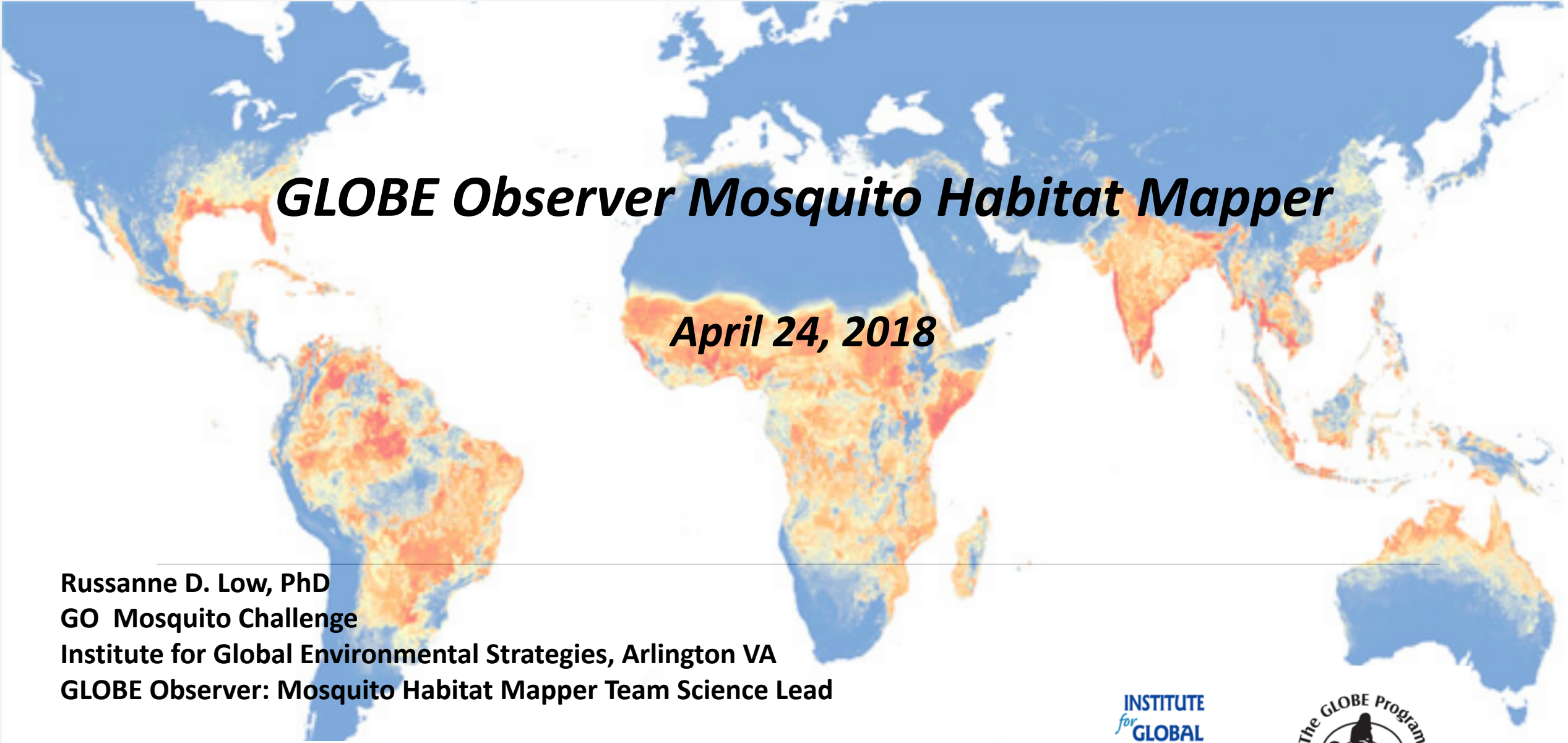


GLOBE Observer Mosquito Habitat Mapper

April 24, 2018

Russanne D. Low, PhD
GO Mosquito Challenge
Institute for Global Environmental Strategies, Arlington VA
GLOBE Observer: Mosquito Habitat Mapper Team Science Lead

The Mosquito Challenge Community Campaign | COMBATING ZIKA AND FUTURE THREATS A GRAND CHALLENGE FOR DEVELOPMENT

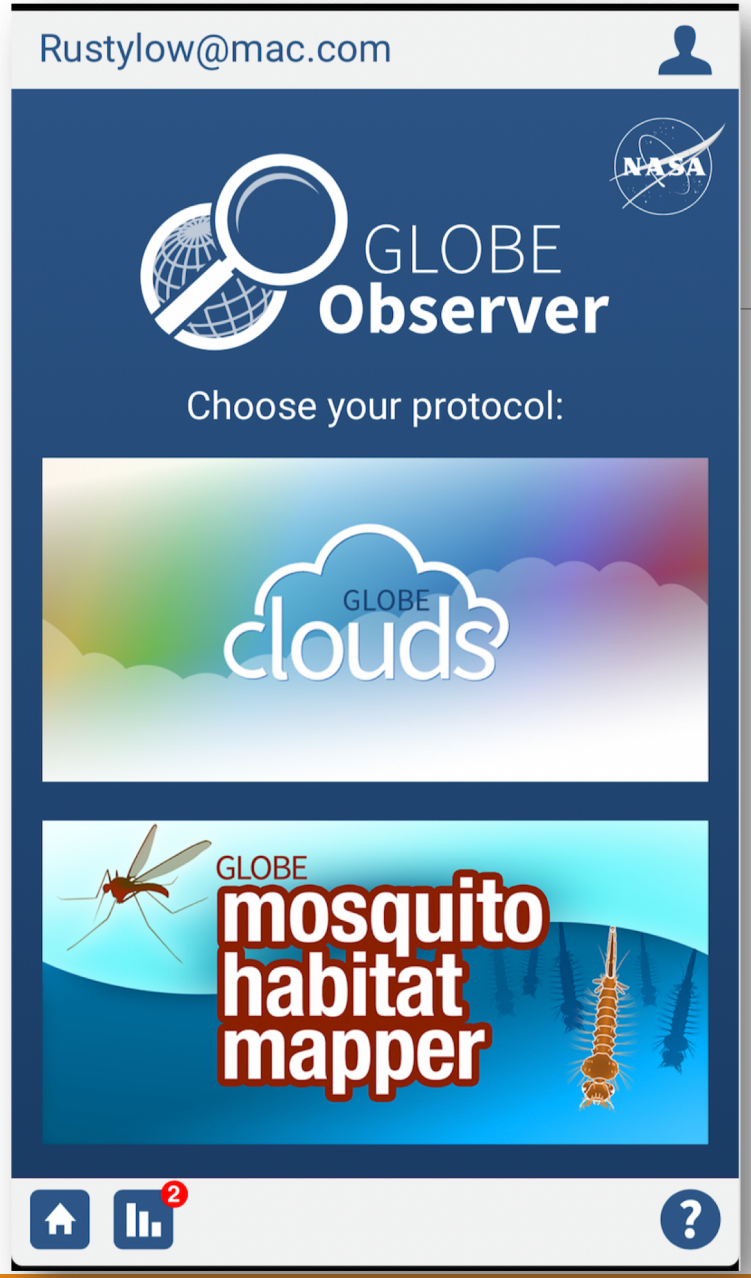
INSTITUTE for GLOBAL ENVIRONMENTAL STRATEGIES

The GLOBE Program

Developing a Citizen Science Project

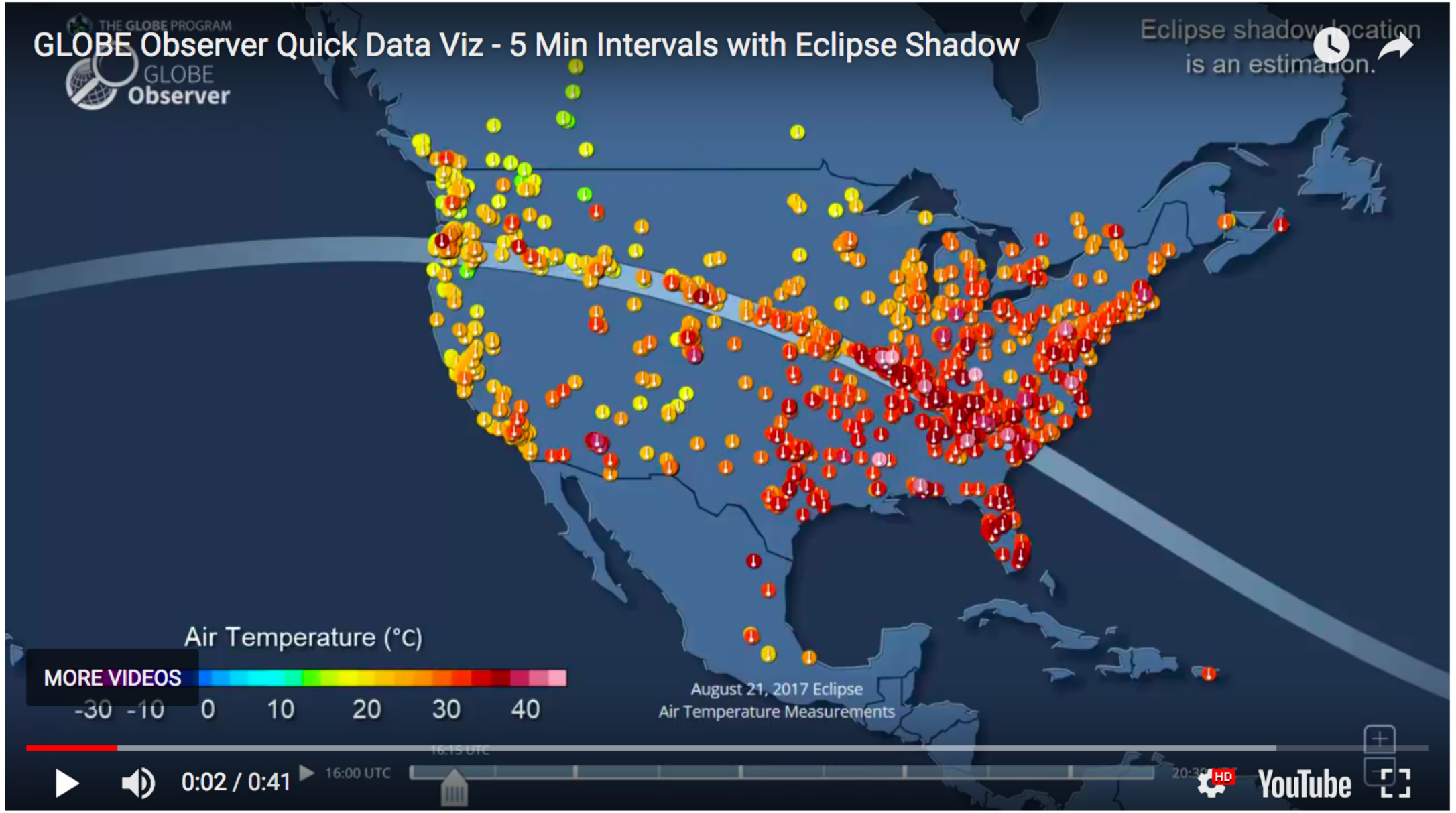
- Simple, easy to use
- Motivations and rewards
- Accuracy and data quality
- Usefulness of data
- Societal benefits of participation

https://www.citizenscience.gov/toolkit/

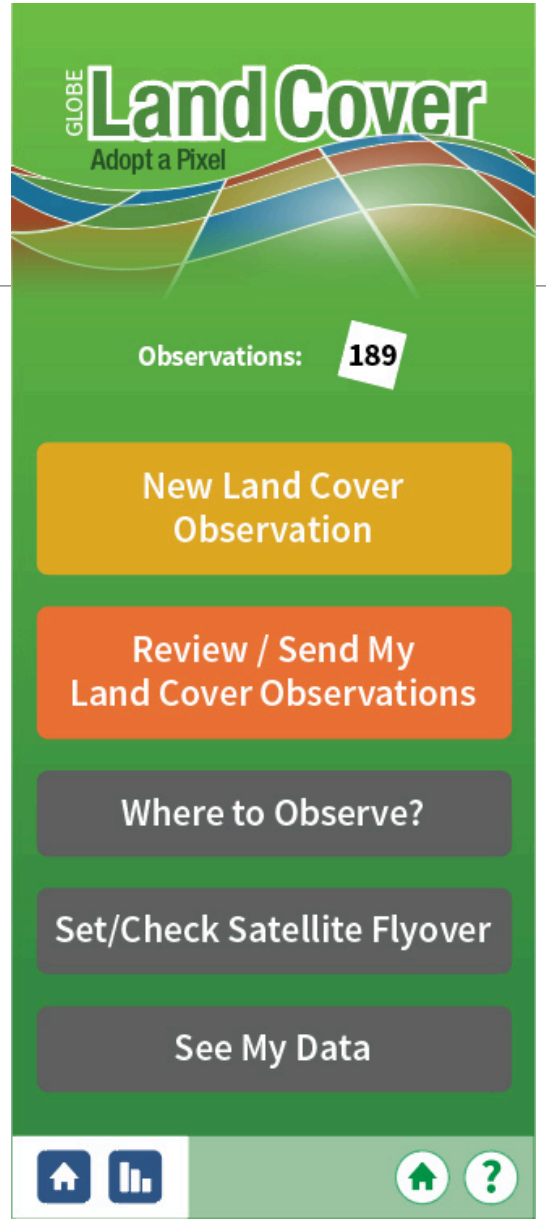


Simple, easy to use

GLOBE Observer is an international network of citizen scientists, of all ages and scientists working together to learn more about our shared environment, changing climate and its impacts.


GLOBE Observer Quick Data Viz - 5 Min Intervals with Eclipse Shadow
THE GLOBE PROGRAM
GLOBE
Observer
Eclipse shadow location
is an estimation.
Air Temperature (°C)
-30 -10 0 10 20 30 40
MORE VIDEOS
August 21, 2017 Eclipse
Air Temperature Measurements
0:02 / 0:41
16:00 UTC
HD
YouTube


doveroye@gmail.com
GLOBE Observer
Choose your protocol:
GLOBE clouds
GLOBE mosquito habitat mapper
GLOBE Land Cover Adopt a Pixel
Visit the Website

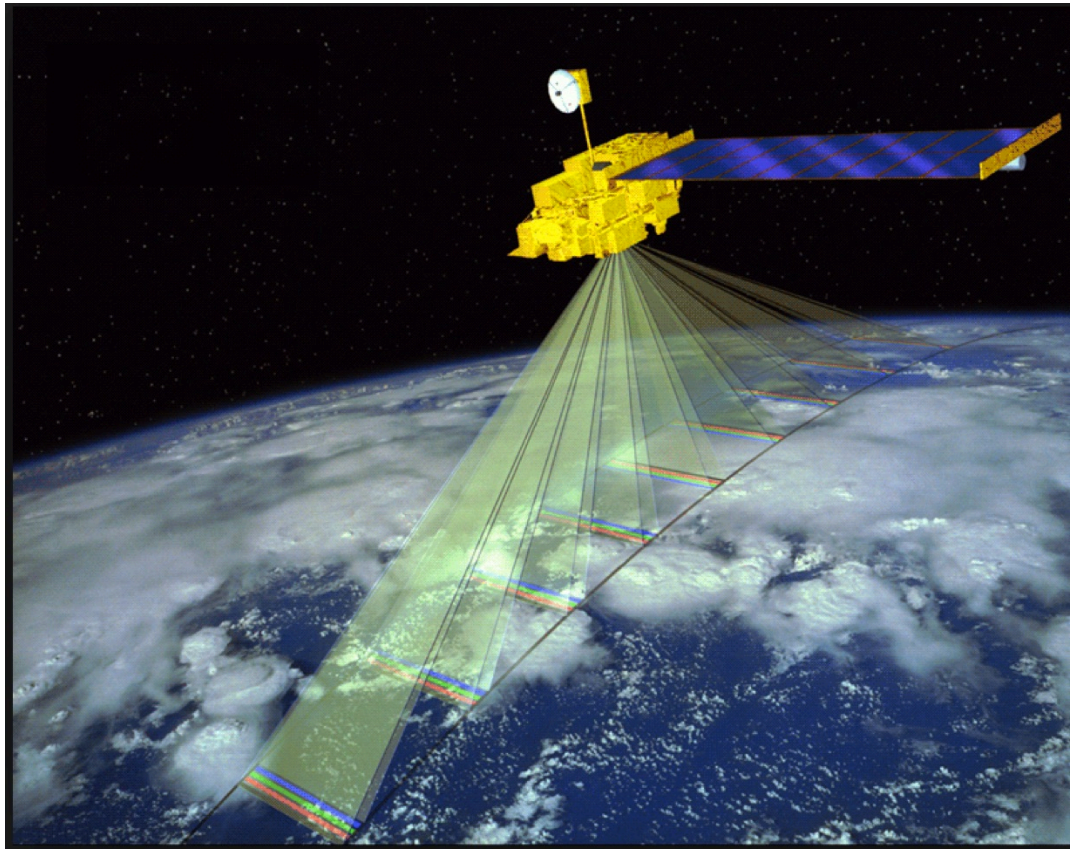

GLOBE Land Cover Adopt a Pixel
Observations: 189
New Land Cover Observation
Review / Send My Land Cover Observations
Where to Observe?
Set/Check Satellite Flyover
See My Data

You can’t quite see mosquitoes from here….

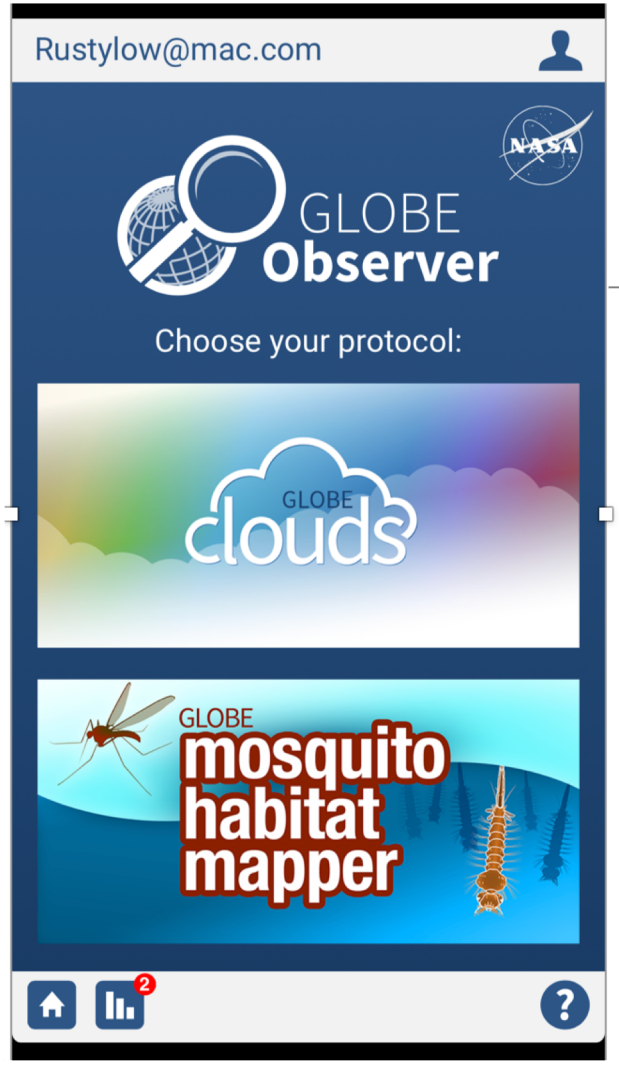
Why is NASA and AEB sponsoring this work?

Through ground-based observations, GLOBE Observer citizen scientists will be able to augment broad scale satellite-based research with highly targeted ground-based observations at a high level of granularity.

Why high interest? Insufficient surveillance worldwide, heightened interest in using satellite data to predict outbreaks of vector borne disease.

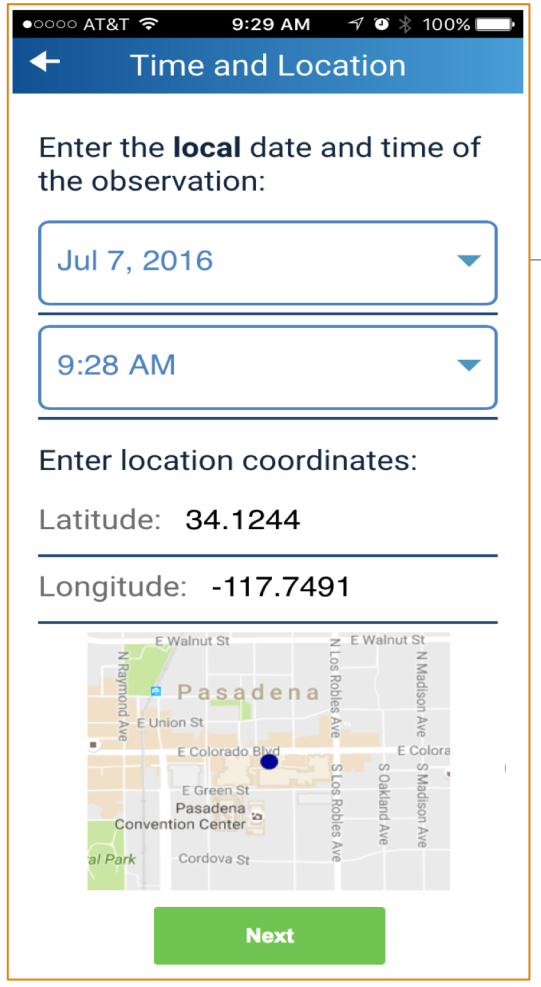


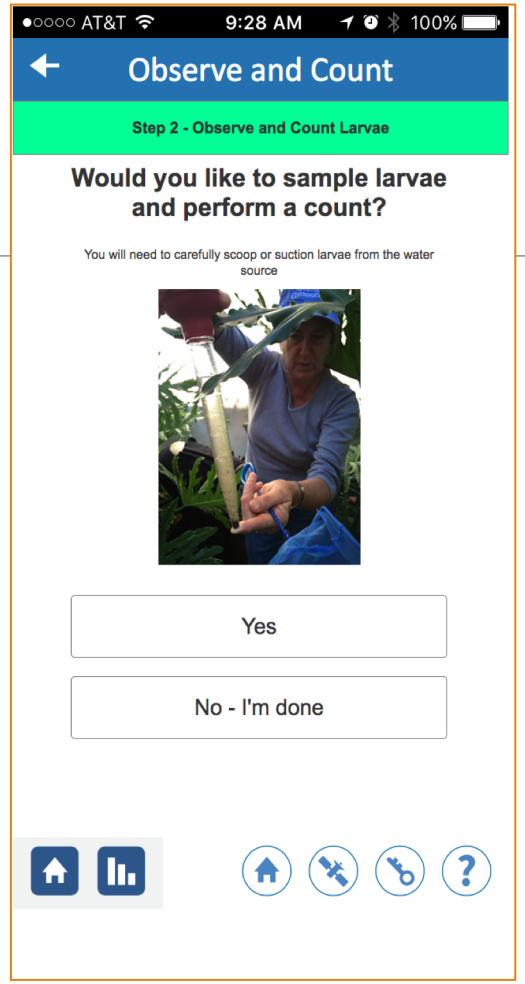
Terra (NASA)

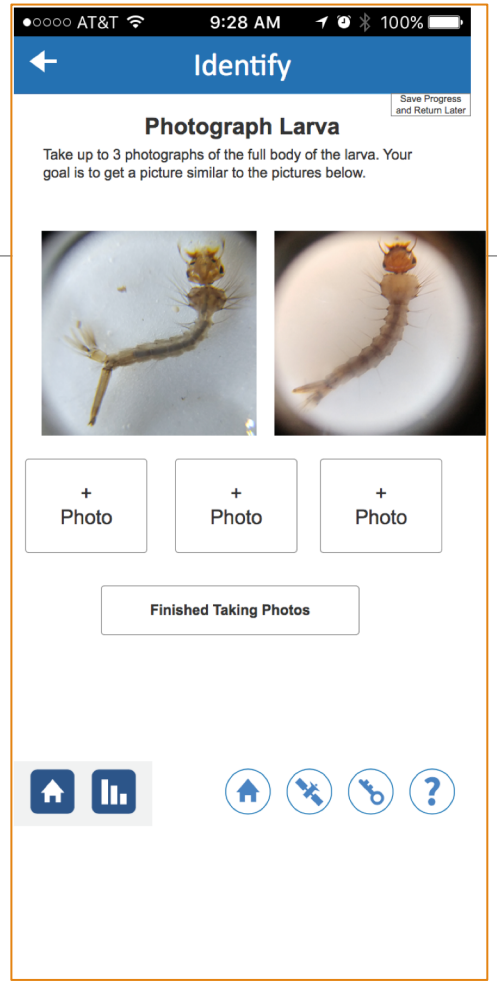


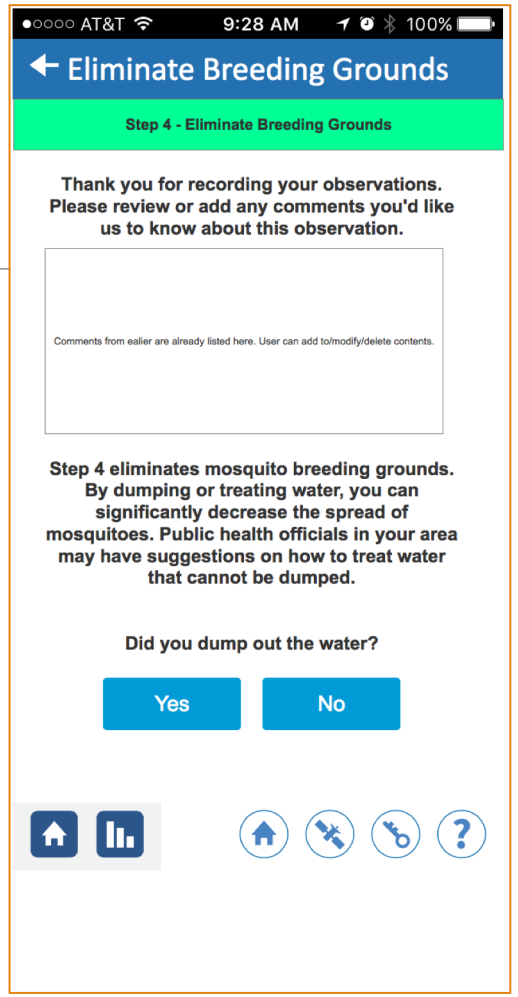
The mosquito is the world's most dangerous animal.

Project observes and reports larvae, an immature developmental stage of the mosquito that lives in water, doesn't bite and doesn't pose a health hazard to humans



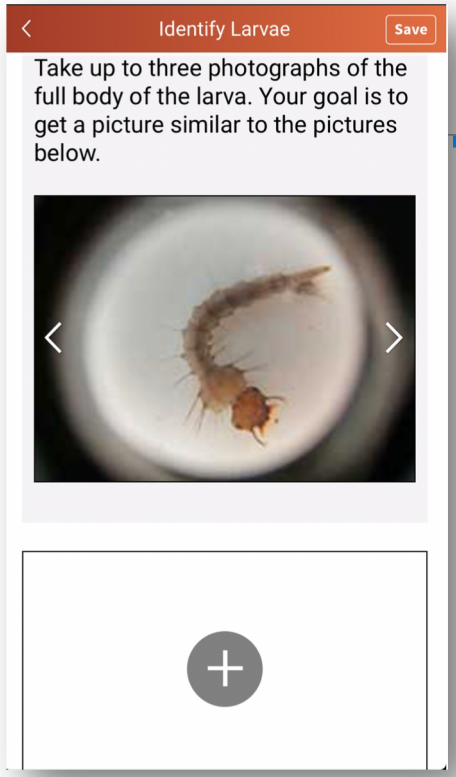


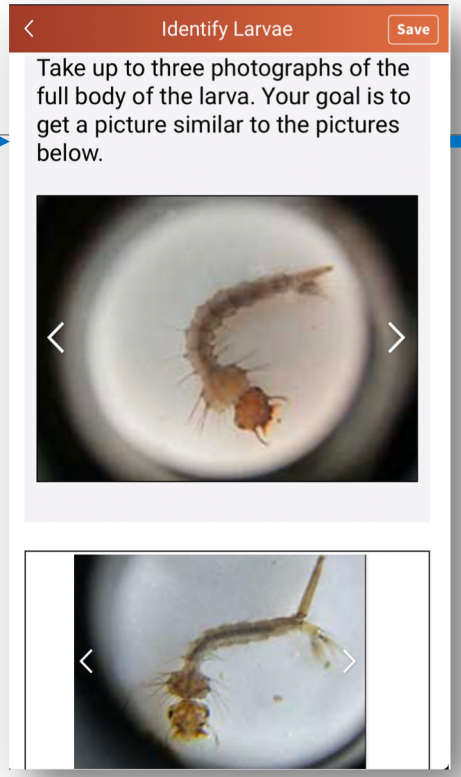


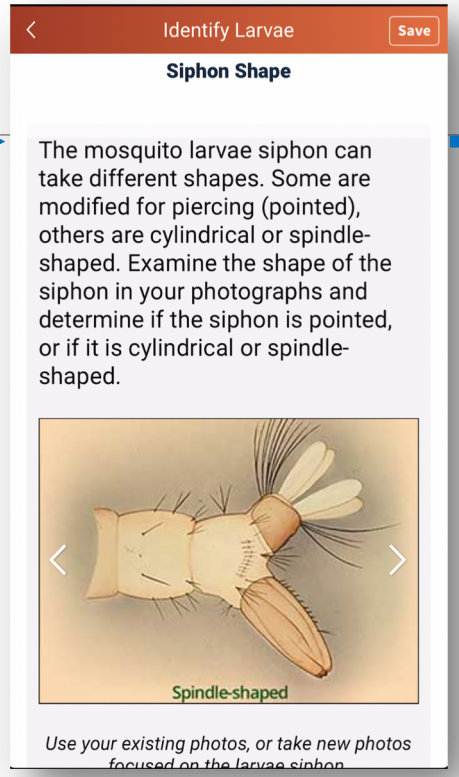


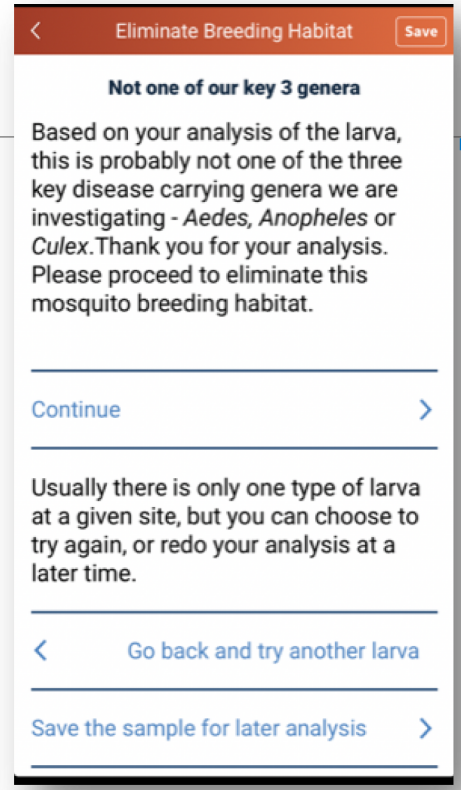
Locate breeding site **sample & count** **identify** **decommission**

1 **2** **3** **4**


Identify Larvae
Save
Take up to three photographs of the full body of the larva. Your goal is to get a picture similar to the pictures below.


Identify Larvae
Save
Take up to three photographs of the full body of the larva. Your goal is to get a picture similar to the pictures below.


Identify Larvae
Save
Siphon Shape
The mosquito larvae siphon can take different shapes. Some are modified for piercing (pointed), others are cylindrical or spindle-shaped. Examine the shape of the siphon in your photographs and determine if the siphon is pointed, or if it is cylindrical or spindle-shaped.
Spindle-shaped
Use your existing photos, or take new photos


Eliminate Breeding Habitat
Save
Not one of our key 3 genera
Based on your analysis of the larva, this is probably not one of the three key disease carrying genera we are investigating - Aedes, Anopheles or Culex.Thank you for your analysis. Please proceed to eliminate this mosquito breeding habitat.
Continue
Usually there is only one type of larva at a given site, but you can choose to try again, or redo your analysis at a later time.
Go back and try another larva
Save the sample for later analysis

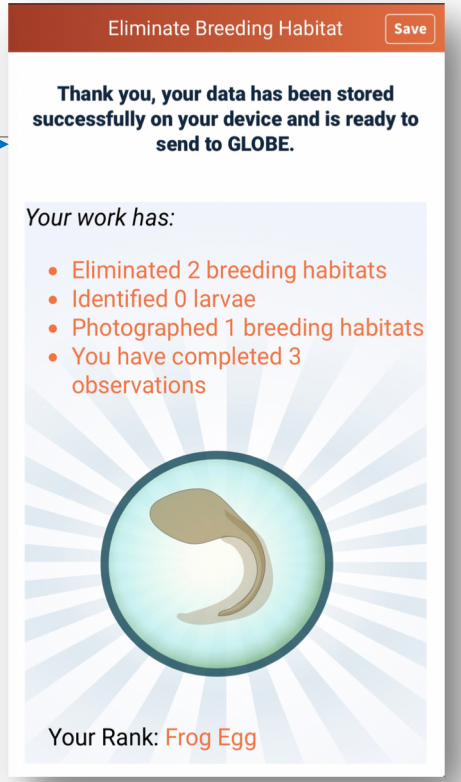
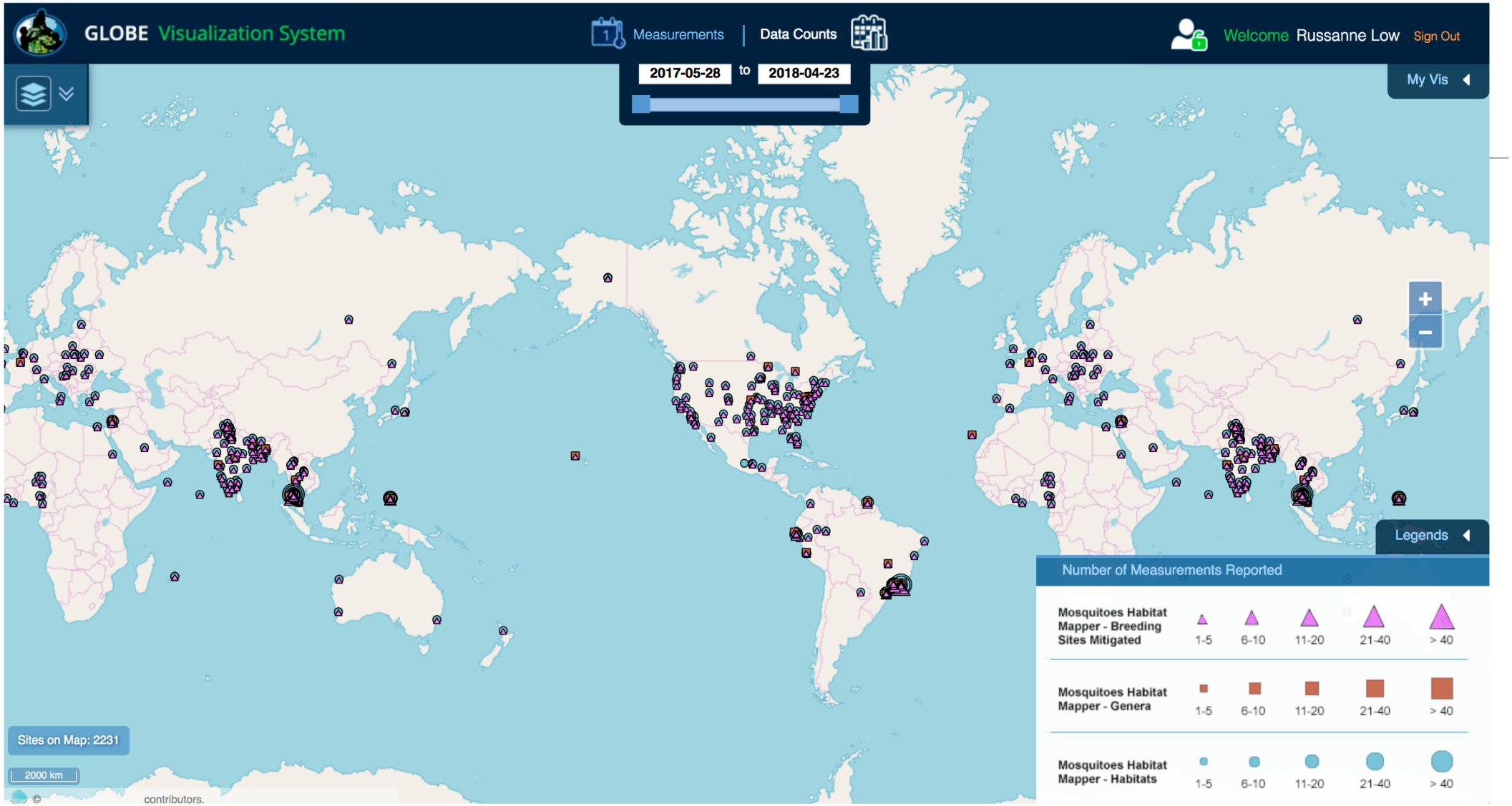
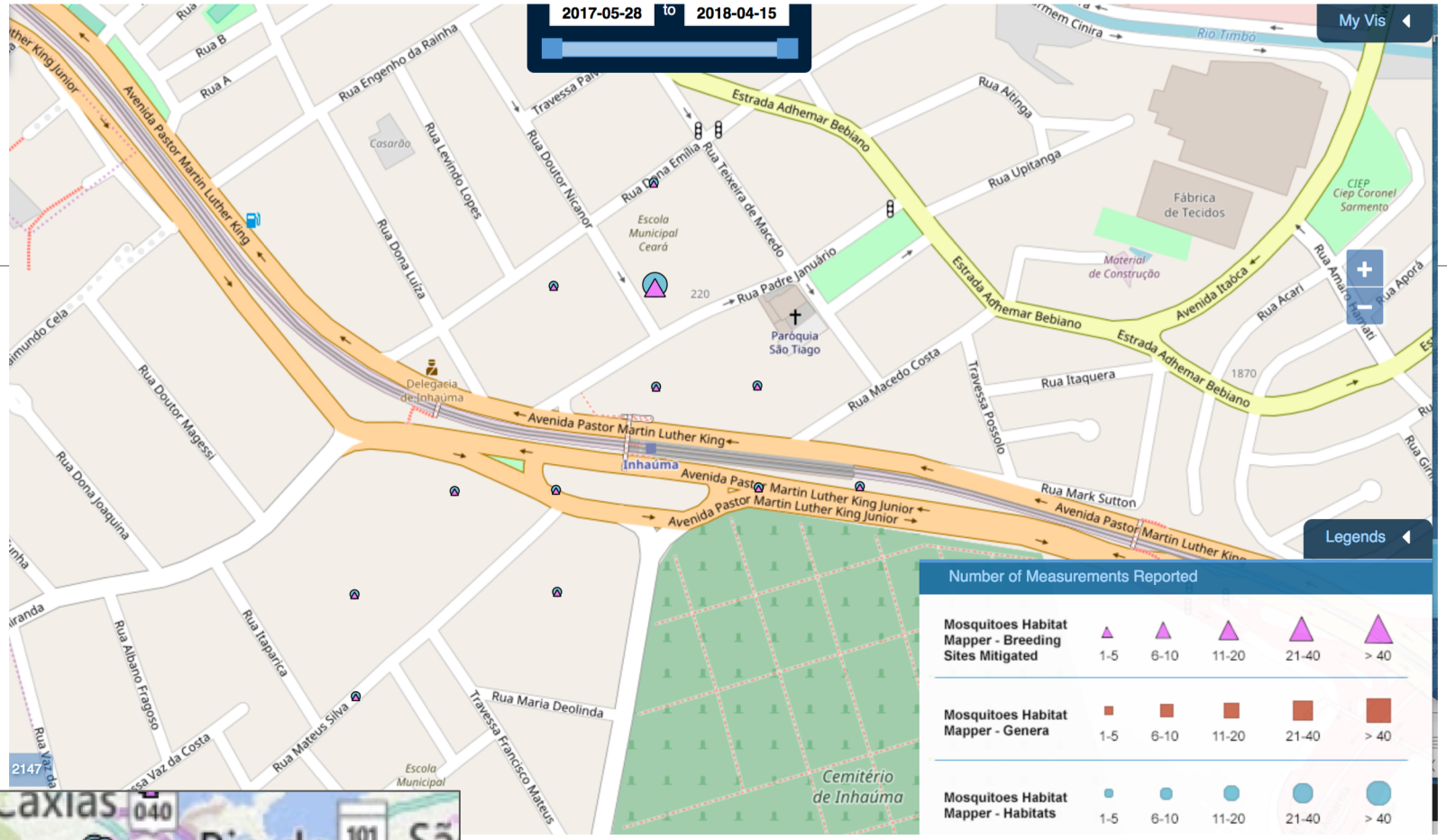
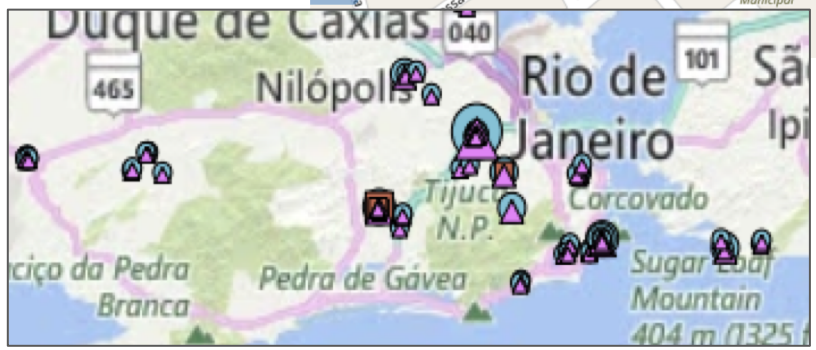

Eliminate Breeding Habitat
Save
Thank you, your data has been stored successfully on your device and is ready to send to GLOBE.
Your work has:
Eliminated 2 breeding habitats
Identified 0 larvae
Photographed 1 breeding habitats
You have completed 3 observations
Your Rank: Frog Egg


Foto
2.5x

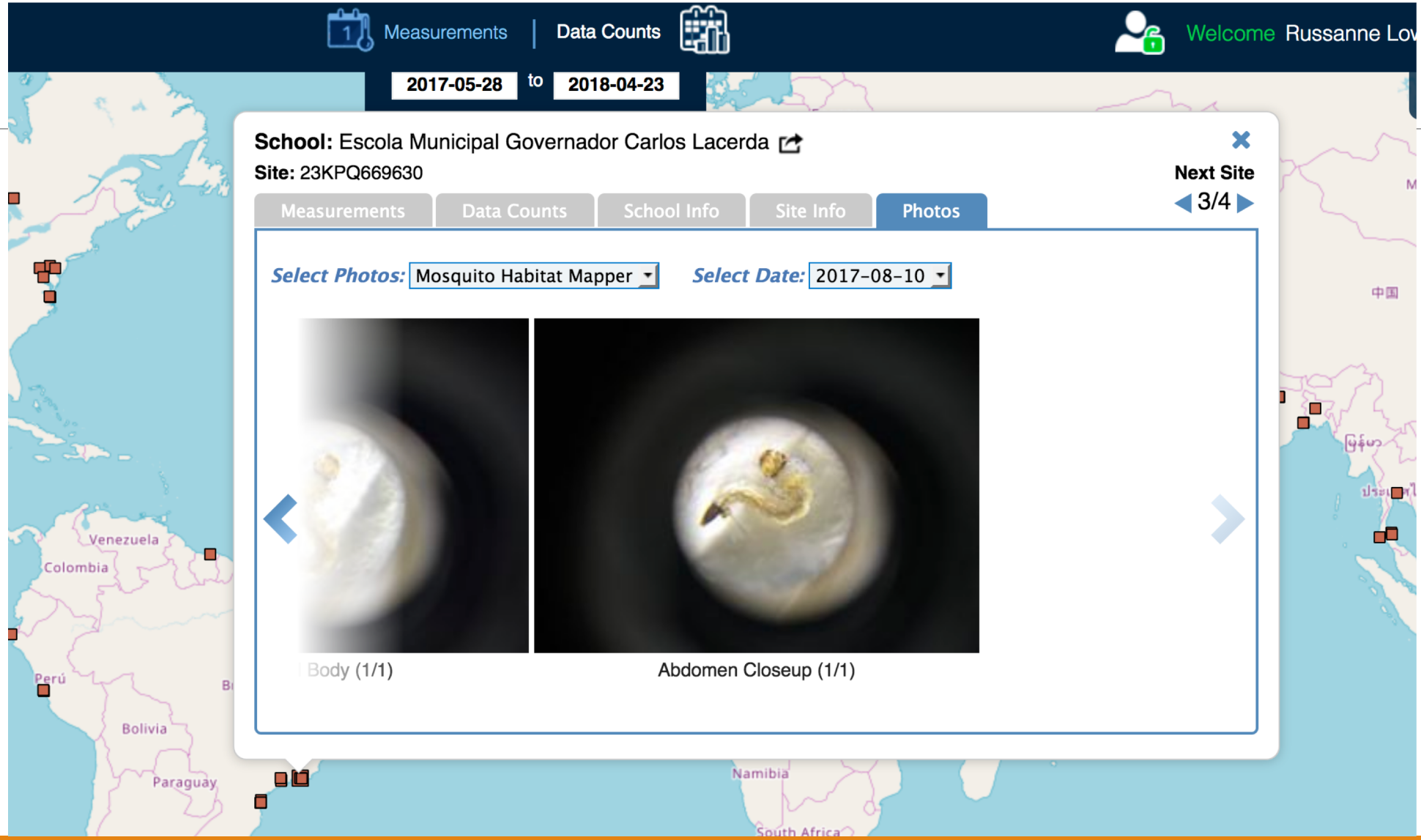

GLOBE Visualization System
Measurements
Data Counts
Welcome Russanne Low
Sign Out
2017-05-28
to
2018-04-23
My Vis
Legends
Number of Measurements Reported
Mosquitoes Habitat Mapper - Breeding Sites Mitigated
Mosquitoes Habitat Mapper - Genera
Mosquitoes Habitat Mapper - Habitats
1-5
6-10
11-20
21-40
> 40
Sites on Map: 2231
2000 km
contributors.





Above: Data reported by citizen scientists since inception, using the GO MHM app, June-December 2017. See inset image, Rio de Janeiro, Brazil data hub, where intensive training pilot took place in May-June 2017. N=1523. (https://vis.globe.gov/GLOBE/)

Accuracy and data quality



2018-04-07

My Vis

Planaltina

Protocol Layers

- Mosquito Genera
- Mosquito Breeding Sites Mitigated
- Mosquito Habitats

Mosquito Habitat — Update

Mosquito Genera — Update

- All Genera
- Unknown
- Anopheles
- Culex
- Aedes
- Aedes aegypti
- Aedes albopictus
- Aedes albopictus or aegypti indeterminate

Choose sphere to explore protocols

- Atmosphere
- Biosphere
- Hydrosphere

https://assets.globe.gov/photos/2018/04/08/660437/original.jpg

Brazil Citizen Science

Site: 23LJC915535

Measurements | Data Counts | Site Info | Photos

Select Photos: Mosquito Habitat Mapper *Select Date:* 2018-04-08


Water Source (2/2)


Larva Full Body (1/2)


Larva Full Body (2/2)

National Park

Brasília

Cruzeiro

Estrada Epia

Paranoá Lake

001

130

Legends

PHOTO REVIEW

GLOBE.gov

View: Unapproved ▾ App: Mosquitoes ▾ Sort by: Oldest ▾ Display: 5 ▾ ◂ Prev Next ▸

2 submissions with 9 unapproved mosquitoes photos are pending approval

Clear Approvals

Submit Approvals

Citizen Scientist
sand_811@hotmail.com
Peru
-3.7474°, -73.2531°
Mosquitoes

2018-04-23
23:31:00

Mark All In Row:

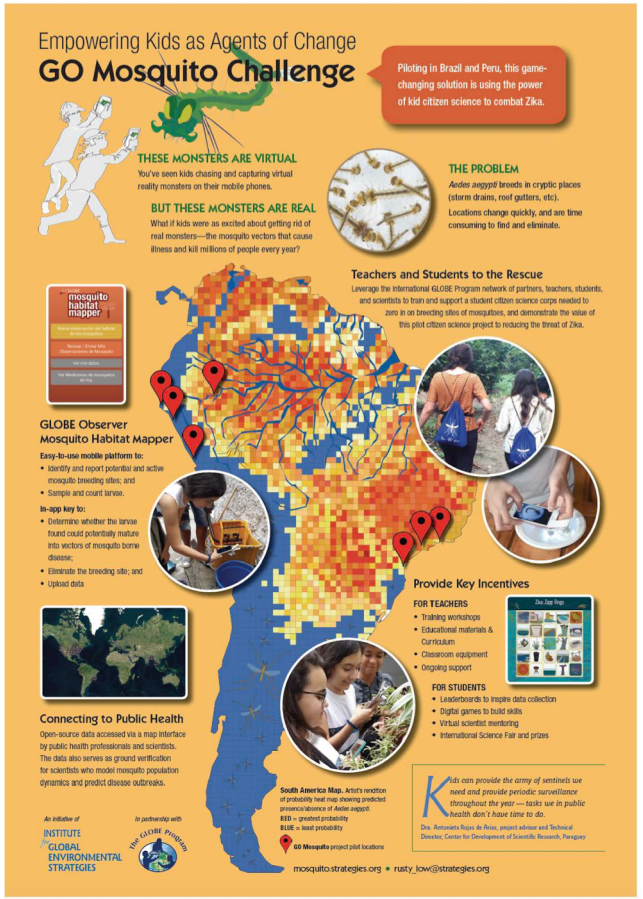
Water Source (1/2)	Water Source (2/2)	Larva Full Body (1/3)	Larva Full Body (2/3)	Larva Full Body (3/3)
				

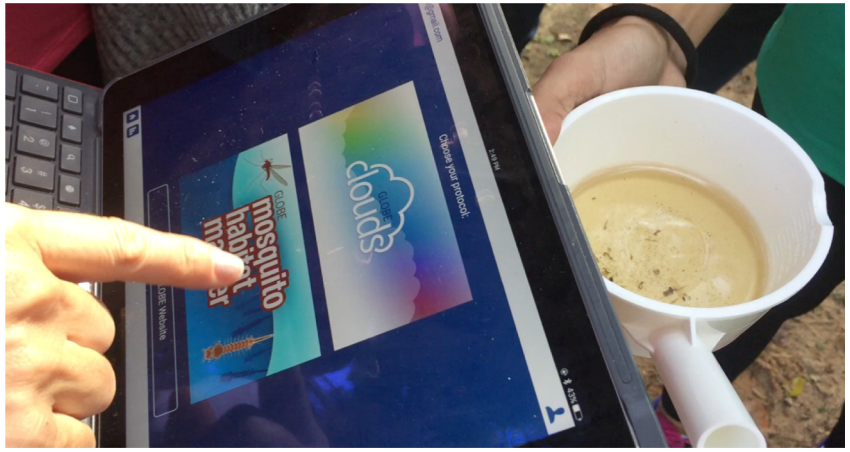
Mark All as Approved

Submit Approvals

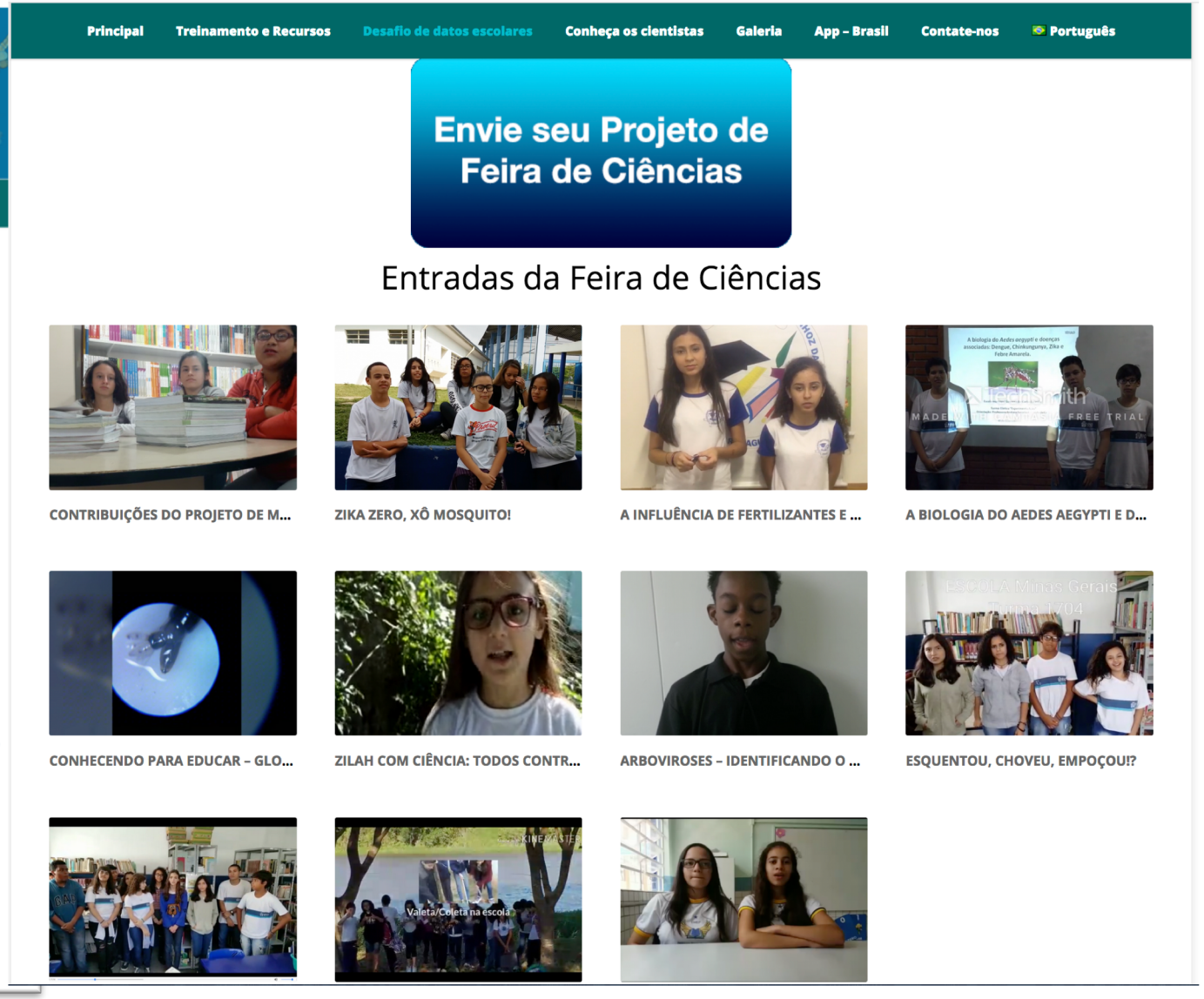
The Mosquito Challenge Community Campaign

COMBATING ZIKA AND FUTURE THREATS
A GRAND CHALLENGE FOR DEVELOPMENT

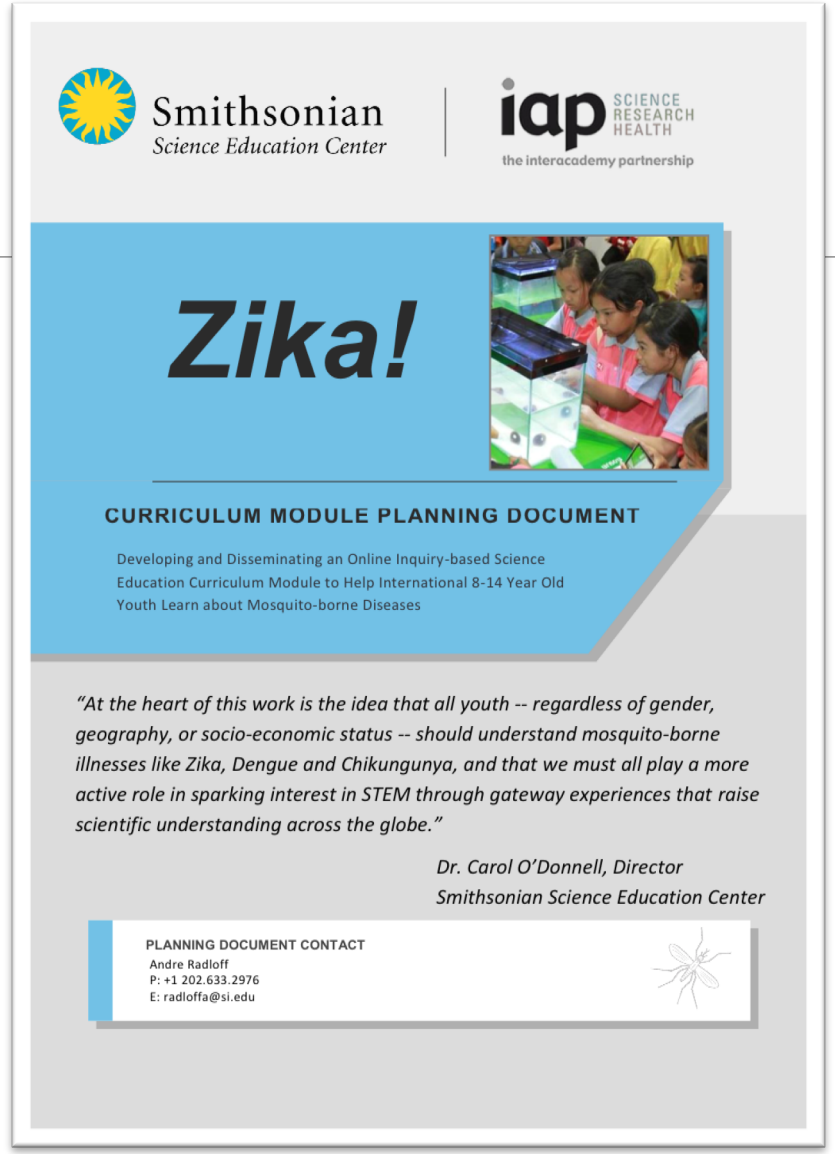


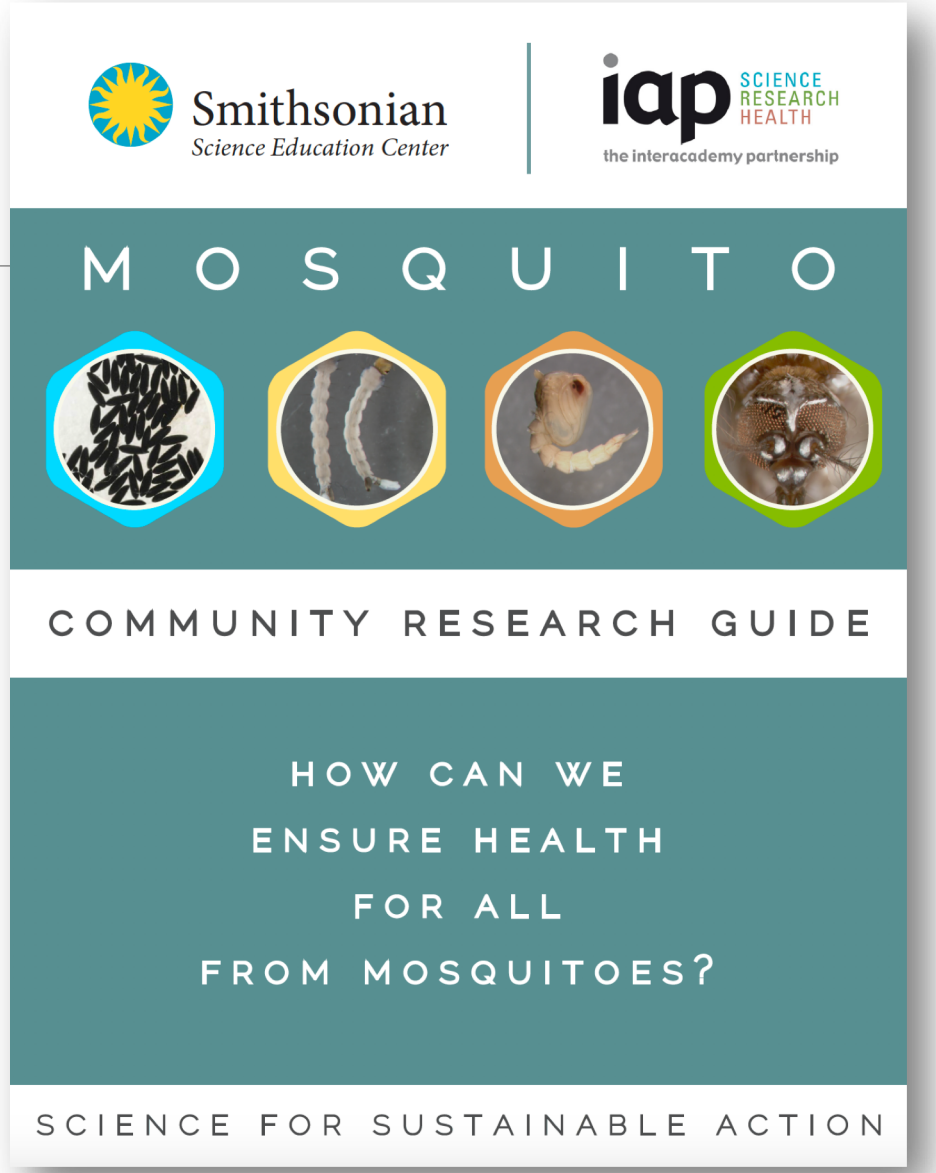


Motivations and rewards



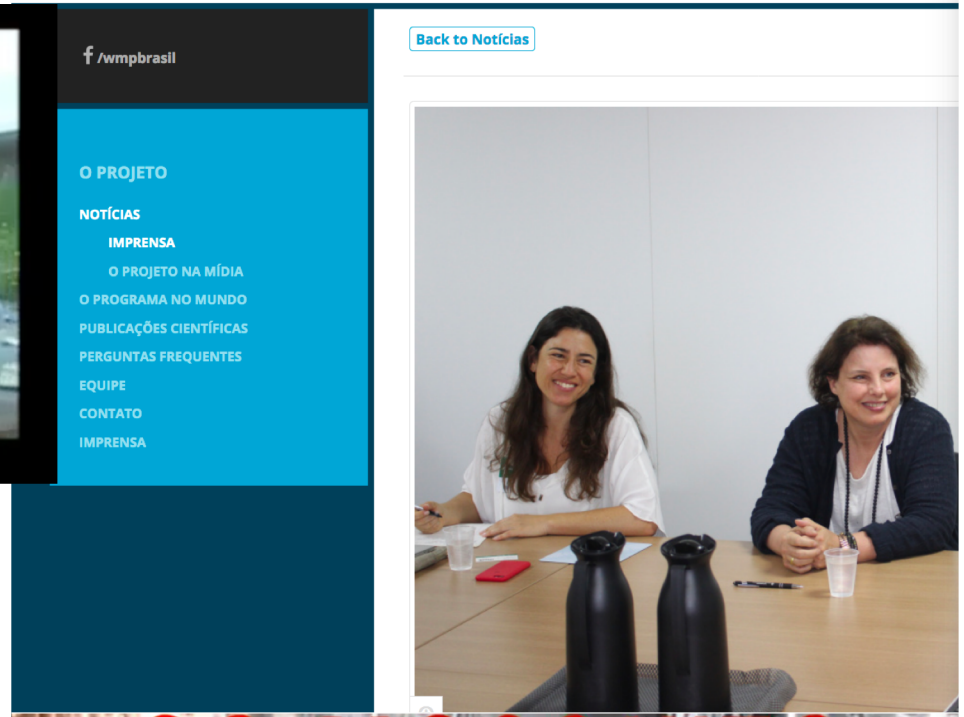
Will people Participate?





Public interest and excitement

World Mosquito Program



Designing a citizen science project

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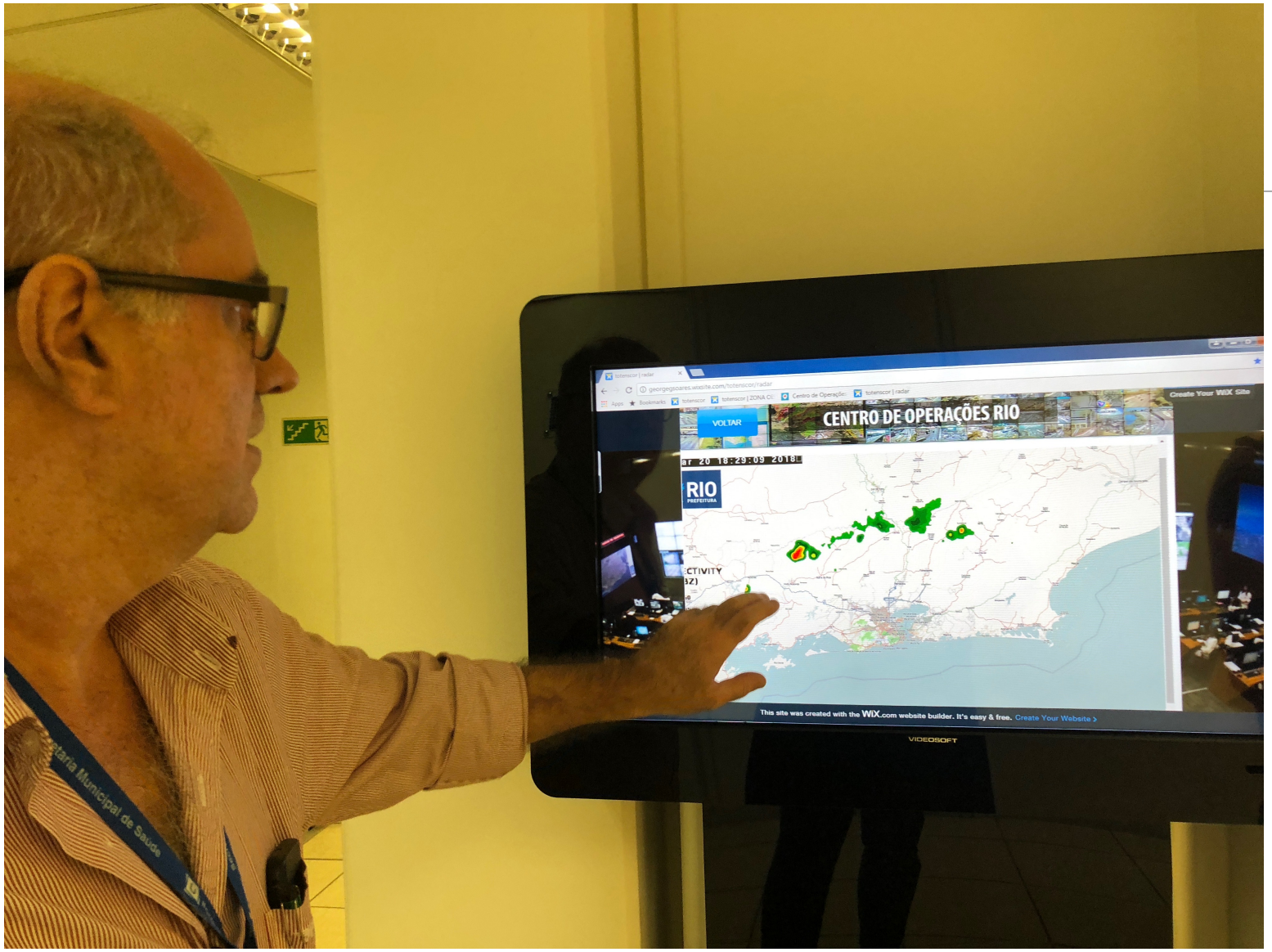
https://www.citizenscience.gov/toolkit/



Data Partners

- **FIOCRUZ, Rio de Janeiro**
- **Ministries of Health, Brazil and Peru**
- **Ministry of the Environment, Peru**
- **CARE**
- **WCS: Citizen Science of the Amazon**
- **Pan American Health Organization**
- **World Mosquito Project**

NASA DEVELOP: Taking a Bite Out of Mosquito-borne Illness

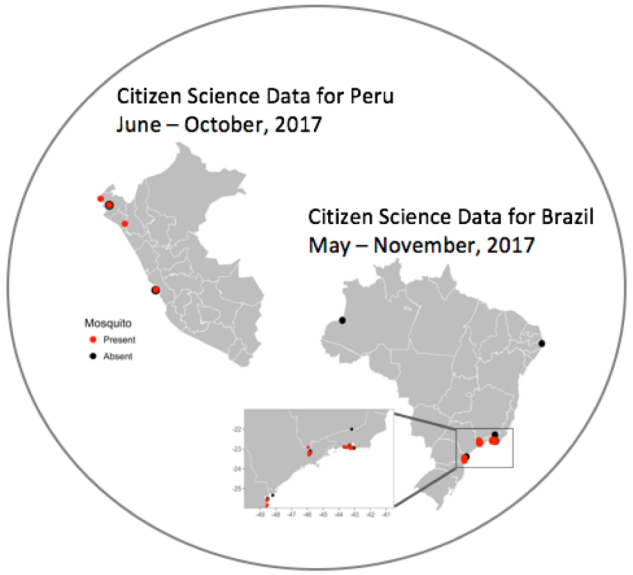
The Wilson Center, partnered with NASA Earth Science Education Consortium (NESEC) and members of the Global Mosquito Alert Consortium to propose and support the DEVELOP project, *Taking a Bite Out of Mosquito-borne Illness: Mapping and Monitoring Vector-borne Diseases in Western Europe*. This research is one of the first projects that attempts to describe mosquito risk using both remotely sensed environmental data from satellites in conjunction with citizen science observations. The project also serves as an early exploration of the value of citizen science data collected by the GLOBE **Observer** Mosquito Habitat Mapper when analyzed in conjunction with satellite data. The Fall 2017 project results were presented at a Nov. 8 hand off meeting that was webcast, and participants included scientists and citizen science programs from US, Germany, and Netherlands.

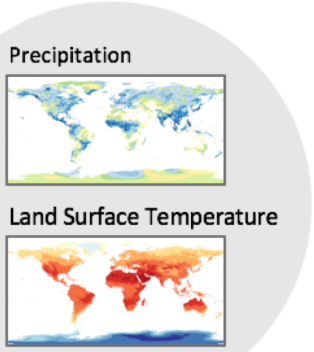
For more information: https://www.wilsoncenter.org/event/global-mosquito-alert-nasa-develop-project-partners-handoff

Photos to right DEVELOP team presentation, Wilson Center, DC.

11/16/17

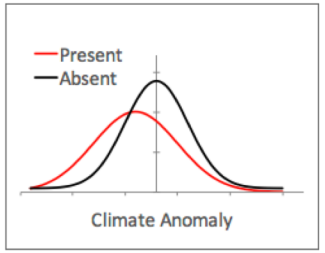
Data Analysis Model

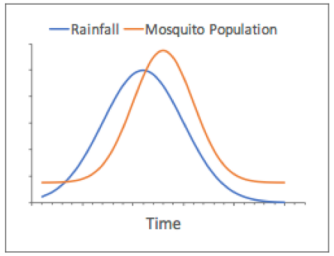




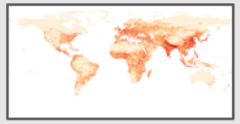
Assess climatic condition in areas with mosquito presence and/or absence

- Identify differences in climate conditions between mosquito presence/absence
- Identify climate conditions suitable for increase mosquito population
- Identify any lag relationships





Validate projected vector-borne disease risk map



Overlay with population to infer the relationship with population density

Compare mosquito population distribution with historical disease outbreak data

Results will be used in refining disease risk map models

UN environment

EUROPEAN CITIZEN SCIENCE ASSOCIATION

Woodrow Wilson International Center for Scholars

PRESS RELEASE

Pioneering UN Backed, Citizen Led Alliance against Mosquito Borne Diseases Joins Global Fight to Save 2.7 Million Lives Every Year

Initiative Empowers National Networks, Stakeholders and Governments to Generate and Access Real-time Data and Tools through UN Electronic Platform 'Environment Live"

Geneva, 8 May, 2017 – A new alliance of citizen-science organizations and UN Environment will be launched, Monday, in an effort to escalate the global fight against mosquito-borne diseases, responsible for killing close to 2.7 million people annually, mostly in Africa and Latin America. Overall mosquito borne cases are estimated at 500 million every year.

The new initiative, launched under the name '***Global Mosquito Alert***', brings together thousands of scientists and volunteers from around the world to track and control mosquito borne viruses, including Zia, yellow fever, chikungunya, dengue, malaria and the West Nile virus. It is the first global platform dedicated to citizen science techniques to tackle the monitoring of mosquito populations.

Usefulness of Data: public health, modelers, municipalities

- Global health security
- Increased surveillance
- Local empowerment of communities
- Take action reducing vector-borne disease

Acknowledgements

Mosquito Habitat Mapper Team
Russanne Low, IGES
Holli Riebeek Kohl, GSFC
Kristen Weaver, GSFC
Dorian Janney, GSFC
Theresa Schwerin, IGES
David Overoye, SSAI
Rebecca Boger, Brooklyn College
Pablo Munoz, INTEL

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Dr. Nadia Sacenco, Deputy Coordinator
Dr. Aline Venoso, AEB, Brasilia
Prof. Ines Mauad, Rio de Janeiro
Prof. Renee Codsi, Salvador

Project Leads- GLOBE Peru
Jose Martin Cardinas Silva, Country Coordinator
Marissa Valdez, Peace Corps

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Dr. Radina Soebiyanto, GSFC
Dr. Sara Paul, UC Denver

GLOBE Observer Citizen Scientists & GLOBE Program Participants

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