

EMERGING OUTCOMES

- Participation in International Virtual Science Fair (IVSF)
- Increase in student research projects
- Community benefits – connect to Sustainability Development Goal 6.3.2
- Girls in science and education (SDG 4 & 5)
- Potential for future growth of indirect relationship between water quality and food security (SDG 2)
- Maps and initial visualizations and analyses in a timely fashion

NEXT STEPS:

- Further develop the collaboration of GLOBE science team & RCO/CC
- Closer partnerships with NASA and UNEP for dissemination
- Another IOP in spring 2020
- Further analyze data submitted (future webinars)

2020 GLOBE
International Virtual Science Symposium

Projects due March 10, 2020