Scientific Visualization Project Update

Visualizing Natural Disasters

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Project Goals

The main objective of this project is to create visually appealing and informative visualizations of the datasets we have chosen. Another objective is to become comfortable and confident in the tools/applications we are choosing to create the visualizations with. We want to show what a tornado looks like by showing wind speeds at different points, wind direction, etc. With the volcano dataset we want to show what effects a volcanic eruption has on the atmosphere, and whether those effects are short term or long term. We also want to make some interactive visualizations using VTK, so the user is free to explore the visualization.

Percentage Complete

We estimate that we are 40% complete with this project.

Completed so far

So far we have loaded our datasets into ParaView and explored the two different datasets. We have mainly worked on the tornado dataset. We have created a vector in paraview using the calculator filter so that we can view streamlines for the tornado. We have 3 save states of the tornado showing angular velocity, rotation, and vorticity to illustrate the windflow. We also have a python script setup using VTK, that allows the user to move the seed points of streamlines around and increase and decrease the streamline resolution. We have loaded the volcano dataset into ParaView and begun to explore it.

What still needs to be done and Timeline

For the tornado dataset, we need to complete our visualization in ParaView. We need to adjust the parameters and settings on our streamlines to make sure the visualization is

not cluttered, yet compelling. Right now we are in an exploratory state to see what visualizations look good in ParaView and what meaningful information we can show using them. We hope to have this task completed by April 9.

Additionally, for the tornado dataset we need to have an interactive component in VTK. Right now we have the data loaded into VTK and showing up correctly, but we hope to have a visualization where the user can change other settings to make it more interactive. We will finish this visualization by April 16.

Lastly, we need to load the volcano dataset into ParaView. The Volcano dataset is much larger than the tornado dataset and is a time series. We are still exploring this dataset to understand all the possible things we can do. Our goal is to show the effects of a volcano on the atmosphere. We also plan on using VTK to observe and make the visualization interactive as well. We will finish this visualization by April 23.

We will spend the last week preparing our presentation and fixing any issues we see in the visualizations. We will also make updates and iron out any bugs we can find.

Changes to project description

So far we are right on par with what we described in the proposal. There are still potential things that will need to change if we run into any issues along the way.