Team Members: Emma Fisk, Maksym Gerashchenko, Autumn Hawkins
Team Number: 33
School Name: Los Alamos Middle School
Area of Science: Life Science
Project Title: The Spread of the Zika Virus

Project Definition:

        The Zika virus is a very large problem in many places all around the world. It is causing a birth defect in infants called microcaphaly. This causes the head of a child that was infected during pregnancy to be smaller than other kids' heads due to not fully developing during the pregnancy or the head stopping growing after birth.

Project Solution:

        Our team is going to create a visual model of where the Zika virus is or could be spreading to.To do this, we are starting by making a code using machine learning. Machine learning is a type of artificial intelligence that gives computers the ability to learn without being explicitly programmed to do so and focuses on computers being able to change and grow when exposed to new data.We will put in data sets of the climates of where there is Zika and where there is not Zika. Then, when you put in a place and it's climate, the program will put the place under one of the categories, therefor telling you whether that place does or does not have Zika.To model where it can spread to, we will use data sets about the mosquitoes that can carry Zika and the climates they live in. We plan to only model the spread of Zika that happens through mosquitoes. By the end of the year, we hope to have a visual model showing where the Zika virus currently is and where the mosquitoes that could carry the virus are. This would show where the virus could possibly spread to.

Progress to Date:

        While we have not finished a first draft of our code, we are planing to do so by the end of the month. However, we have conducted a lot research. We are mostly using data sets, due to the fact that our project is using machine learning.We have researched about the spread of Zika. We have also conducted research about the mosquitoes that can potentially carry the virus. We have found many good resources to help us in this project.

Expected Results:

        Using the models we plan on making, we expect to have an easy to read model showing where there are current reports of the Zika Virus are and where it could possibly spread to. This could help people know whether or not to travel or move to a certain area while pregnant, decreasing the risk for anyone to be exposed to the virus.

Resources:

- http://eospso.nasa.gov/sites/default/files/publications/2009_Encephalitis_508.pdf
- http://www.cdc.gov/zika/vector/range.html

- http://www.cdc.gov/chikungunya/pdfs/surveillance-and-control-of-aedes-aegypti-and-aedes-albopictus-us.pdf
-
- http://www.businessinsider.com/how-far-will-zika-spread-in-america-2016-8/#another-group-of-researchers-modeled-zikas-predicted-spread-again-based-on-environmental-factors-but-focused-on-international-travel-from-infected-areas-they-predict-the-virus-could-circulate-year-round-in-florida-and-parts-of-texas-and-has-the-potential-to-pop-up-seasonally-across-a-larger-chunk-of-the-us-4

- https://knoema.com/

Sponsoring Teacher: Ellie Simmons