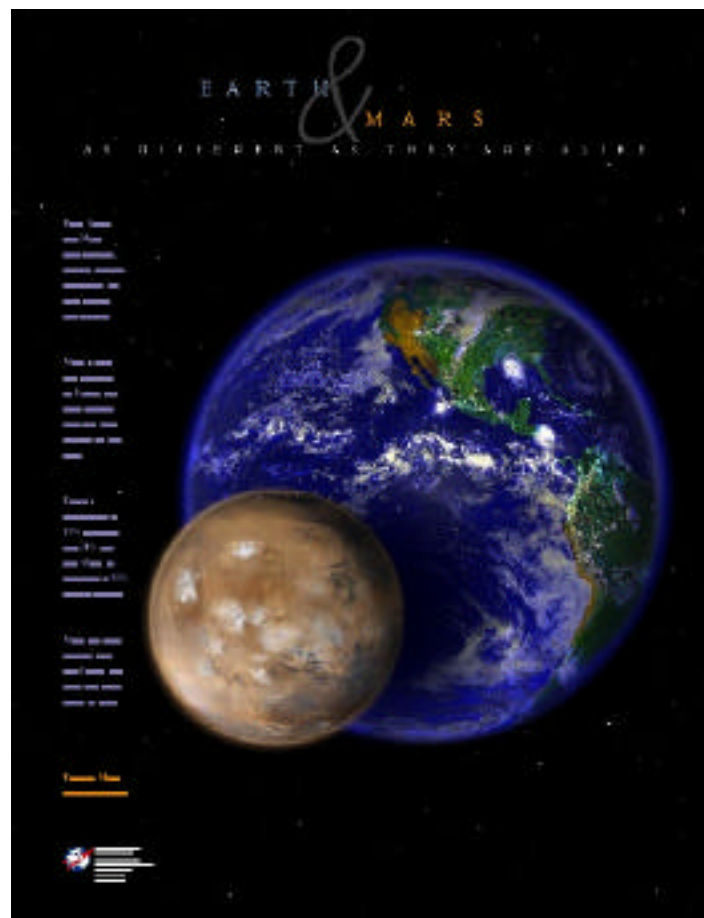




Comparative Planetology

Postvisit Activity for Solar System



courtesy NASA/JPL

Grades 4-8
CDE Standards
Science: 1,4.4

Preparation and Materials

Estimated Preparation Time: 30–45 minutes

Estimated Activity Time: Three or more class periods of 45 minutes each

Materials

Crayola modeling clay or salt dough (recipe below)

Cardboard

Tempera paint

Paintbrushes

Painting smocks (optional)

Paper

Pencils

Topographical maps of terrestrial planets

Learning Goals/Objectives

Students will

- Identify similarities and differences between Earth and another terrestrial planet of their choice
- Create topographical maps to show landforms on the Earth and other terrestrial planets

Connections to *Space Odyssey*

The Mars diorama on the floor of the *Space Odyssey* exhibition shows the landscape of a location on Mars: Candor Chasma. Students can view the various landforms presented in this diorama and make generalizations about surfaces on terrestrial planets. Students can also visit the Carving Landscapes and Cratering interactives to learn about how different landscapes on Mars were formed. There is also the High-Altitude Probe, which also shows topography on Mars. Don't forget to find out about those awesome dust storms at the Martian Dust Devil exhibit!

Advanced Preparation

1. Prepare enough salt dough or purchase enough modeling clay for each of the students in your class to use to make their topographical maps.
2. Cut pieces of cardboard into pieces large enough for students to construct their topographical maps.

Classroom Activity

1. For this activity, students will choose a terrestrial planet to compare with Earth.
2. Students will need to complete research about each planet to compare and contrast landforms on each planet.
3. Have students create a chart or poster that describes the similarities and differences between the two planets they've chosen.
4. Provide students with topographical maps of the Earth and the other terrestrial planet they are studying or have them find these maps in their Internet search. Ask students to note any large-scale differences first by just looking at the maps.
5. Using salt dough or Crayola modeling clay, have students create topographical maps of the surfaces of both planets they have studied.
6. Ask students to label any significant features on their maps.
7. Allow students to paint their maps to show the differences in elevation.
8. Display maps for parents and students to see.

Variations/Extensions

1. Students can compare Earth with one of the Jovian planets. The trick for students will be how they will show comparisons in topographical maps for gas planets. Allow them to be creative!
2. Students can research how landforms on Earth and other terrestrial planets are formed. Then they can compare the similarities and differences in the ways similar landforms are made on different planets. For instance, the Grand Canyon was formed by water erosion, whereas Valles Marineris was formed as the crust of Mars split apart, much like a fault line here on Earth.

Resources

Web sites

<http://denali.gsfc.nasa.gov/topo/topo.html>

http://ltpwww.gsfc.nasa.gov/tharsis/Mars_topography_from_MOLA/

<http://www.nasm.edu/ceps/research/cook/disc.html>

http://emma.la.asu.edu/images/SOL_SYST/VENUS/venus_topography.gif

<http://www.space.edu/moon/atlas/BothSides/topo.html>

<http://www.solarviews.com/cap/index/earth1.html>

<http://www.ngdc.noaa.gov/mgg/image/mggd.gif>

<http://www.solarviews.com/cap/index/maps-topographic1.html>

Recipe

Salt Dough

1 C. salt

1 C. flour

1/2 to 3/4 C. water

Mix salt and flour in a bowl. Add water to make the dough. You will want the dough to be slightly more fluid than regular play dough for ease in forming landscapes. Form topographical maps and allow dough to dry (you can dry in the oven at 100 degrees for four hours). Paint.