

# Mars and New Mexico

Suggested Grade Level: 3–5

## Summary

Students will compare and contrast Mars and New Mexico.

## Standards

- NM Science Content Standards: Strand I, Scientific Thinking and Practice; Strand II, Standard III, Earth and Space Science
- National Science Standards: Standard A, Science as Inquiry; Standard D, Earth and Space Science

## Background Information

Planetary geologists cannot travel to the planets they study; instead, they try to compare and contrast features on the planets with known features on Earth. These types of scientific studies are called analogs. New Mexico has a long history of being used by geologists as an analog to other planets because there is little water or vegetation to erode or cover the geology of the state. Geologically, New Mexico and Mars have many similarities, and our state can be used to understand some of the physical properties and processes operating on Mars. In many ways, the surface of Mars is a lot like New Mexico. Both are geologically diverse, with plains, ridges, buttes, mesas, volcanoes, canyons, landslides, and arroyo-like channels. Like New Mexico, Mars displays an arid environment with evidence of past water.

## Materials for Each Team

- Mars and New Mexico Data Sheet included in this activity.
- Resources for students to investigate such as web sites, books about Mars, videos about Mars, the Mars image file included in this CD, or the Making Tracks on Mars exhibit at the New Mexico Museum of Natural History & Science in Albuquerque, NM.

## Preparation

1. Print and photocopy the Data Sheet included in this activity for each student or team of students. Assemble the Data Sheet booklet by copying page 3 and page 4 in double-sided format and folding the sheet in half, or by putting two single-sided sheets back to back and stapling them.
2. Print the Mars Image File from this CD or prepare other images, maps, and resources for the students to use in their comparison. Students can be assigned the task of collecting images and information about Mars and collecting pictures and information about New Mexico.

## Introduction for Students

You are a member of a Mars mission science team. It is your job to answer the following question based upon your observations. Scientists use a process of investigation that includes questioning, observation, and interpretation. The question that you have to answer is: How is the Martian landscape different than and/or similar to New Mexico's landscape?

## Procedure

1. Students should work as a team to complete the Data Sheet.
2. Teams can research the occurrence on Mars and in New Mexico of each of the listed features.
3. This activity can be done in the classroom or as a focused activity during a field trip to the Making Tracks on Mars exhibit at the New Mexico Museum of Natural History & Science . At the exhibit, students observe the Marscape and work with the interactive "Planet" kiosk.

## Process/Closure

Are the landscapes of Mars and New Mexico similar or different? What does this mean about both areas? Discuss the implications about life, about the general geology of both areas, and about physical parameters such as atmospheric wind or temperature. What would happen if we chose a different set of features for comparison?

## Extension/Enrichment

Choose another state to compare with Mars; use the same table of features and then devise a new table of features that is specific to the other state. Choose another planet in our solar system and use the same table of features to compare this other planet with both New Mexico and Mars.

Each team can choose one feature in the list and have students find out additional information about its occurrence on Mars and in New Mexico.

## Credits

This activity was created by Amy Grochowski and Jayne Aubele, New Mexico Museum of Natural History & Science.

Continue to be a scientist on this mission by returning to the Mars Rover web site to examine images from the surface of Mars. Write your observations here.



## Mars Exploration Rover Mission Investigation Log

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## Mars and New Mexico

Name(s) \_\_\_\_\_

Date \_\_\_\_\_

Name(s) \_\_\_\_\_

Date \_\_\_\_\_

## Mars and New Mexico Data Sheet

**Y**ou are a member of the Mars mission science team. It is your job to answer the following question based on your observations. Scientists use a process of investigation which includes questioning, observation, and interpretation.

### The Question

How is the Martian landscape different from and/or similar to the landscape of New Mexico?

### Make a Hypothesis

What is your best scientific guess? Write it here.

### Making Observations

Scientists make observations using their own senses. The Mars rover on this mission is a robotic field geologist. It uses scientific instruments, including cameras, to make the observations you would make if you were on Mars.

### Record Your Observations

Carefully study images taken by the Mars rovers and information from your own research, from the *Making Tracks on Mars* exhibit, or from other sources. Compare Mars with your knowledge of New Mexico. Check the box where each feature occurs.

|             | Mars | New Mexico |
|-------------|------|------------|
| volcanos    |      |            |
| canyons     |      |            |
| dunes       |      |            |
| dust devils |      |            |
| arroyos     |      |            |
| blue sky    |      |            |
| ice         |      |            |
| red soil    |      |            |
| life        |      |            |
| seasons     |      |            |

### Interpret the Data

You must now interpret your observations. What do they mean for Mars and New Mexico?

0-2 matches: The landscapes are not similar.

3-5 matches: The landscapes are slightly similar.

6-8 matches: The landscapes are similar.

9-10 matches: The landscapes are very similar.

Based on your observations, was your hypothesis correct?