Possible Science Fair Investigations Utilizing Mission Mosquito Campaign Resources

For some of us, active mosquito season will not occur until later in our school year. Many teachers and students are interested in developing science fair projects for the IVSS and other opportunities, and are wondering how they might use the GLOBE Mission Mosquito Campaign resources and community to assist them with this goal.

We have a few ideas that you might consider as you and your students think about the potential of creating an investigation that focuses on the world's most dangerous animal- the mosquito! Not only will your students learn about these insects and why they are considered to be so dangerous, but they will also discover how NASA Earth observations are being used to help predict, monitor, and respond to mosquito-related disease threats around the world.

Using the GLOBE Observer "Mosquito Habitat Mapper" tool along with a few GLOBE protocols which they select, they can begin to document the potential mosquito breeding habitats around their school environment. By doing a weekly walk around their school environment using the "Mosquito Habitat Mapper" tool, they will become adept at recognizing potential mosquito habitats and will have documented where they have found these before mosquitoes begin to lay their eggs. They can monitor the air temperature and precipitation data using GLOBE atmosphere protocols to predict when active mosquito season will occur in their location. They can also access NASA EOS data for their school location in past years to see if the key parameters which are used to predict active mosquito season; namely air temperature, precipitation, soil moisture, humidity, land cover and vegetation; appear to be impacted by climate change. It also would be interesting for them to use the GLOBE Observer Land Cover tool once a month to assist them in identifying variables that might increase or decrease the number of active mosquitoes.

In addition to learning about mosquitoes and the diseases they might transmit to humans, students can assist their school community in preparing for the next active mosquito season by creating posters, videos, and other means of communicating their findings to others. We will cover what some of these preventative measures might entail in our webinars this spring. Getting students involved in meaningful prevention campaigns for the school community would greatly enhance their sense of being stakeholders in this campaign.

As we begin to enter active mosquito season in the northern hemisphere, we will also spend time helping our community to learn how to use microscopes or the very inexpensive cell phone magnifiers to identify the species of the mosquito larvae they find. Many students may decide to begin to collect data on the number and types of larvae they find and use this data as a part of their science fair project for the next school year! They might supplement this data with their predictions for active mosquito season for the 2018-2019 school year, trying out different types of water quality in their larval traps, as well as investigating aquatic mosquito ecology. For that purpose, all of the Hydrosphere protocols can

be employed. Studies of water pH, water temperature, salinity, nitrates (nutrients), dissolved oxygen, water transparency, and water temperature can provide information about the optimal conditions which determine how fast an immature mosquito matures.

There are so many ways for students to use several different GLOBE protocols to better understand this extremely important global health topic. From the GLOBE protocol for Atmosphere, air temperature, precipitation, and relative humidity would be contributors in breeding season as would the GLOBE protocol in Pedosphere, soil moisture and soil temperature. Biosphere, land cover classification and green up and green down. The links below will take you to the e-Training modules. The topics in parenthesis will enhance your understanding of the environmental factors affecting mosquito breeding habitats.

- Atmosphere (Air Temperature, Precipitation, Relative Humidity)
- Hydrosphere (all protocols)
- Pedosphere (Soil Moisture, Soil Temperature)
- Biosphere (Landcover and Green Up-Green Down)

We hope you will consider getting your students involved in this extremely meaningful campaign, and will complete this form to keep informed about our events and other news. Please go here and click on "*Join Community*" so we also know that you are a part of our GLOBE Mission Mosquito family.

Let us know if there are any resources or other ways in which we can assist you in being a part of this community. Feel free to share this information with anyone you think might like to be involved. We do plan to include informal education groups such as scouts and afterschool clubs, as well as citizen scientists around the world.