High Waters for Low Riders:
Agent Modeling of Flooding in Espanola, New Mexico

Espanola Valley High School: Team 1

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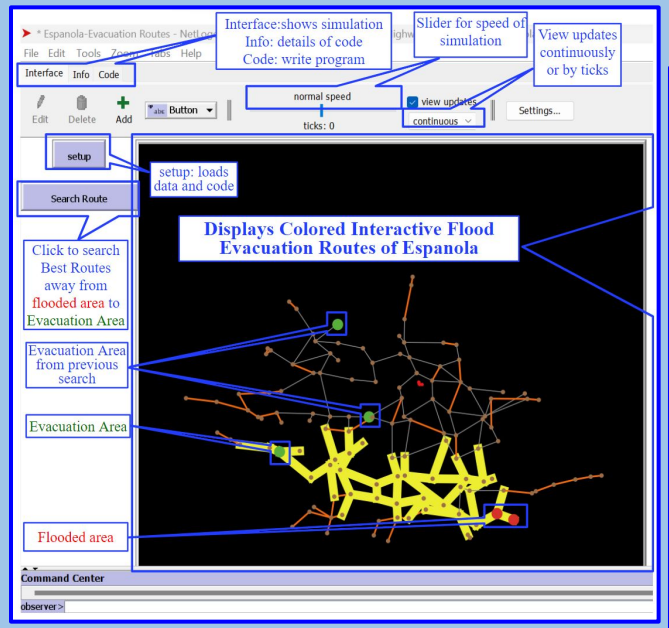
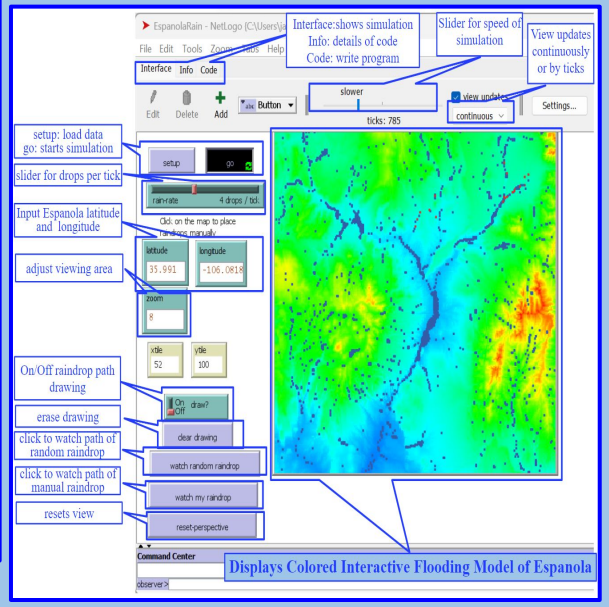
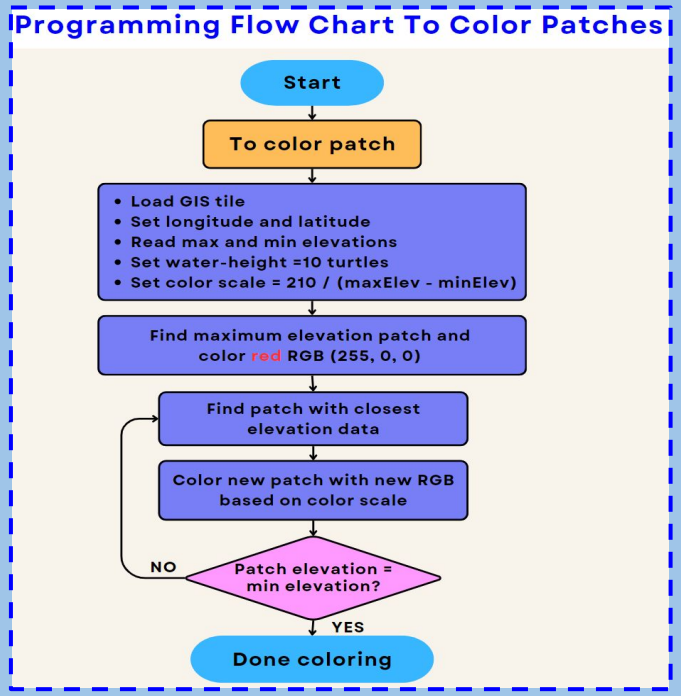


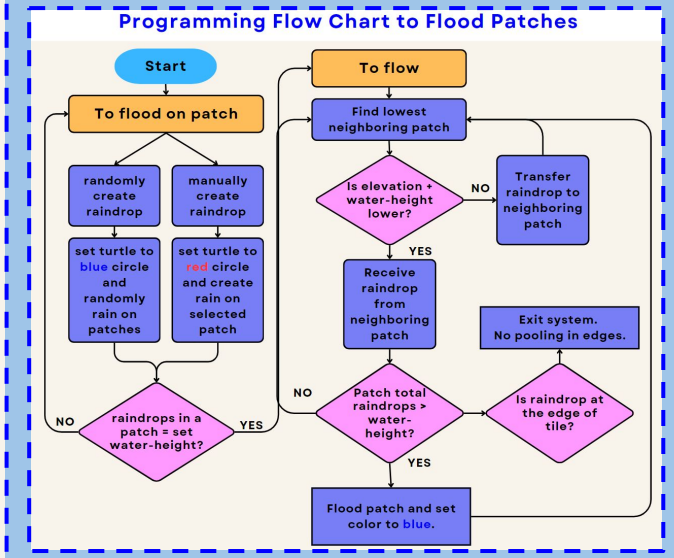


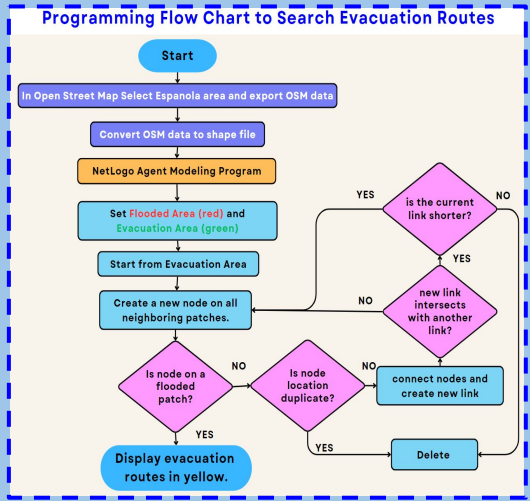
- This prototype demonstrates safe evacuation routes the citizens can take when flooding occurs using NetLogo and to the right is a landscape of espanola where flooding is more susceptible.

- The users of of our project are the citizens of Espanola.
- This allows citizens to stay safe and be aware of flooding and shows how climate is affecting our community (U.N. Goals 11 and 13).
- Using this information, our community to come together and think of more ways to improve our environment as well (U.N. Goal 15).

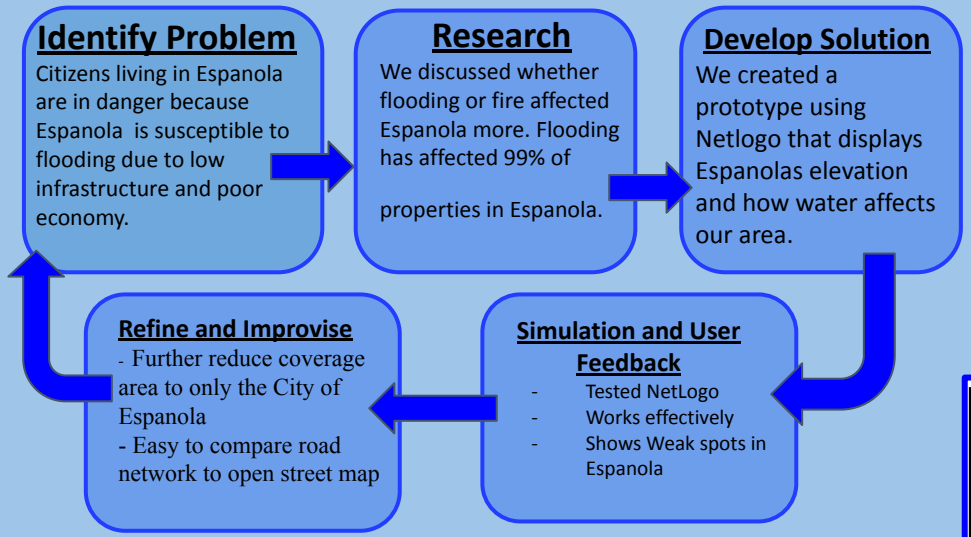
Demonstrations of how NetLogo's coding works.







Design Process



Design Iterations

Initial Design	Iteration 1	Iteration 2
- Used ESRI ArcGIS as an agent-based modeling program. - Coverage area is Rio Arriba County. - Got elevation data of Rio Arriba from QGIS.	- Changed agent-based simulation modeling program to NetLogo. - Reduced area to City of Espanola, Hernandez and Okay Owingeh Pueblo - Used Open Street Map as source of elevation data.	- Created 2 separate simulation models for flooding and evacuation route search. - Further reduce coverage area to only the City of Espanola - Easy to compare road network to open street map

User Feedback Agent-based Flood Modeling and Evacuation Route Searcher	
Strengths	**Weaknesses**
• Interactive • Colorful • Customizable • Can manipulate some variables • Accessible • Digital • Maps Flood Hazard Risk • Ability to monitor flow of water • Ability to creat rain at desired location • Efficiently search and displays evacuation route	• Elevation Map lacks street names • Cannot immediately identify location

Future Plans:

- In the Evacuation Route Search Model add:
  a. manual selection of evacuation area
  b. street name layer
  c. on-foot evacuation routes
- In the Flood Model add more layer and label of map
- Create 3D Simulation
- Create simulation for other hazards
- Present to the City Government of Espanola

Conclusions:

The interactive agent-based models of Espanola Flooding and Evacuation Route Searcher are cutting edge technology tools that is free for both the local government and members of the community so everyone is informed and hopefully everybody will work collaboratively take action and work collaboratively so our city will be more resilient against any any water-related disasters.