



## **Mosquitoes Buzz Around GLOBE! The Challenges and Successes of a Citizen Science Project**

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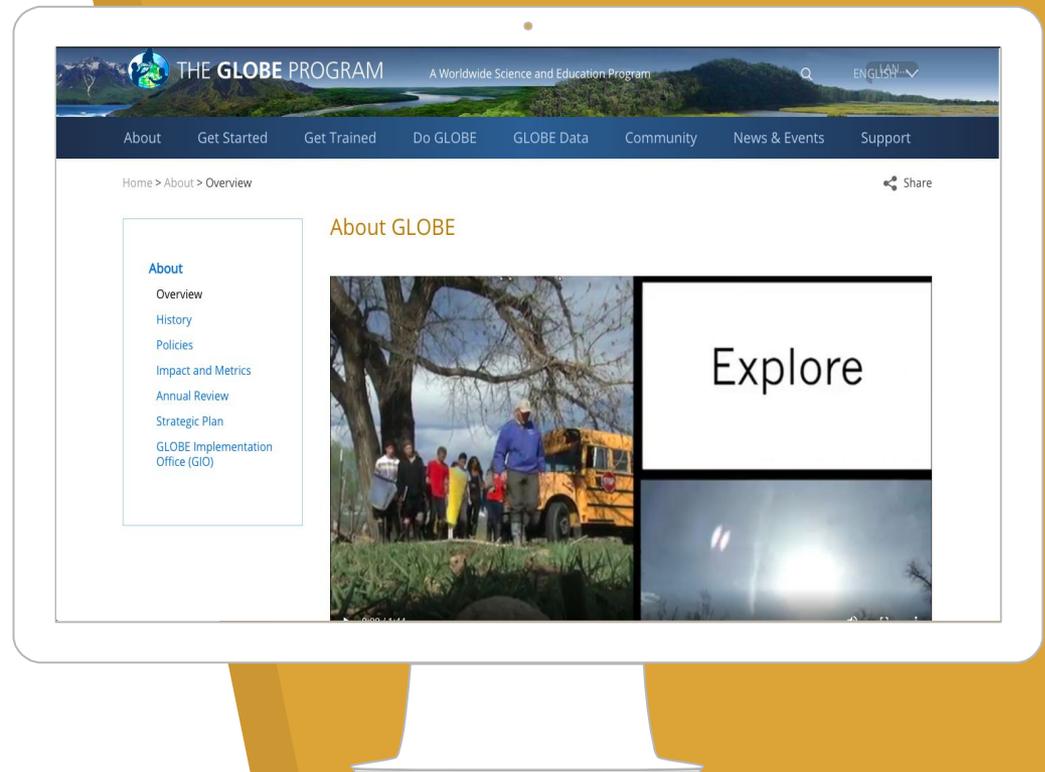




## What is GLOBE?

### *Global Learning and Observations to Benefit the Environment*

- An international science and education program that brings together students, teachers, scientists and the public to contribute meaningfully to our understanding of the Earth and global environment
- GLOBE connects teachers and students to Earth system science, high-caliber scientific research and a global network of scientists
- GLOBE promotes lifelong engagement with science by providing an opportunity for citizen scientists of all ages to join the GLOBE network
- Sponsored by NASA and supported by NSF, NOAA, and the State Department; implemented by the University Corporation for Atmospheric Research (UCAR) in Boulder, Colorado





## High level **Zika** project objectives:

- Zika education and breeding site elimination
- Develop & strengthen networks of public health officials, GLOBE Country Coordinators, scientists, and teachers
- Providing public health officials important data to track mosquitoes and fight mosquito-borne disease



## Results



# The GLOBE Program



30 Participating Countries

- ▼ 10 focus countries identified by DoS
- additional initial implementation countries



## Country List

### 10 focus countries identified by Department of State:

- Argentina
- Benin
- Dominican Republic
- Guatemala
- Marshall Islands
- Micronesia
- Palau
- Paraguay
- Thailand
- Togo

### Additional implementation countries:

Burkina Faso, Cameroon, Colombia, Costa Rica, India, Nigeria, Peru, Philippines, Senegal, Suriname, Uganda, Vietnam

**And other countries are also using the protocol!**



# 135+ CMTs

Country Mosquito Trainings

# 80+ LMWs

Local Mosquito Workshops

# 36 countries

that held LMWs

# 160,000+

total measurements from all GLOBE countries

as of March 23, 2020

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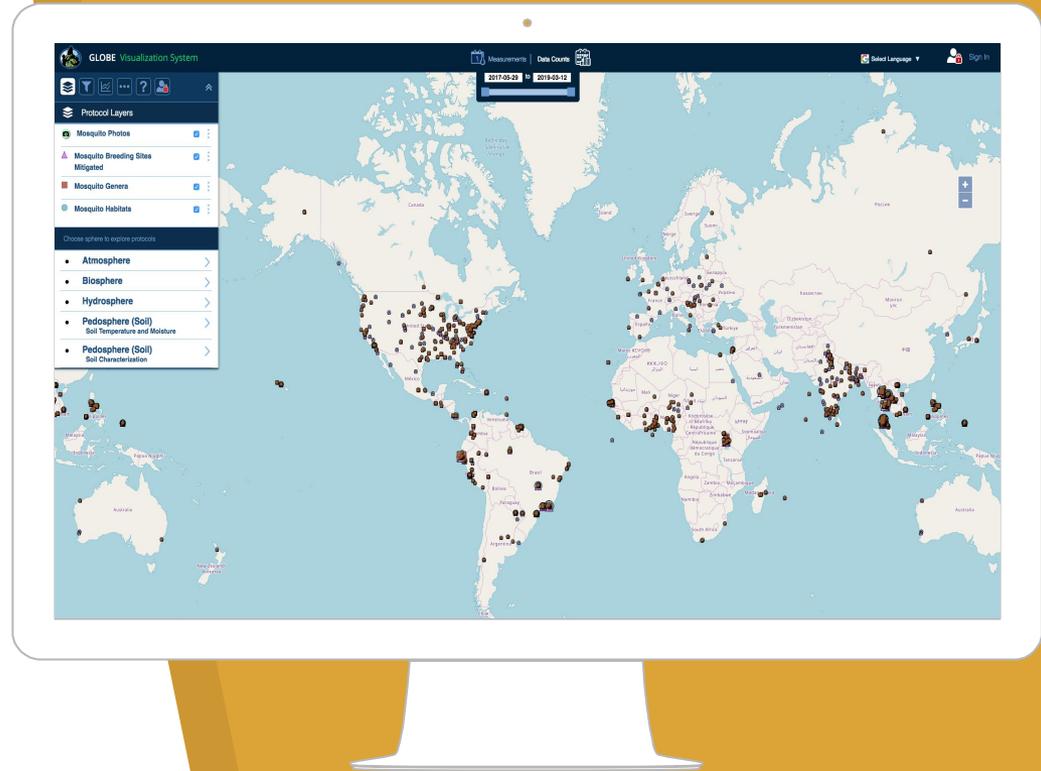


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# The GLOBE Program



## May 2018 - March 2020

More than 160,000 measurements!



## Data Points Entered into the Database for Africa Region

as of March 23, 2020

Country	Total data points
<b>Total</b>	<b>57231</b>
Benin	10687
Botswana	13
Burkina Faso	1338
Cameroon	134
Chad	106
Ghana	272
Guinea	168
Kenya	1492
Madagascar	430
Mali	73
Niger	24
Nigeria	479
Rwanda	41
Senegal	38071
South Africa	69
Togo	1450
Uganda	2384



## SUCCESSSES + CHALLENGES

### Successes

- ▶ Community that steps up
- ▶ Exceeding project metric goals
- ▶ MHM tool on GLOBE Observer App
- ▶ Expansion beyond initial countries
- ▶ Integration of project into core GLOBE Program through Mission Mosquito
- ▶ Research
- ▶ Mosquito Protocol Bundle

### Challenges

- ▶ Equipment
  - ▷ Lens
- ▶ MHM tool on GLOBE Observer App
- ▶ Hosting workshops
- ▶ **COVID-19**





## PUBLIC HEALTH RESEARCH

“Assessment of population dynamics and biting trends of *Aedes aegypti* in northern Benin: Public health implications.” *International Journal of Mosquito Research* in October 2018

- Lead author was the Francophone Regional PHO
  - Dr. Rock Aikpon
- Co-authors: Mark Brettenny (Regional Coordinating Officer) & Ylliass Lawani
- Presents important findings about the biting behavior of *Aedes* mosquitoes in Benin, and the probability of exposure to *Aedes aegypti* mosquitoes (based on the indoor and outdoor collection of 485 adult *Aedes aegypti* mosquitoes)





## Student Research

	IVSS Report Title	Grade
Kenya	Research on mosquitoes and diseases they transmit	Middle
Madagascar	Surveillance of Aedes albopictus mosquitoes vectors of ZIKA in urban area	Graduate
Philippines	Community Based Mosquito Vector Prevention Model : Conceptual Approach to Mitigating the Risk of Mosquito threats Thru Community Empowerment and Education	Middle
Thailand	Dengue situation with different ecological and environmental factors in the sub-district in Chiang Mai, Thailand	Middle
Argentina	Distribution and abundance of mosquitoes in the world. Preliminary report.	Secondary
Colombia	Comparative Studies of Larvae of Mosquitoes Present in the Gardenia's Urbanization, Barranquilla-Colombia	Middle

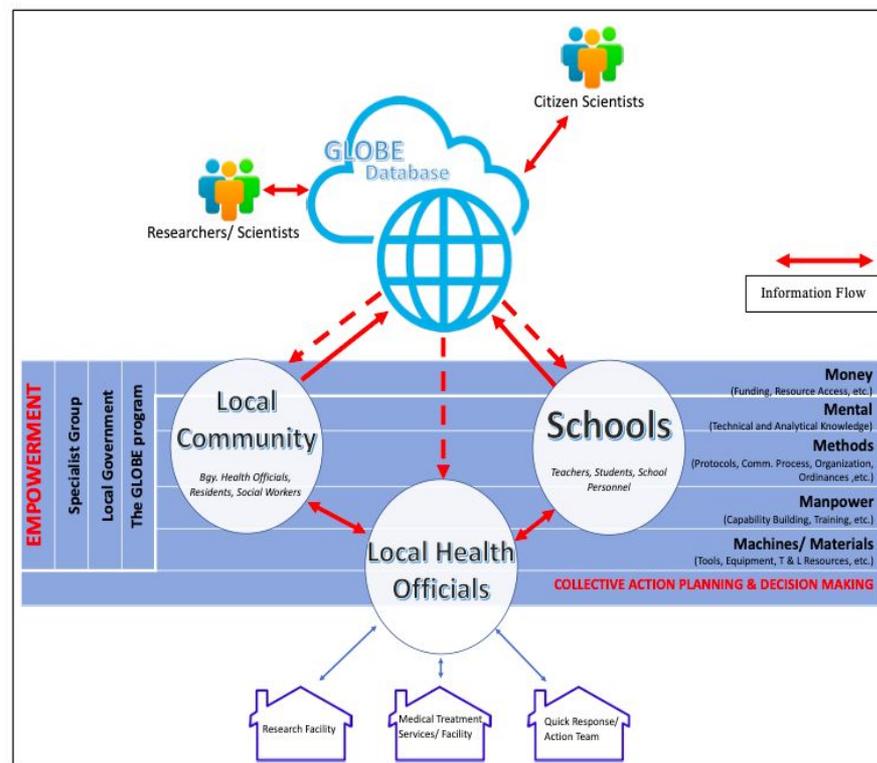




## Sample Student Research: The Philippines

### GLOBE Program (Philippines) Local Mosquito Workshops Targets & Commitments

SUCCESS INDICATORS	TARGET NO.
Total Target Number of LMWs Conducted Nationwide	78
Total Target Number of LMW Participants	1320
Total Target Number of Unique Mosquito Data Uploaded	5280
Target Geographical Coverage	Nationwide, covering all 16 political regions of the country





## **Mission Mosquito** <sup>GLOBE</sup> Campaign

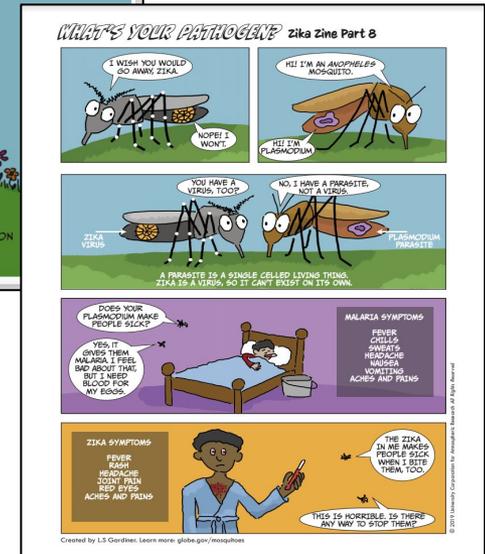
Three basic questions initiated the campaign:

- Identify baseline (2018-2021) for range and distribution of vectors such as *Aedes aegypti* and *Aedes albopictus*.
- Identify seasonality of local mosquito vectors: first sighting, last sighting, period of greatest number of observations
- Quantify change in mosquito frequency and distribution at local, regional, national and global scales with specific reference to prevailing environmental parameters, such as precipitation, land cover, surface temperature, and soil moisture.



## Zika Zine

- UCAR Center for Science Education developed the “Zika Zine”
- Available in 10 languages: English, Spanish, French, Dutch, Hindi, Nepali, Portuguese, Tagalog, Thai, and Vietnamese





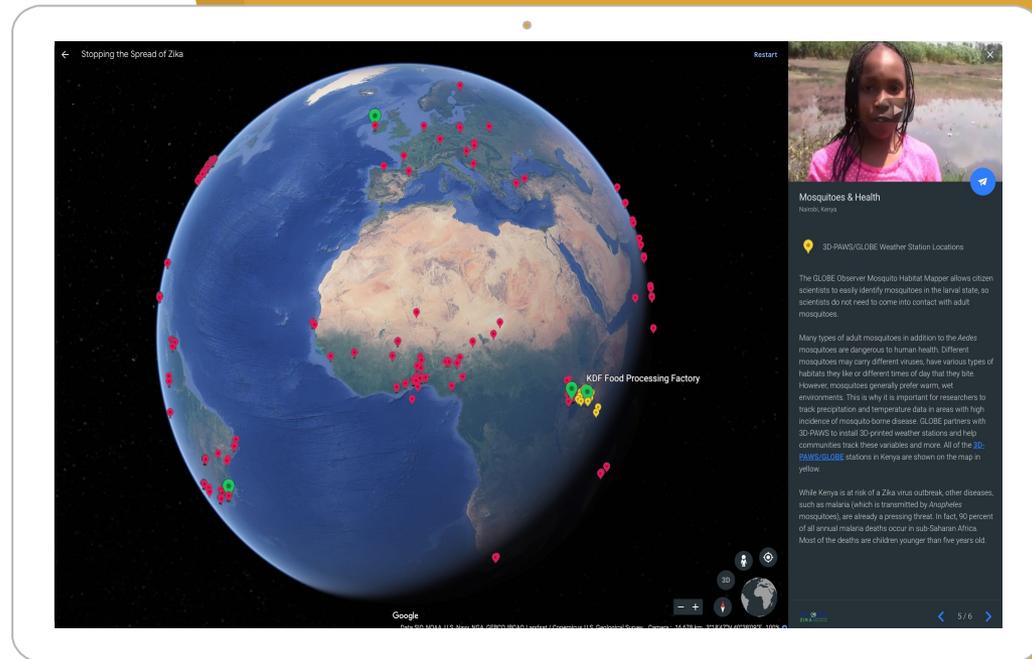
## Google Voyager + GLOBE Zika Collaboration

In 2019, the GLOBE Zika Education and Prevention Project began a collaboration with Google Voyager.

Google Voyager is a digital storytelling platform that uses Google Earth to take readers to specific locations around the world.

GLOBE's story, "Stopping the Spread of Zika," highlights global student involvement in the GLOBE Zika Education and Prevention Project.

Visit [this link](#) for more information, or do a Google search for "Google Voyager Zika".





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# THANKS!

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