Water-Phosphorus Animation

Members: Spencer Gordon

Project: Interactive Animations for the University of South Florida's Geology Department

Date: June 2020 through September 2020

Person of Contact: Mark Rains

Resources: Unity, AStar Pathfinding

Purpose: Create an interactive animation as a teaching aid to demonstrate a chemical reaction that occurs when mixing freshwater with seawater at the molecular level.

Process: The project is a constantly running animation made in Unity that speeds up or slows down depending on the seawater concentration the user sets. This shared a lot of similarities with the last project I worked on, the Alaska Groundwater animations, so I continued the same design philosophy, just in another direction. This time, small Carbonate and Magnesium particles enter the freshwater from the saltwater, replacing/knocking off Phosphorus particles that are on a larger Calcite molecule, creating Calcium-Carbonate. In order to represent each molecule, I used small colored circles, each with enough room to have the chemical formula on each one. They are color coded, so they are easy to identify from a distance. After all of the Phosphorus is replaced, the Calcium-Carbonate floats away, so that another one can take its place, and the animation can continue on.

Major Design Decisions

Visuals: I chose a very simplistic background and visuals deliberately, so that the chemical reaction being communicated stands in contrast. Everything is said through the movement of the particles.

Seawater Concentration: The decision to speed up/slow down the reaction was made to simulate how the reaction works in reality. In this case, the professors wanted an animation that would change based off of the different levels of water, explaining how much Calcium-Carbonate is in different types of brackish water.