# Team 10 Artesia High Emergency Egress

# Interim:

## **Problem Definition**

In an environment that is run by an uncontrollable nature, one cannot change the outcome of an unexpected shift. Human beings cannot control the outcome, however it is possible to try and study the patterns of such natural occurrences, and that is exactly what is being planned. The avalanche works with all of the factors surrounding the area. Simple vibrations in the ground or a movement of objects cause the avalanche to erupt.

#### Solution

Figuring out the many factors that contribute to the formation of an avalanche will aid in the ways to better understand such occurrences and possibly determine the projected outcome before such an event actually happens. Researching such an event will aid in the actual discovery and help of lost wanderers, trapped by rogue avalanches. Time is everything, and this research would definitely cut that limit. In such a case, a method to distinguish between safe and hazardous buildings is sorely in need. With this in mind, Team 10, of Artesia High School, has developed a simulation to test the pattern of avalanches in the event of a crisis.

## Progress as of now

We have a model that provides an accurate representation of avalanche behavior and how it is affected. The current coding that has been completed still does not reflect the whole project and model. However work is still being done extensively and the needed code shall be completed in time. We have the basic outline of everything that is needed but do not have it all generated on the computer.

#### **Expected Results**

Our focus for this year will be on the behavior of avalanches and its interactions with its environment. Due to recent events, such as half of our team quitting, we turn to a simpler model to use. We are excited about the project as well as getting our thoughts in the codes. We strive to conclude the year with positive results of our work. We will intemperate and reconstruct incidences which have tripped and caused these natural occurrences to take action.

Import all libraries necessary for calculation in the program.

Define the Magnitude of particle vectors.

Define the Particles' properties for SPH functions.

Create array and tilt for particles to interact with.

Define Functions for interactions between Particles.

Define Conditions for Avalanche trigger.

Define time step.

Run Program.

After program runs, change tilt, and change properties of area (Heat, Wind, Obstacles, Frictioncoefficients.)

Rerun the Program.

Repeat until the properties do not meet the conditions necessary for and avalanche to occur.

Display final case in which an avalanche occurred.

End and show results on graphs. (density, heat, friction, wind, slope, accel., momentum, time.).