

The Eruption of Mt. St. Helens

Background Information:

Mount St. Helens began to show the first signs of volcanic unrest in March of 1980. Earthquakes, ground deformation, and steam explosions would continue for nearly two months before culminating in a major eruption on May 18, 1980. Ash from the May 18th eruption of Mt. St. Helens traveled around the world. People in the Eastern United States noticed highly colored sunsets soon after the eruption. The color was caused by the refraction of the sun's rays from the fine particles of dust left in the atmosphere with the passing of the dust cloud.

Figure 1 entitled, "Time of First Ash Fall," shows the movement of ash across the state of Washington. Each time-line connects the places where the ash first fell on the ground at the time indicated. In this activity this is called the Ash-Fall Front.

Pre-Lab Questions:

1. What three pieces of evidence shown by the Mt. St. Helens volcano did scientists see as evidence for an impending eruption?
2. How far did the ash from this volcanic eruption travel?
3. What is the name given to the areas where the ash fell on the ground?



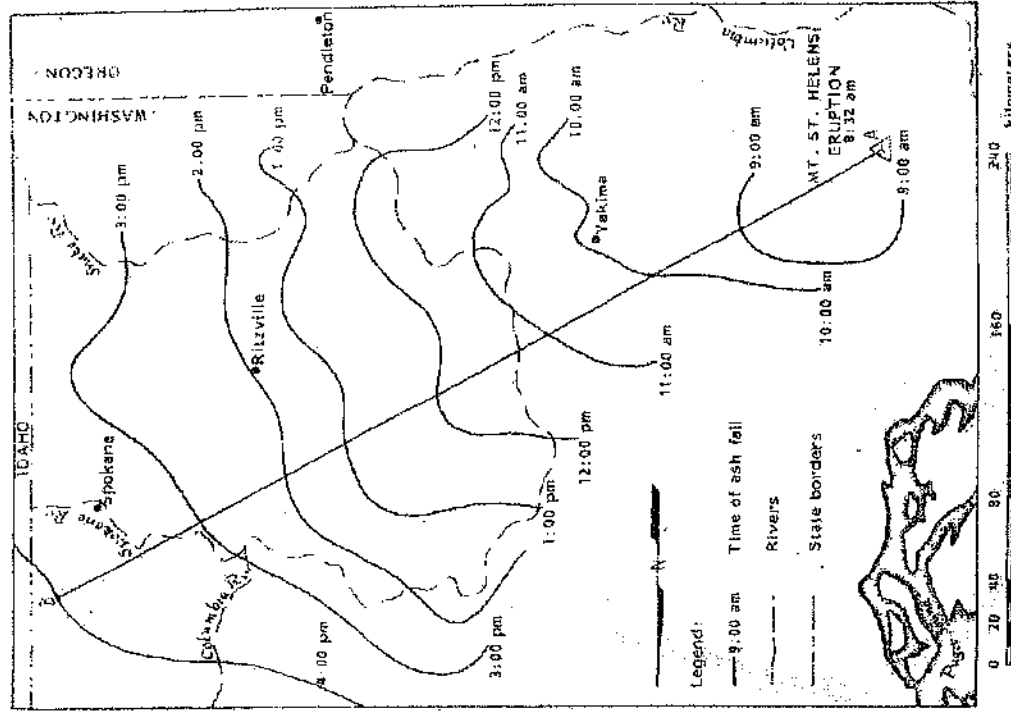
Procedure:

1. Recreate (Draw) the scale shown at the bottom of figure #1 onto a straight edge piece of scrap paper. You will be using this scale to measure throughout this activity.
2. Take all of your measurements along the straight line coming out of Mt. St. Helens.
3. Measure the distance (along the straight line in the diagram) from 10:00 ~ 11:00am using your replicated scale. Record this number in column B.
4. Measure the distance (along the straight line in the diagram) from Mt. St. Helens to the 11:00am line. Record this number in column C.
5. Divide your answer from column B by 1 hour. Record this number in Column E.
6. Repeat steps 5 ~ 7 for the remainder of the times given in the data table.
7. Then, make a Line Graph using the data gathered in Column C (x-axis) and Column E (Y-axis).

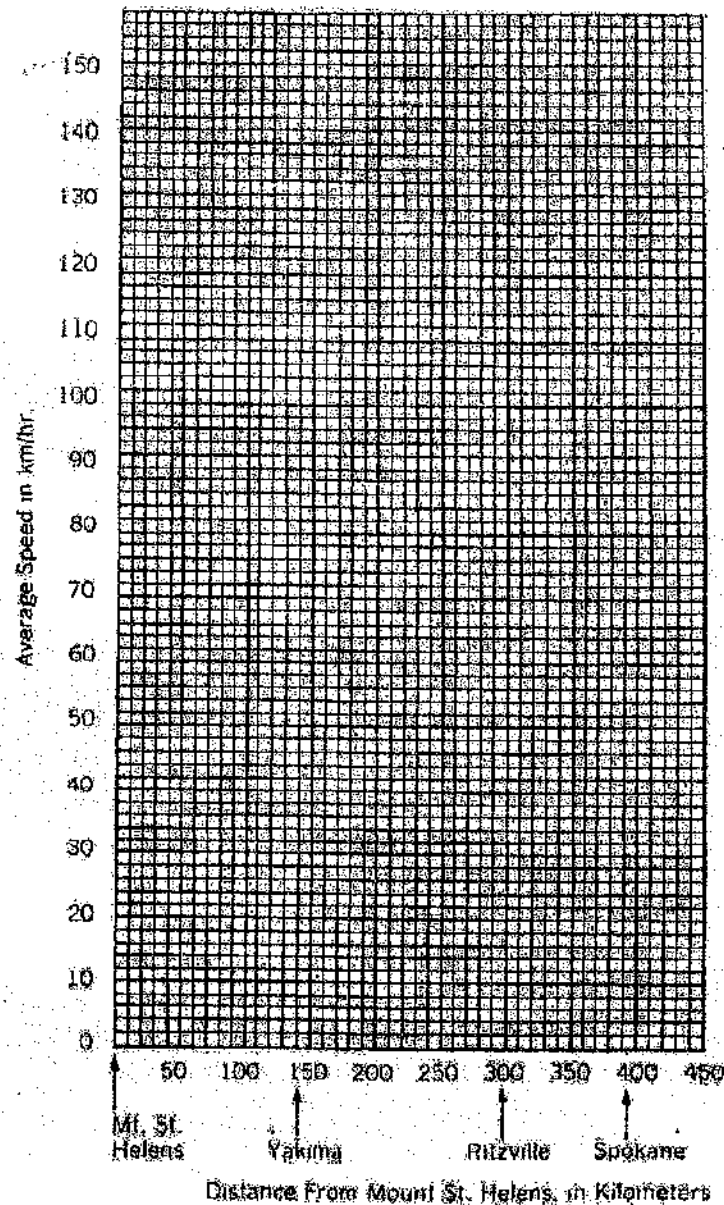
Data: Table #1 - Ash Movement Data

A	B	C	D	E
Time	Distance Between Time Lines	Distance From Mount St. Helens	Time Interval (hours)	Average Ash Speed for Each Time Interval (Km/Hr)
8:32 - 9:00am	78km	78km	**9.0 hr.	156 km/hr
9:00 - 10:00am	47km	125km	1hr	47 km/hr
10:00 - 11:00am			1hr	
11:00 - 12:00pm			1hr	
12:00 - 1:00pm			1hr	
1:00 - 2:00pm			1hr	
2:00 - 3:00pm			1hr	
3:00 - 4:00pm			1hr	

Figure 1: Time of first ash fall in the state of Washington



Graph: Average Speed of Ash Fall Compared to the Distance from Mount St. Helens



Analysis and Conclusion Questions:

1. Looking at Figure 1 entitled, "Time of First Ash Fall," in what direction did the ash fall?

Keep in mind that you are studying the fallout from the ash cloud, not the movement of the cloud itself. The particles of ash would slowly settle from the atmosphere as the cloud passed.

2. Study the graph you made. What does it show you about the speed of the ash soon after the eruption?
3. What do you think caused the speed of the ash at the volcano?
4. Why did the speed soon change?