



Volcano Fan Club Results continued...

Instructions:

1. Each group's predictions will vary, based on the fan speed assigned to them.
2. Students might predict correctly that the smaller and lighter materials travel farther and spread more broadly in area than larger, heavier materials. Some students might note correctly that the aerodynamics of some ingredients might influence results.

Graph Results:

Graph results should indicate greater transport distance and area covered by the finer-grained materials, such as cocoa and cornmeal.

Analyzing your results from the graphs:

1. Describe the relationship between tephra size and distance traveled. Explain these observations.

Graph results should indicate greater transport distance and area covered by the finer-grained materials, such as cocoa and cornmeal. This results from the greater capacity of rapidly moving air to transport particles before they settle, than slowly moving air.

Note: Remember to discuss the similarities and differences in each group's results.

2. Describe the relationship between tephra size and area covered. What factors influence this relationship?

Graph results should indicate greater area covered by fine-grained materials, caused by the easier transport of fine particles.

3. Write a conclusion and cite data as evidence.

Fine-grained material can remain airborne even after coarse material falls to the ground. The area covered and distance of travel depends in part upon wind speed. Wind direction determines the ash plume direction of travel. Cite evidence from students' graphs.





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4. Use your knowledge of tephra distribution to describe the atmospheric conditions that brought tephra from Mount St. Helens and Mount Mazama (Crater Lake, Oregon) to the slopes of Mount Rainier. Describe at least one likely characteristic of this tephra.

Winds blowing from southwest to northeast were of sufficient velocity to transport tephra to the slopes of Mount Rainier. The tephra found on the slopes of Mount Rainier is medium to fine-grained material.

Note: Encourage discussion about what additional atmospheric conditions (rain, jet stream, etc.) and eruption variables (amount of tephra erupted, height of the eruption cloud, etc.), might influence the path of an ash cloud.

5. Describe the energy transformations that occur when tephra erupts from a volcano, travels downwind, and falls to the ground.

Tephra ejected from the volcano rises due to thermal energy, and gains potential energy with altitude. Once thermal energy is expended, tephra particles begin to fall. Kinetic energy is expended as the tephra particles fall towards the ground.

