Georgia Performance Standards Framework for Science – Grade 5

**Unit Organizer: Earth Science / Fifth Grade**
(7 weeks)

**OVERVIEW:**
In this unit, students will discover how earth’s constructive and destructive forces change and create surface features. Geological phenomenon and examples worldwide will be explored, but there will be many fun, interactive, and relevant opportunities for students to apply their knowledge and understanding of these processes to local and Georgia landforms. Various engaging activities, multimedia, technology, and authentic assessment will help facilitate student understanding of how scientists use observations and evidence from their environment and surroundings to gain knowledge, develop theories, and learn of earth’s constructive and destructive processes. Students will also explore human intervention to control constructive and destructive processes and human interaction with landforms and the surrounding environment. This unit will also provide accommodation and extension ideas that support differentiated student learning and various learning environments from school to school.

**STANDARDS ADDRESSED IN THIS UNIT**

**Focus Standards:**
*S5E1: Students will identify surface features of the Earth caused by constructive and destructive processes.*

- Identify surface features caused by constructive processes.
  - Deposition (deltas, sand dunes, etc.)
  - Earthquakes
  - Volcanoes
  - Faults
- Identify and find examples of surface features caused by destructive processes.
  - Erosion (water – rivers and oceans, wind)
  - Weathering
  - Impact of organisms
  - Earthquake
  - Volcano
c. Relate the role of technology and human intervention in the control of constructive and destructive processes.
   - seismological studies,
   - flood control, (dams, levees, storm drain management, etc.)
   - beach reclamation (Georgia coastal islands)

STANDARDS ADDRESSED IN THIS UNIT

Supporting Standards:
GPS Scientific Habits of the Mind – Fifth Grade
S5CS4: Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.
S5CS5: Students will communicate scientific ideas and activities clearly.
S5CS6: Students will question scientific claims and arguments effectively.

National Educational Technology Standards (NETS) for Students
3. Technology and productivity tools
   - Students use technology tools to enhance learning, increase productivity, and promote creativity.
   - Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.
4. Technology communications tools
   - Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences
5. Technology research tools
   - Students use technology to locate, evaluate, and collect information from a variety of sources.

ENDURING UNDERSTANDINGS

Students will understand that:
   - Earth’s surface features and constantly changing.
   - Processes that shape the earth can be constructive, destructive or a combination of both.
   - Human interaction with the earth can affect its surface features.
### ESSENTIAL QUESTIONS:
- What is the Ring of Fire?
- Why do earthquakes and volcanoes show up where they do?
- Will Stone Mountain always exist? Why or why not?
- How can water break rocks apart?
- Why are some people afraid to live in California?
- Why do some places have more weathering and erosion than other places?

<table>
<thead>
<tr>
<th>MISCONCEPTIONS</th>
<th>TRUTHS</th>
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<tbody>
<tr>
<td>1. Scientists can predict volcanic eruptions and sometimes earthquakes.</td>
<td>1. Scientists can use specialized equipment and technology to learn more about when volcanoes and earthquakes might occur, but scientists cannot make consistent and accurate predictions yet.</td>
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<td>2. Changes to earth’s surface only happen quickly.</td>
<td>2. Changes to the earth’s surface can happen fast or slow.</td>
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<td>3. Weathering and erosion are the same thing.</td>
<td>3. Weathering and erosion are both processes that change the earth’s surface, but weathering involves breaking down rock into sediment while erosion is more related to wearing down earth’s surface by carrying sediment away.</td>
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<td>4. Rocks are here to stay!</td>
<td>4. Rocks, concrete, metal, etc. are all subject to weathering, earth’s destructive forces, and the rock cycle.</td>
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<tr>
<td>5. Humans can control earth’s constructive and destructive forces.</td>
<td>5. Debatable – Humans can use technology, mechanical means, structures, etc. to help control earth’s forces, but only temporarily – eventually these will also succumb to earth’s forces.</td>
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<td>6. Earth’s forces can only destroy.</td>
<td>6. Earth’s forces can be constructive, destructive, or a combination of both.</td>
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<tr>
<td>7. According to standard S5E1, tornadoes, hurricanes, and blizzards, among others, are powerful forces that shape the earth.</td>
<td>7. True to some extent, but standard S5E1’s focus should be on constructive and destructive processes of the Earth and as related to earth’s geology rather than on atmospheric processes.</td>
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**LANGUAGE**

| weathering, erosion, continental drift, ridge, trench, fault, plate (tectonic), crust, mantle, magma, lava, glacier, volcano, earthquake, tsunami, deposition, sediment, landform, seismograph |

**EVIDENCE OF LEARNING:**

By the conclusion of this unit, students should be able to demonstrate the following competencies:

- Demonstrate knowledge of terms, geological phenomena and processes, and landforms associated with earth’s constructive and destructive forces and processes
- Identify both constructive and destructive forces that shape the earth’s surface
- Apply understanding of weathering agents and process that are involved in creating a variety of landforms
- Apply understanding of human methods to control earth’s constructive and destructive forces and processes
- Demonstrate understanding of human interaction and relationships to earth’s constructive and destructive forces and processes

**Culminating Activity:**
Develop a travel poster of Georgia landforms that have been shaped by constructive, destructive forces, or by a combination of both forces.

**GRASPS**

**Goal:** Apply knowledge and understanding of earth’s constructive and destructive forces within a real world scenario.

**Role:** Travel Agent

**Audience:** peers, administrators, public

**Scenario (to student):**
Your travel agency is developing an overnight field trip for students to learn more about constructive and destructive forces in Georgia. Your job is to create a travel poster, or PowerPoint infomercial, of your field trip that will attract principals and schools to your travel agency. Remember to be creative and select only the best attractions that support student learning! Your fleet of coach busses is waiting, so good luck!

**Product (to student):**
Using information from your research, activities, and field experiences, create a poster that describes what students can learn
during their field trip. This field trip should support Georgia learning standards by highlighting Georgia’s own landforms and surface features shaped by constructive and destructive forces. It will be important that your travel poster include a map of Georgia that identifies, locates, and describes at least:
  - 2 landforms in Georgia that were caused by constructive forces,
  - 2 landforms in Georgia that were caused by destructive forces, and
  - 1 landform or process that involves both constructive and destructive forces.

In your research and development, it will also be important that your travel poster show what forces were involved in creating or destroying these landforms. Your poster should be colorful and attractive for principals and schools to review, complete with illustrations and/or photographs. You might also consider types of accommodations for large groups of students to visit and other unique characteristics that the locations might provide.

Use the [rubric](#) to help guide you during your construction. I know everyone in your agency will be eager to see what you will develop and present to the principals and schools!

**Standard:** S5E1

**Discussion, Suggestions for use:**

- **GRASPS** components can be completed periodically throughout the unit. For example, after completing activities and lessons in class related to constructive forces, students will complete segment of travel poster that involves describing and locating 2 landforms in Georgia caused by constructive forces (see general timeline below).

- Consider providing a list of landforms in Georgia, with possibly some being more local to your area, that students can choose from. For example: Tallulah Falls, Appalachian Mountains, Pine Mountain, Stone Mountain, Amicalola Falls, Sawnee Mountain, Brasstown Ball, Yonah Mountain, Brevard Fault Zone, Lookout Mountain, Blue Ridge Mountains, Cumberland Plateau, Sand Mountain, Providence Canyon, Okefenokee Swamp, Georgia Barrier Islands, Georgia Rivers ( Chattahoochee, etc.)

- Involve your principal in acknowledging, possibly implementing, suggestions provided by students for actual field trip

- Post student work and/or have students present their posters to their peers and/or class. Vote on the best locations for each type of surface feature or on the best overall travel agency / field trip.

- Internet Resources for Georgia Maps:
  - Maps: [Georgia Outline Map](#), [Georgia County Map](#), [Georgia State and County Highway Maps](#), [Georgia Maps](#)
  - [Georgia landforms](#)
## LITERATURE

<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Publisher</th>
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Excellent resource that provides basic information students can use to build knowledge and understanding. Link provides affordable pricing for a class set of 6 from publisher.

## QUALITY WEBSITE RESOURCES

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<thead>
<tr>
<th>Website</th>
<th>Description</th>
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<tbody>
<tr>
<td>Volcano World</td>
<td>Simple website that allows students to visit volcanoes and other unique landforms around the world through virtual reality. Contains other valuable resources related to volcanoes as well.</td>
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<tr>
<td>Can we predict volcanic eruptions?</td>
<td>A simple, interactive, and organized site that allows students to explore the latest research.</td>
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<tr>
<td>USGS-Earthquakes for Kids</td>
<td>Directory page for kids from U.S. Geological Survey that includes opportunities for students to locate the most recent earthquakes in their area and “Ask a Geologist” among others.</td>
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<tr>
<td>NOVA – Earth</td>
<td>Directory webpage from NOVA that includes opportunities to for students to read and interact with some of the most dramatic landforms and forces that shape the earth.</td>
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<tr>
<td>Geography4kids</td>
<td>Excellent website that explores a wide variety of topics from standard S5E1. Simple, easy to read text, and supporting graphics make this a great site for students to read and conduct research.</td>
</tr>
<tr>
<td>National Geographic Forces of Nature</td>
<td>Quality, media enhanced online activities that illustrate the forces of volcanoes and earthquakes. Includes atmospheric hurricanes and tornadoes.</td>
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