



Fernbank Science Center

Title: Earth, Wind, & Fire (4434)

Level: 3rd, 4th, 5th Grades

Location: Local School

Type: Outreach

Length: 55 minutes

Limit: One Class per session

Program Description

This program brings an Earth Science Extravaganza to your school! From Geology in 3rd grade to Meteorology in 4th grade to the forces that shape Earth's surface in 5th grade, your students will be engaged in captivating classroom demonstrations and hands-on activities.

Standards

See attached descriptions for details pertaining to each grade level's program.

Vocabulary

See attached descriptions for details pertaining to each grade level's program.

Pre-Visit Activities

See attached descriptions for details pertaining to each grade level's program.

Post-Visit Activity

See attached descriptions for details pertaining to each grade level's program.

Additional Resources

See attached descriptions for details pertaining to each grade level's program.

Notes

***** If you schedule this program, all 3rd, 4th, and 5th grade classes at your school will be visited by a Fernbank instructor on the same day. This program should only be booked once per school. *****

For all 3 programs, it is best if the Fernbank instructor can set up equipment and materials in a central location at your school (science lab, media center, classroom, etc.) for the day. Each class can make their visit to the central location for the program.

If you schedule this program for your students, please do not schedule the following programs:

Outreach Programs

- Local Rocks & Minerals (4316)
- Extreme Weather (4436)
- Volcanoes, Earthquakes, and Asteroid Impacts (4640)

Program @ Fernbank Science Center

- The Whys of Weather (4405)

These programs cover similar content as "Earth, Wind, and Fire."



Fernbank Science Center

Title: Local Rocks & Minerals
Level: 3rd Grade
Location: Local School

Type: Outreach
Length: 55 minutes
Limit: One Class per session

Program Description

Students are introduced to geology, rocks, and minerals and guided through strategies to identify local minerals based on color, texture, luster, and context. Students then work in groups of 3 to 4 to identify the rocks in a bag of “unknown” samples. Groups may compete to determine who can identify a set of unknowns the fastest. The relationships of local rocks to the region, globe, and tectonic history of the Earth is highlighted. Time permitting, students are introduced to the layers of the Earth (“DeKalb beneath their feet”) and shown rocks representing the mantle and core.

Standards

S3E1. Obtain, evaluate, and communicate information about the physical attributes of rocks and soils.

- a. Ask questions and analyze data to classify rocks by their physical attributes (color, texture, luster, and hardness) using simple tests. (Clarification statement: Mohs scale should be studied at this level. Cleavage, streak and the classification of rocks as sedimentary, igneous, and metamorphic are studied in sixth grade.)

Vocabulary

granite	gneiss	schist	amphibolite	clay
igneous	sedimentary	metamorphic	quartz	mica
feldspar	rock	mineral	hornblende	pegmatite

Pre-Visit Activities

Collect at least three rocks from near your home. Bring them to identify and discuss with the geologist.

Post-Visit Activity

Attached.

Resources

HSP Georgia Science III, Chapter 2, Lesson 2, "What Are the Types of Rocks?"

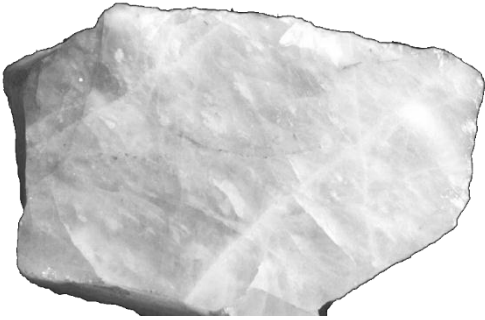
Local Rocks & Minerals (Post Visit Activity)

Name _____

Post-Presentation Review

I. Name each rock illustrated below.

A. _____



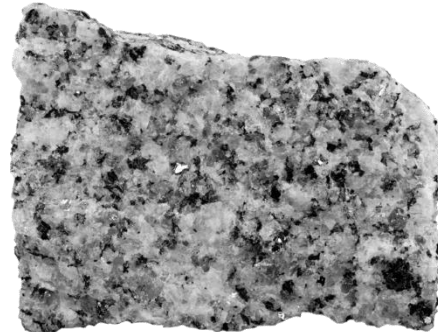
B. _____



C. _____



D. _____



E. _____



F. _____



II. Is each rock above igneous, sedimentary, or metamorphic?

A. _____

B. _____

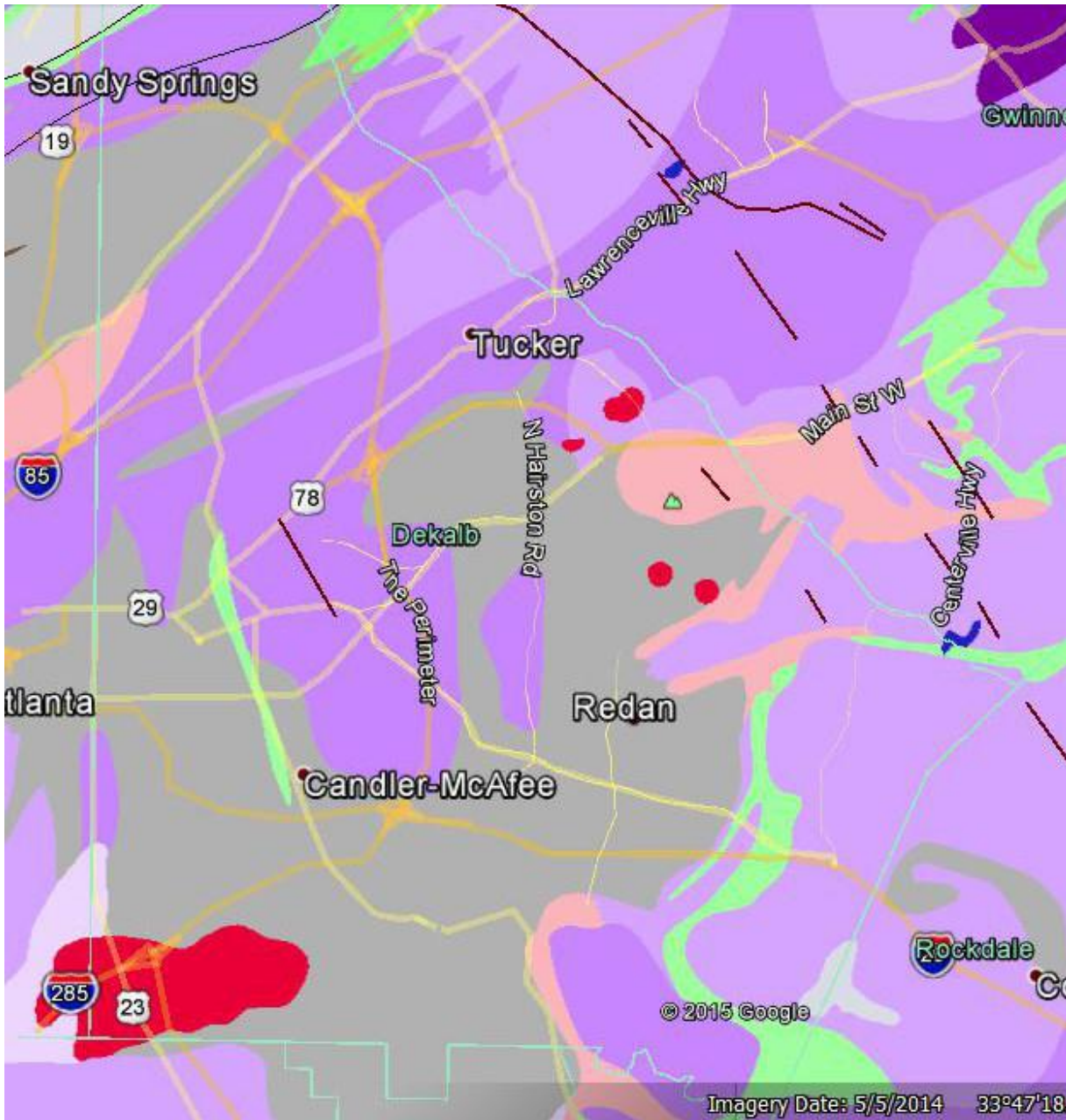
C. _____

D. _____

E. _____

III. Which of the rocks above does **NOT** occur in DeKalb County? _____

IV. Open the following link in Google Earth: <http://mrddata.usgs.gov/geology/state/kml/gageol.kmz>
Zoom to DeKalb County, Georgia.
Print a copy of the Geologic Map for DeKalb County.
Place the letter for each rock above on the map in the correct colored rock unit.





Fernbank Science Center

Title: Extreme Weather
Level: 4th Grade
Location: Local School

Type: Outreach
Length: 55 minutes
Limit: One Class per session

Program Description

A classroom activity using large props will allow students to investigate fronts and pressure systems. Students will what they learned to analyze a weather map and make a prediction. Classroom demonstrations of fronts, pressure, and how weather phenomena such as thunderstorms, tornadoes, and hurricanes are created further establish key weather concepts.

Standards

S4E3. Obtain, evaluate, and communicate information to demonstrate the water cycle.

b. Develop models to illustrate multiple pathways water may take during the water cycle (evaporation, condensation, and precipitation). (Clarification statement: Students should understand that the water cycle does not follow a single pathway.)

S4E4. Obtain, evaluate, and communicate information to predict weather events and infer weather patterns using weather charts/maps and collected weather data. a. Identify weather instruments and explain how each is used in gathering weather data and making forecasts.

a. Construct an explanation of how weather instruments (thermometer, rain gauge, barometer, wind vane, and anemometer) are used in gathering weather data and making forecasts.

b. Interpret data from weather maps, including fronts (warm, cold, and stationary), temperature, pressure, and precipitation to make an informed prediction about tomorrow's weather.

Vocabulary

evaporation	condensation	precipitation	cold front	rain gauge
warm front	thermometer	high pressure	low pressure	cumulus
stationary front	anemometer	water vapor	thunderstorm	barometer

Pre-Visit Activities

Introduce the class to the vocabulary words listed above.

Post-Visit Activity

Analyze a weather map from the date of birth of a student in the classroom.

- Weather maps 2003 – present: <http://www.wpc.ncep.noaa.gov/dailywxmap/index.html>
- Older maps: http://www.lib.noaa.gov/collections/imgdocmaps/daily_weather_maps.html (must install this plug-in to view maps: <https://www.cuminas.jp/en/downloads/download>)

Additional Resources

<http://www.srh.noaa.gov/jetstream/append/lessonplans.htm>
[http://ww2010.atmos.uiuc.edu/\(Gh\)/guides/mtr/af/frnts/home.rxml](http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/af/frnts/home.rxml)



Fernbank Science Center

Title: Volcanoes, Earthquakes, & Asteroid Impacts
Level: 5th Grade
Location: Local School

Type: Outreach
Length: 55 minutes
Limit: 1 class/session

Program Description

The energy and effects of three of the most powerful forces of geologic change are investigated through dynamic demonstrations of volcanic eruptions, earthquakes, and asteroid impacts.

Standards

- S5E1.** Obtain, evaluate, and communicate information to identify surface features on the Earth caused by constructive and/or destructive processes.
- Construct an argument supported by scientific evidence to identify surface features (examples could include deltas, sand dunes, mountains, volcanoes) as being caused by constructive and/or destructive processes (examples could include deposition, weathering, erosion, and impact of organisms).
 - Ask questions to obtain information on how technology is used to limit and/or predict the impact of constructive and destructive processes. (Clarification statement: Examples could include seismological studies, flood forecasting (GIS maps), engineering/construction methods and materials, and infrared/satellite imagery.)

Vocabulary

plate tectonics	magma	volcano	eruption	earthquake
seismometer	asteroid	impact crater	basalt	granite
rhyolite	andesite	viscosity		

Pre-Visit Activities

Discuss and develop questions about geologic disasters and the landforms they create.

Post-Visit Activity

View these websites: <http://earthquake.usgs.gov/earthquakes/>
<http://www.volcano.si.edu/>
<http://www.passc.net/EarthImpactDatabase/>

- Choose three currently active volcanoes, three recent earthquakes, and three impact craters.
- List the primary type of lava/magma (low vs. high viscosity) associated with each volcano and the type of rocks (for example, granite or basalt) associated with each.
 - Compare the shapes of the volcanoes, and explain them based on the answers to #1.
 - List the location, magnitude, and depth for each earthquake.
 - Describe the type of plate boundary associated with each earthquake.
 - Compare and contrast the shapes of the three impact craters. Develop hypotheses to explain the differences.

Resources

Prentice Hall: Earth Science Georgia, Tarbuck & Lutgens, Unit 3, Ch. 8 & 10; Unit 7, Ch. 23.4.