The Winds of Change
Teacher Version

Adapted from the Athena Mars Exploration Rovers web site at athena.cornell.edu/kids/home_07.html

Introduction & Purpose
The Martian surface frequently experiences high winds and massive dust storms that can envelop a large portion of the planet. This unique climate affects how human observers on Earth perceive the planet. This activity will show your students how wind can alter perceptions from a distance, and how wind forms a variety of surface features.

Objective
Students will demonstrate how the wind on Mars affects how the Martian surface appears from a distance.

Materials Needed
- Red, brown, or orange modeling clay
- A tray or cookie sheet
- Sugar
- Pen or pencil
- Idaho TECH Lab Notebook

Procedure
Complete directions for this activity are included in the Student Version.

1. Have the students make some predictions about what will happen when they blow across their landscape before they attempt the activity. Have them write their thoughts down in their Lab Notebook.
2. Have the students try a few different "types" of wind by altering the wind angle, wind speed, amount of time spent blowing, and the amount of sugar blown across the landscape.
3. Encourage the students to be creative and to have fun, *but be careful that they do **NOT** blow sugar in each other's faces*!

Debriefing
Once your students have spent ample time experimenting with blowing the sugar, lead them in a debriefing session.

- How does the force of wind create changes in the Martian surface and atmosphere?
- How has this impacted human perception of the Martian surface? (Lead them to the answer that sand in the atmosphere and/or moving sand on the surface can obscure or reveal geographical features on the planet)
- What do the patterns that are formed on the surface look like, once the sand has settled?
- How can wind affect the exploration of Mars? (Think about how large dust storms on Mars may affect landing site choices, mapping of the surface, navigating a rover on the surface, etc.)

Encourage the students to think about other activities they completed that involve how the topography of Mars is formed and altered (e.g., Crater Creation or Martianscape).

- How does the force of wind cause topographical features to be formed?
- How are these features similar to and different from impact craters and channels caused by water erosion?
- How are the creative forces (i.e., meteorites, moving water, and wind) similar and different?
- How can knowledge of these processes and their results help scientists understand more about Mars and its history?