

# Resources Archive

---

## Chapter 5: Earth's Landforms and Water

### An Eagle's View

#### Topographic and Relief Maps

- Free topographic maps of most places in the United States can be downloaded in PDF format from the U.S. Geological Survey at [http://store.usgs.gov/b2c\\_usgs/usgs/maplocator/%28xcm=r3standardpitrex\\_prd&layout=6\\_1\\_61\\_48\\_1&uiarea=2&ctype=areaDetails&carearea=%24ROOT%29/.do](http://store.usgs.gov/b2c_usgs/usgs/maplocator/%28xcm=r3standardpitrex_prd&layout=6_1_61_48_1&uiarea=2&ctype=areaDetails&carearea=%24ROOT%29/.do).
- Free shaded relief maps of the United States are available at <http://birrell.org/andrew/reliefMaps>. You can also do an internet search on the term *relief maps of the United States*.
- Google Earth ([www.google.com/earth](http://www.google.com/earth)) allows you to fly over the surface of Earth.

#### Maps of Tectonic Plates (for grades 6–8)

- See, for example, [https://planetjan.wordpress.com/2010/04/04/its-the-end-of-the-world-as-we-know-it/map\\_plate\\_tectonics\\_world](https://planetjan.wordpress.com/2010/04/04/its-the-end-of-the-world-as-we-know-it/map_plate_tectonics_world), or search online images for *map of tectonic plates*.

#### Books

Barker, C. F. 2005. *Under Michigan: The story of Michigan's rocks and fossils*. Detroit: Wayne State University Press.

Cole, J. 1987. *The magic school bus: Inside the earth*. New York: Scholastic.

Dorr, J. A., and D. Eschman. 1970. *Geology of Michigan*. Ann Arbor: University of Michigan Press.

National Wildlife Federation. 1997. *Geology: The active earth*. New York: McGraw-Hill.

Wargin, K. 2004. *The legend of the Petoskey Stone*. Ann Arbor, MI: Sleeping Bear Press.

### Diving With Dolphino

- Relief maps of the ocean floor—see, for example, [www.orangesmile.com/travelguide/afoto/ocean-maps.htm](http://www.orangesmile.com/travelguide/afoto/ocean-maps.htm), or search online images for *relief maps of ocean floor*
- Maps of volcanic eruptions and earthquakes—see, for example, [www.pbs.org/wgbh/nova/education/activities/2515\\_venusius.html](http://www.pbs.org/wgbh/nova/education/activities/2515_venusius.html) and <http://hvo.wr.usgs.gov/seismic/volcweb/earthquakes>, or search online images for *map of volcanoes and earthquakes*
- Maps of tectonic plates—see, for example, [https://planetjan.wordpress.com/2010/04/04/its-the-end-of-the-world-as-we-know-it/map\\_plate\\_tectonics\\_world](https://planetjan.wordpress.com/2010/04/04/its-the-end-of-the-world-as-we-know-it/map_plate_tectonics_world), or search online images for *map of tectonic plates*
- A scaled infographic comparing the heights and depths of terrestrial and oceanic landforms, available at [www.livescience.com/29536-infographic-tallestmountain-to-deepest-ocean-trench.html](http://www.livescience.com/29536-infographic-tallestmountain-to-deepest-ocean-trench.html)

## Water, Water Everywhere

- Information on the amount of water on Earth: <http://water.usgs.gov/edu/gallery/global-water-volume.html>.
- Holling, H. C. 1980. *Paddle-to-the-sea*. Boston: HMH Books for Young Readers; Mason, B. 2015. *Paddle to the sea* [film adaptation of the book by Holling]. National Film Board of Canada. [www.nfb.ca/film/paddle\\_to\\_the\\_sea](http://www.nfb.ca/film/paddle_to_the_sea).
- Harvard-Smithsonian Center for Astrophysics. 2007. *The habitable planet: A systems approach to environmental science*. Unit 8: Water resources. Annenberg Learner [video series]. Los Angeles: Annenberg Foundation. [www.learner.org/resources/series209.html#program\\_descriptions](http://www.learner.org/resources/series209.html#program_descriptions).
- Relf, P. 1996. *The magic school bus wet all over: A book about the water cycle*. New York: Scholastic; The Magic School Bus video series available at [www.scholastic.com/magicschoolbus/tv/index.htm](http://www.scholastic.com/magicschoolbus/tv/index.htm).

## Chapter 6: Rock Cycle and Plate Tectonics

### Keweenaw Rocks

#### Information on Michigan Geology

- Bornhorst, T. J., and W. I. Rose. 1994. "Self-guided geological field trip to the Keweenaw Peninsula, Michigan." Institute on Lake Superior Geology proceedings, 40th annual meeting, Houghton, MI, Vol. 40, Part 2. [www.d.umn.edu/prc/lakesuperiorgeology/Volumes/ILSG\\_40\\_1994\\_pt2\\_Houghton.cv.pdf](http://www.d.umn.edu/prc/lakesuperiorgeology/Volumes/ILSG_40_1994_pt2_Houghton.cv.pdf).
- Gillespie, R., W. B. Harrison III, and G. M. Grammer. 2008. *Geology of Michigan and the Great Lakes*. Cengage Brooks/Cole. Also available at [http://custom.cengage.com/regional\\_geology.bak/data/Geo\\_Michigan\\_Watermarked.pdf](http://custom.cengage.com/regional_geology.bak/data/Geo_Michigan_Watermarked.pdf).
- Michigan Rocks. 2008. Michigan geologic time line list. [www.educ.msu.edu/michiganrocks/PDFs/migeo11.pdf](http://www.educ.msu.edu/michiganrocks/PDFs/migeo11.pdf).
- Oxley, P. (Series producer and director). 2015. *Making North America: Origins* [video]. NOVA. Boston: WGBH Educational Foundation.

#### Maps

- Michigan bedrock map: [http://custom.cengage.com/regional\\_geology.bak/data/Geo\\_Michigan\\_Watermarked.pdf](http://custom.cengage.com/regional_geology.bak/data/Geo_Michigan_Watermarked.pdf).
- This Dynamic Planet (interactive map website): <http://nhb-arcims.si.edu/ThisDynamicPlanet/index.html>.
- Geologic map of the Keweenaw Peninsula and adjacent area, Michigan (IMAP 2696): <https://pubs.er.usgs.gov/publication/i2696>.

#### General Geology References

- Press, F., R. Siever, J. Grotzinger, and T. Jordan. 2003. *Understanding Earth*. 4th ed. New York: W. H. Freeman.
- Marshak, S. 2005. *Earth: Portrait of a planet*. 2nd ed. New York: W. W. Norton.

#### Possible Materials for Modeling Tectonic Plates

- Graham crackers
- Soft frosting, whipped cream, or nondairy whipping cream

- Sprinkles or bread crumbs

### Hand Sample Rocks

- Conglomerates
- Basalts
- Sandstones

## **Lassen's Lessons**

### Maps and Geologic Timescale

- Highway maps of the area around Lassen Peak are available at [www.aapg.org/publications/special-publications/maps/details/articleid/4392/pacific-southwest-regioneological-highway-map](http://www.aapg.org/publications/special-publications/maps/details/articleid/4392/pacific-southwest-regioneological-highway-map).
- Description of the Phanerozoic eon by M. A. Kazlev is available at <http://palaeos.com/phanerozoic/phanerozoic.htm>.

### Books and Educational Materials

- Elder, W. P. 2001. Geology of the Golden Gate headlands. In *Geology and natural history of the San Francisco Bay Area: A field-trip guidebook*, eds. P. W. Stoffer and L. C. Gordon, 61–86. U.S. Geological Survey Bulletin 2188. Reston, VA: U.S. Geological Survey.  
<http://pubs.usgs.gov/bul/b2188/b2188ch3.pdf>.
- Fichter, L. S. 2000. An introduction to igneous rocks.  
<http://csmres.jmu.edu/geollab/Fichter/IgnRx/Introigrx.html#simpleclass>. Harrisonburg, VA: James Madison University.
- Harris, S. L. 2005. Lassen Peak: California's most recently active volcano. In *Fire mountains of the West: The Cascade and Mono Lake volcanoes*. Missoula, MT: Mountain Press.
- Kane, P. S. 1980. *Through Vulcan's eye: The geology and geomorphology of Lassen Volcanic National Park*. Walter Lithograph.

### Possible Materials for Modeling Tectonic Plates

- Graham crackers
- Soft frosting, whipped cream, or nondairy whipping cream
- Sprinkles or bread crumbs

### Hand Sample Rocks

- Granite
- Basalt
- Blueschist
- Andesite
- Sandstone
- Chert
- Serpentine

## **San Andreas**

### Books

- Collier, M. 1999. *A land in motion: California's San Andreas Fault*. Oakland, CA: University of California Press.

Press, F., R. Siever, J. Grotzinger, and T. Jordan. 2003. *Understanding Earth*. 4th ed. New York: W. H. Freeman.

Marshak, S. 2005. *Earth: Portrait of a planet*. 2nd ed. New York: W. W. Norton.

### Websites

- Indiana University, Indiana Geological Survey. n.d. Study of faults and earthquakes with foldable fault blocks. <https://igs.indiana.edu/lessonplans/faultblock.pdf>.
- U.S. Geological Survey. 2014. Understanding plate motions. <http://pubs.usgs.gov/gip/dynamic/understanding.html>.

### Possible Materials for Modeling Tectonic Plates

- Graham crackers
- Soft frosting, whipped cream, or nondairy whipping cream
- Sprinkles or bread crumbs

### Hand Sample Rocks

- Granite
- Chert
- Pillow basalt
- Shale
- Sandstone

## Chapter 7: Weather

### **Northern Lights**

- Find average monthly temperatures for anywhere in the continental United States at <https://weather.com/maps/averages/normal-temperature>.
- Look up average temperatures and rainfalls for U.S. cities at <http://countrystudies.us/united-states/weather>.
- View a simulation of the Sun's path as seen from anywhere on any date, including sunrise and sunset times, at [www.sunearthtools.com/dp/tools/pos\\_sun.php](http://www.sunearthtools.com/dp/tools/pos_sun.php).

### **Water So Old**

- A video of the water cycle is available from the National Aeronautics and Space Administration (NASA) at [www.youtube.com/watch?v=0\\_c0ZzZfC8c](http://www.youtube.com/watch?v=0_c0ZzZfC8c).
- An interactive diagram of the water cycle is available at <http://water.usgs.gov/edu/>

### **Leave It to the Masses**

#### Online Resources on Weather

- Current weather maps of any type are available at <http://weather.com/maps>.
- This animated website shows current wind conditions and includes a section that explains how data are used to generate the animation: <http://hint.fm/wind>.
- Current and archived weather data plus information about clouds and precipitation, hurricanes, and El Niño weather patterns are available at <http://ww2010.atmos.uiuc.edu/%28Gh%29/home.rxml>.

- To explore a variety of different weather fronts and the interactions of air masses, view the simulator at [www.phschool.com/atschool/phsciexp/active\\_art/weather\\_fronts](http://www.phschool.com/atschool/phsciexp/active_art/weather_fronts).

### Meteorology Books

- Ahrens, C. D. 2016. *Meteorology today: An introduction to weather, climate, and the environment*. 11th ed. Boston: Cengage Learning.
- Cox, J. D. 2000. *Weather for dummies*. New York: Hungry Minds.
- Williams, J. 1997. *The weather book: An easy-to-understand guide to the USA's weather*. New York: Vintage.

## Chapter 8: Astronomy

### E.T. the Extra-Terrestrial

#### Movie (Source Material for Problem)

- Spielberg, S. (Producer and Director). 1982. *E.T. The Extra-Terrestrial*. Universal City, CA: Universal Pictures.

#### Information About and Images of the Moon

- Photographs of the Moon's surface around the Apollo program landing sites, set up like Google Maps, are available at Google Moon: [www.google.com/Moon](http://www.google.com/Moon).
- Animations of the Moon phases and the Moon orbiting Earth based on data from the Lunar Reconnaissance Orbiter are available at <http://astro.unl.edu/naap/lps/animations/lps.swf>.
- The U.S. Naval Observatory hosts the website Complete Sun and Moon Data for One Day at [http://aa.usno.navy.mil/data/docs/RS\\_OneDay.html](http://aa.usno.navy.mil/data/docs/RS_OneDay.html).
- StarDate, the public education and outreach arm of the University of Texas McDonald Observatory, has an online Moon Phase Calculator with daily pictures of the Moon as seen from Earth, plus a pictorial model, at <http://stardate.org/nightsky/Moon>.
- The Moon phase for any date and time can be found at the Moon Phase Images website: <http://tycho.usno.navy.mil/vphase.html>.

#### Materials for Modeling

- For the Sun, use a light source such as a bright bulb in a lamp without a shade, a flashlight, or an overhead projector.
- For the Moon, use a Styrofoam ball 4–6 cm in diameter (stuck on a bamboo skewer or pencil to act as a handle).
- For Earth, use your head.
- Optional: Use a sextant to determine the position of the Moon; see “Activity: Moon Finder” at <http://analyzer.depaul.edu/paperplate/Moon%20Finder.htm>.

### Obsidian Sun

- Students can view data and maps related to the total solar eclipse of February 26, 1979 at <http://eclipse.gsfc.nasa.gov/SEgoogle/SEgoogle1951/SE1979Feb26Tgoogle.html>.
- Students can search for data about eclipses in any year at the HMNAO (Her Majesty's Nautical Almanac Office) Eclipse Portal: [www.eclipse.org.uk/eclbin/query\\_hmnao.cgi](http://www.eclipse.org.uk/eclbin/query_hmnao.cgi).
- NASA's website offers resources, images, and videos about eclipses: [www.nasa.gov/topics/solarsystem/features/eclipse/index.html](http://www.nasa.gov/topics/solarsystem/features/eclipse/index.html).

- NASA also provides information on how to safely view a solar eclipse:  
<http://eclipse.gsfc.nasa.gov/SEhelp/safety2.html> or at [www.exploratorium.edu/eclipse/how-to-view-eclipse](http://www.exploratorium.edu/eclipse/how-to-view-eclipse).

## **Copper Moon**

- Students can search for data about eclipses in any year at the HMNAO (Her Majesty's Nautical Almanac Office) Eclipse Portal: [www.eclipse.org.uk/eclbin/query\\_hmnao.cgi](http://www.eclipse.org.uk/eclbin/query_hmnao.cgi).
- NASA's website offers resources, images, and videos about eclipses:  
[www.nasa.gov/topics/solarsystem/features/eclipse/index.html](http://www.nasa.gov/topics/solarsystem/features/eclipse/index.html).
- Information about the total lunar eclipse on September 6, 1979, is available at [www.timeanddate.com/eclipse/lunar/1979-september-6](http://www.timeanddate.com/eclipse/lunar/1979-september-6).

## **Morning Star, Evening Star**

- The interactive Sky Map at Your Sky, an interactive planetarium on the web, lets students find the location of many stars and planets on any day: [www.fourmilab.ch/yoursky](http://www.fourmilab.ch/yoursky).
- Stellarium is a free open-source planetarium that shows images of objects in space for any date: [www.stellarium.org](http://www.stellarium.org).
- NASA's website has information, images, and videos of Venus:  
<http://solarsystem.nasa.gov/planets/venus>.
- Nine Planets is another website with information about Venus: [www.nineplanets.org/venus.html](http://www.nineplanets.org/venus.html).