Amazon Deforestation

New Mexico Supercomputer Challenge
Final Report
April 6, 2022

Truman Middle School
Team 29
Briana Anaya
Sade Garcia
Yaritzel Castro

Teacher
Natali Barreto Baca

Project Mentor
Edington Creighton

The Amazon Rainforest has long been a target of modern-day development. The canopy is ripped apart for timber, the earth scoured for minerals, and the land scorched to make way for ranching. Over the last decade, protections were put into place which curbed the rate of deforestation in the Amazon. However, things changed in 2018, following the election of Brazil's president Jair Bolsonaro. The Bolsonaro administration scrambled to loosen environmental protections, empowering ranchers and loggers to increase the pace of development in the forest, bringing them into direct conflict with indigenous people who live in and around the forest and depend upon it for survival.

The impacts of deforestation in the Amazon basin carry many serious implications, many of which are already being felt. We will code models to analyze all the concerns for the Amazon deforestation that are raising grave concerns such as impacts on indigenous communities, animals, plants, ecosystems, water supply for South American cities, and local climatic changes.

We started our coding journey the first week of January. Our project begins with us learning about deforestation and how it affects the planet Earth. We learned how to make a graph about deforestation and the problems that it causes to human life. The coding graph shows animals, plants, and humans. The animals that it shows are harpy eagles, spidermonkey, the plants that we use are mangrove trees and humans. We have four columns with four different codes for each species that are in the code. On the side, we have a graph that shows the population either decreasing or increasing, how not just animals but plants go down. One because the monkeys live off the trees, the harpy eagles eat them and cause the population of the harpy eagles to increase. While we were learning to code and learn about deforestation we also had a mentor to show us what we could do better for our project. His name is Mr.Creighton, we meet with him every Monday at 6:00 pm. He shows us what we can be better in but not just show us what we are struggling in but also what we did that was professional for our age. We got all this information from the NASA data we do in Mrs. Barreto's class.

We are going to try and make the trees die and regrow, with this we also got some more suggestions on what to add to our code. Such as making the harpy eagles and the spider monkeys population decrease and increase. In the code with some of the population, the spider monkeys die first or the other way around where the harpy eagles die first. One suggestion that was helpful from Mr.Creighton was that we should make the humans start to rapidly decrease in

the code. At first we thought that this idea would be completely impossible but with some time we slowly figured out how to do more strategic things to the code.

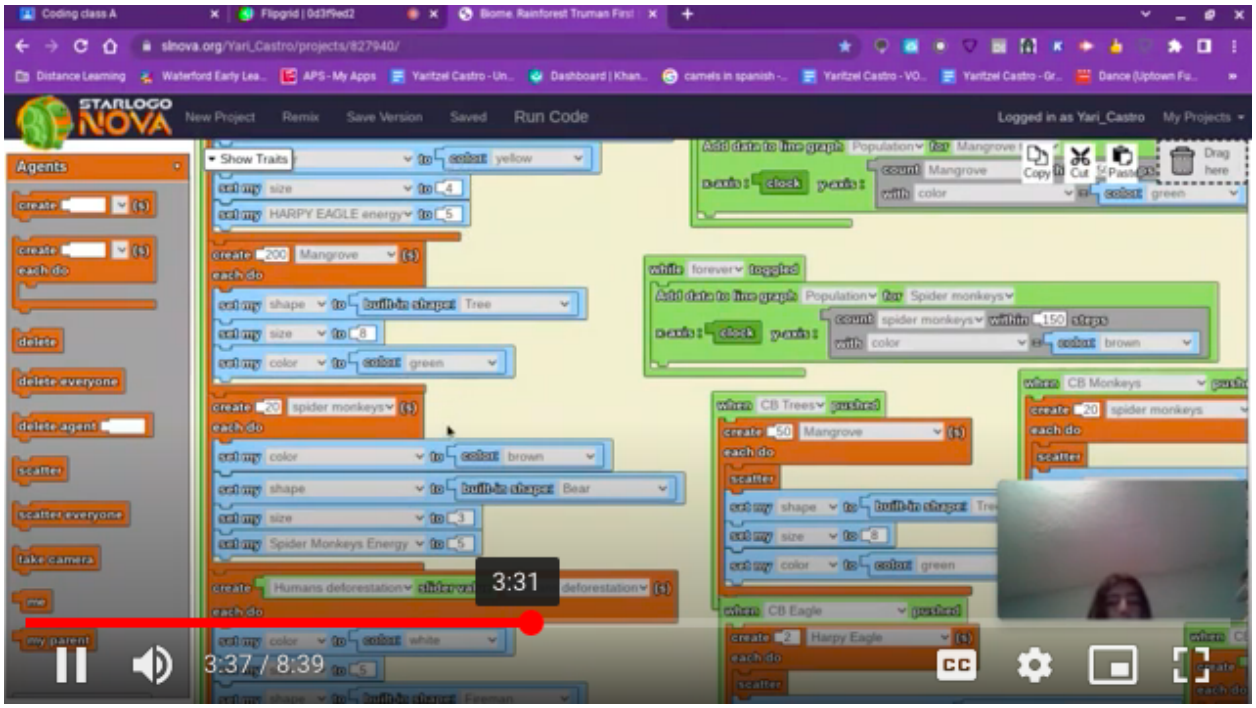
The progress we have made so far we started with little turtles making flowers, the code was simple. For us at first, it looked difficult but as we got to do more code the code became simple we understood it clearly. After that, the frog with flowers we went onto the frog one with was in a way a practice to what more people ahead of us were doing. The code was somewhat difficult because we had to learn a lot more than what we had anticipated. As there was the code normally we also added our own things, we figured out the frog how to make them disappear and how to make the files bigger and smaller. We also connected one with another

When we first started this project we weren't expecting too much from it because we weren't sure that we would be able to do it. Now that we have gotten a lot of progress we have bigger expectations. We succeeded a lot more than we thought we were super happy with the results as we thought when we first started coding we thought it would be too hard or not enough, it was a very good experience that we learned.

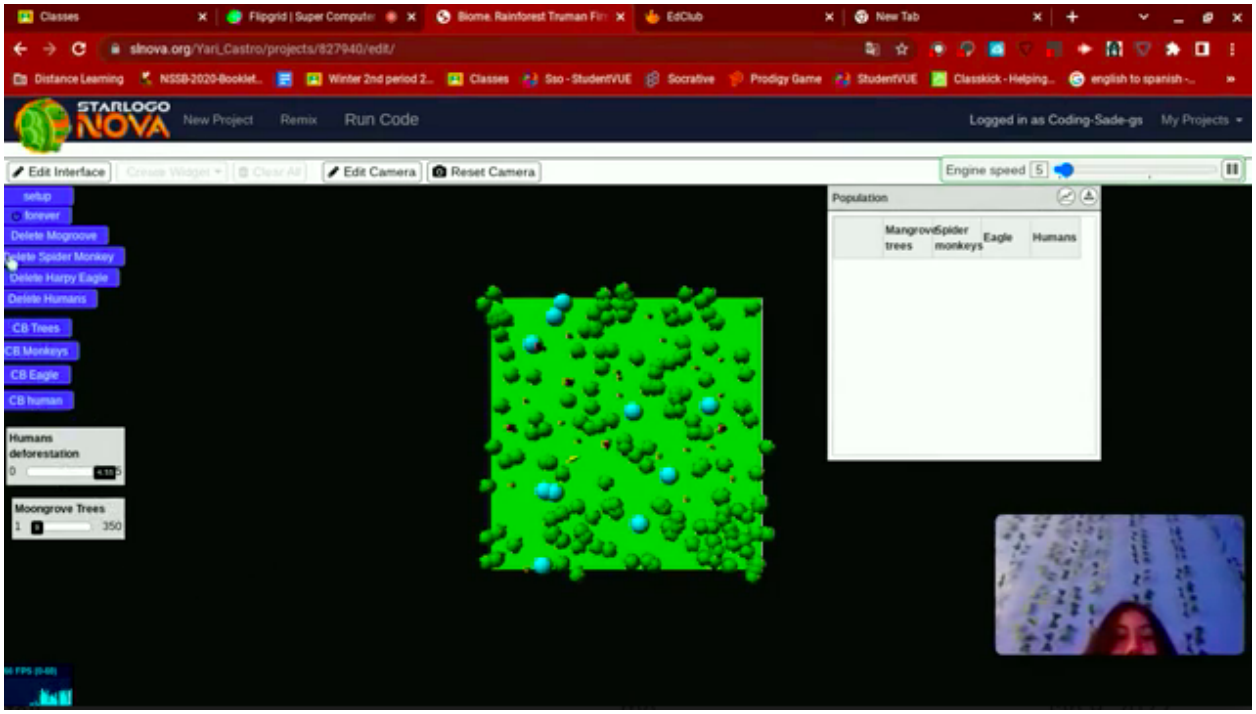
In conclusion with simulation we added more to our simulation and took away unnecessary things that we didn't need.When we get to our code you can see when you press üsetup¨ then ¨forever¨. We can now see that we start of with harpy eagles which in our code we put then yellow, next we have the humans which in our code we put then as fireman, the spider monkeys are just put as normal monkeys on the code, the mangrove trees are just normal trees in the code, for last the CO2 are blue squares. The simulation in our code is a mix of a cycle of life with a food chain. The food chain has decomposers,composers,and producers. We have one or two of each.

In our simulation we can see that after a while of running it the trees overlap each other. There are no harpy eagles,spider monkeys or that many humans left. The only thing that is really left is the CO2 which is the most powerful adjective in this code that we have made. When we run the code we can see that after a while there are little to no more trees which causes the spider monkeys to lose their habitat and hide from the harpy eagles. After they eat all the spider monkeys the harpy eagles have almost nothing to eat.Therefore the humans also lack food and water, and clean oxygen to breath. The CO2 that's in the code is what's helpful and is what everyone needs.

Deforestation in the Amazon



[Yaritzel's presentation link]



[Sade's presentation link]

Bibliography

[Precipitation Education by NASA]

[Earth System Data Explorer by My NASA data]

[Mission: Biomes - NASA Earth Observatory by NASA]