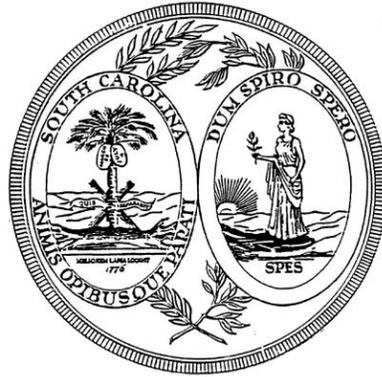


# South Carolina Academic Standards and Performance Indicators for Science 2014



**Instructional Unit Resource**

**1<sup>st</sup> Grade**

# ***South Carolina Academic Standards and Performance Indicators for Science 2014***

## ***First Grade Science Instructional Unit Resource***

As support for implementing the *South Carolina Academic Standards and Performance Indicators for Science 2014*, the standards for First Grade have been grouped into possible units. In the Overview of Units below, the titles for those possible units are listed in columns. Refer to the Overview document to note these unit titles and how Standards, Conceptual Understandings, Performance Indicators, Science and Engineering Practices, and Crosscutting Concepts align. Following the Overview of Units, an Instructional Unit document is provided that delivers guidance and possible resources in teaching our new *South Carolina Academic Standards and Performance Indicators for Science 2014*. The purpose of this document is to provide guidance as to how all the standards in this grade may be grouped into units and how those units might look. Since this document is merely guidance, districts should implement the standards in a manner that addresses the district curriculum and the needs of students. This document is a living document and instructional leaders from around the state will continuously update and expand these resource documents. These documents will be released throughout the 2016-2017 school year with the intentionality of staying ahead of instruction. Teachers should also note that links to the Standards document, A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas, the SEP Support Document, and the Support Document 2.0 are embedded throughout the Instructional Unit format for reference.

### **Acknowledgments**

Jean Baptiste Massieu, famous deaf educator, made a statement that is now considered a French proverb. “Gratitude is the memory of the heart. Indeed, appreciation comes when you feel grateful from the depths of your heart. The head keeps an account of all the benefits you received and gave. But the heart records the feelings of appreciation, humility, and generosity that one feels when someone showers you with kindness.” It is with sincere appreciation that we humbly acknowledge the dedication, hard work and generosity of time provided by teachers and instructional leaders across the state that have made and are continuing to make the Instructional Unit Resources possible.

### Grade 1 Overview of Units

Unit 1	Unit 2	Unit 3		Unit 4	
PHYSICAL SCIENCE: EXPLORING LIGHT AND SHADOWS	EARTH SCIENCE: EXPLORING SUN AND MOON	EARTH SCIENCE: EARTH’S NATURAL RESOURCES		LIFE SCIENCE: PLANTS AND THEIR ENVIRONMENTS	
Standard	Standard	Standard		Standard	
1.P.2	1.E.3	1.E.4		1.L.5	
Conceptual Understanding	Conceptual Understanding	Conceptual Understanding		Conceptual Understanding	
1.P.2A	1.E.3A	1.E.4A	1.E.4B	1.L.5A	1.L.5B
Performance Indicators	Performance Indicators	Performance Indicators		Performance Indicators	
1.P.2A.1 1.P.2A.2 1.P.2A.3 1.P.2A.4	1.E.3A.1 1.E.3A.2 1.E.3A.3 1.E.3A.4 1.E.3A.5	1.E.4A.1 1.E.4A.2 1.E.4A.3	1.E.4B.1 1.E.4B.2	1.L.5A.1 1.L.5A.2	1.L.5B.1 1.L.5B.2 1.L.5B.3
*Science and Engineering Practices	*Science and Engineering Practices	*Science and Engineering Practices		*Science and Engineering Practices	
1.S.1A.2 1.S.1A.3 1.S.1A.4 1.S.1A.8	1.S.1A.2 1.S.1A.3 1.S.1A.4 1.S.1A.8 1.S.1B.1	1.S.1A.2 1.S.1A.3 1.S.1A.4 1.S.1A.8		1.S.1A.2 1.S.1A.3 1.S.1A.4 1.S.1A.6 1.S.1A.8	
*Crosscutting Concepts	*Crosscutting Concepts	*Crosscutting Concepts		*Crosscutting Concepts	
1, 2, 7	1, 2, 7	2, 3, 5, 6		1, 2, 6, 7	

*\*Teachers have the discretion to enhance the selected SEP’s and CCCs.*

**Unit Title:**

Earth Science: Earth's Natural Resources

**Standard**[http://ed.sc.gov/scdoe/assets/file/agency/ccr/Standards-Learning/documents/South\\_Carolina\\_Academic\\_Standards\\_and\\_Performance\\_Indicators\\_for\\_Science\\_2014.pdf](http://ed.sc.gov/scdoe/assets/file/agency/ccr/Standards-Learning/documents/South_Carolina_Academic_Standards_and_Performance_Indicators_for_Science_2014.pdf)

1.E.4 The student will demonstrate an understanding of the properties and uses of Earth's natural resources.

**Conceptual Understanding:**

1.E.4A. Earth is made of different materials, including rocks, sand, soil, and water. An Earth material is a resource that comes from Earth. Earth materials can be classified by their observable properties.

**New Academic Vocabulary**

Some students may need extra support with the following academic vocabulary in order to understand what they are being asked to understand and do. Teaching these terms in an instructional context is recommended rather than teaching the words in isolation. A great time to deliver explicit instruction for the terms would be during the modeling process. Ultimately, the student should be able to use the academic vocabulary in conversation with peers and teachers. These terms are pulled from the essential knowledge portion of the Support Doc 2.0 (<http://ed.sc.gov/instruction/standards-learning/science/support-documents-and-resources/>) and further inquiry into the terms can be found there.

Earth materials	Freshwater	Lakes	Ocean	Observe	Ponds
Properties	Rivers	Rocks	Saltwater	Sand	Soil
Topsoil	Water				

**Performance Indicators**

Text highlighted below in *orange* and *italicized/underlined* shows connections to SEP's.

1.E.4A.1 *Analyze and interpret data* from observations and measurements to compare the properties of Earth materials (including rocks, soils, sand, and water).

1.E.4A.2 *Develop and use models* (such as drawings or maps) to describe patterns in the distribution of land and water on Earth and classify bodies of water (including oceans, rivers and streams, lakes, and ponds).

1.E.4A.3 *Conduct structured investigations* to answer questions about how the movement of water can change the shape of the land.

### \*Science and Engineering Practices

Support for the guidance, overviews of grade level progressions, and explicit details of each SEP can be found in the Science and Engineering Support Doc ([http://ed.sc.gov/scdoe/assets/File/instruction/standards/Science/Support%20Documents/Complete\\_2014SEPsGuide\\_SupportDoc2\\_0.pdf](http://ed.sc.gov/scdoe/assets/File/instruction/standards/Science/Support%20Documents/Complete_2014SEPsGuide_SupportDoc2_0.pdf)). It is important that teachers realize that the nine science and engineering practices are not intended to be used in isolation. Even if a performance indicator for a given standard only lists one of the practices as a performance expectation, scientists and engineers do not use these practices in isolation, but rather as part of an overall sequence of practice. When educators design the learning for their students, it is important that they see how a given performance expectation fits into the broader context of the other science and engineering practices. This will allow teachers to provide comprehensive, authentic learning experiences through which students will develop and demonstrate a deep understanding of scientific concepts.

**1.S.1A.2 Develop and use models** to (1) understand or represent phenomena, processes, and relationships, (2) test devices or solutions, or (3) communicate ideas to others.

**1.S.1A.3** With teacher guidance, **conduct structured investigations** to answer scientific questions, test predictions and develop explanations: (1) predict possible outcomes, (2) identify materials and follow procedures, (3) use appropriate tools or instruments to collect qualitative and quantitative data, and (4) record and represent data in an appropriate form. Use appropriate safety procedures.

**1.S.1A.4 Analyze and interpret data** from observations, measurements, or investigations to understand patterns and meanings.

### \*Cross Cutting Concepts (<http://www.nap.edu/read/13165/chapter/8>)

The link above provides support from the Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas (2012) The text in **blue** and *italicized/underlined* below provides a brief explanation of how the specific content ties to the CCC's.

2. **Cause and effect: Mechanism and explanation:** The National Research Council (2012) states that “events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts” (p. 84). [\*Describe patterns in the distribution of the land and water that is on Earth.\*](#)

3. **Scale, proportion, and quantity:** The National Research Council (2012) states that “in considering phenomena, it is critical to recognize what is relevant at different measures of size, time, and energy and to recognize how changes in scale, proportion, or quantity affect a system’s structure or performance” (p. 84). [\*Analyze and use the data from measurements and observations to interpret how Earth’s natural resources have changed and thus altered the shape of the land through due to time and erosion.\*](#)

5. **Energy and matter: Flows, cycles, and conservation:** The National Research Council (2012) states that “tracking fluxes of energy and matter into, out of, and within systems helps one understand the systems’ possibilities and limitations” (p. 84). [\*Water flows downhill and gathers in lakes, ponds, rivers, and oceans.\*](#)

6. **Structure and function:** The National Research Council (2012) states that “the way in which an object or living thing is shaped and its substructure determine many of its properties and functions” (p. 84). [The movement of water can change the shape of the land over time and can therefore change the earth and the plant and animal life in and around the area.](#)

*\*Teachers have the discretion to enhance the selected SEP’s and CCC’s.*

#### **Prior Knowledge**

- K.L.2A.2 – Plants need water to live and grow
- 1.L. 5B.1 – Plants need water, etc. to live and grow

#### **Subsequent Knowledge**

- H.E.3B - Natural resources

#### **Possible Instructional Strategies/Lessons**

Strategies and lessons that will enable students to master the standard and/or indicator.

- 1.E.4A.1
  - Science Unit on Rocks and Soil: Students will be able to identify, compare and contrast different forms of rocks and soil. Students will be able to name natural resources and the vital use of rocks and soil. Students will be able to develop models and construct simple investigations showing how rocks and water will support plant and animal life. This resource can be found at: <http://www.wheretomorrowbegins.org/climb/wp-content/uploads/2013/02/1E2-Earth-science-Unit.pdf>
  - The Great Water Hunt: Students learn to identify water sources. Students will build models of water on earth. This resource can be found at: <http://www.scholastic.com/teachers/lesson-plan/great-water-hunt>
  - Using a Globe to Find Land and Water: Students will predict if the earth is made mostly of land or water. This activity will allow students to predict and make a visual representation of their findings. This resource can be found at: [http://www.education.com/activity/article/more\\_land\\_or\\_more\\_water/](http://www.education.com/activity/article/more_land_or_more_water/)
  - Liquids Experiment: This is a hands on experiment in which the liquid takes on the shape of its container. This resource can be found at: <http://atozteacherstuff.com/pages/212.shtml>

- 1.E.4A.2
  - Exploring Earth’s Resources: Students will compare and contrast properties of Earth resources. Students will investigate how Earth resources are used in building materials and for growing plants. This resource can be found at: [http://rpsec.usca.edu/workshops/SISSI/LessonPlans/Earth\\_Resources.pdf](http://rpsec.usca.edu/workshops/SISSI/LessonPlans/Earth_Resources.pdf)
- 1.E.4A.3
  - Soaking Soils: Students will determine how soil size affects water flow. This resource can be found at: [http://www.soil-net.com/sm3objects/activities/Activity\\_SoilSoaking.pdf](http://www.soil-net.com/sm3objects/activities/Activity_SoilSoaking.pdf)
  - Water Shapes the Land: Students will understand that over time the earth changes shape due to the movement of water. This resource can be found at: <https://educators.brainpop.com/bp-jr-topic/slow-land-changes/>

## Resources

- 1.E.4A.1
  - Rocks and Soil: Rock Sort: Students will develop a method to sort rocks. This resource can be found at: [https://www.perotmuseum.org/media/files/Programs/Educator\\_Resources/Lesson\\_Resources/Rocks\\_and\\_Soil\\_-\\_Rock\\_Sort.pdf](https://www.perotmuseum.org/media/files/Programs/Educator_Resources/Lesson_Resources/Rocks_and_Soil_-_Rock_Sort.pdf)
  - Project Time: Sorting Rocks: This video illustrates how to sort rocks. Students will be able analyze different rocks according to attributes the rocks possess. This resource can be found at: <https://www.youtube.com/watch?v=y9HBN52HTHI>
  - Observing and Sorting Rocks: Students sort rocks from samples and classify by two properties. This resource can be found at: <https://www.google.com/url?q=https%3A%2F%2Fwww.youtube.com%2Fwatch%3Fv%3Dy9HBN52HTHI>
- 1.E.4A.2
  - Exploring Landforms and Bodies of Water for Kids: This video shows students the variety of landforms and bodies of water that can be found all around them. This resource can be found at: [https://www.youtube.com/watch?v=BsqKTJtK\\_vw](https://www.youtube.com/watch?v=BsqKTJtK_vw)
  - Water - Who Needs It? This video shows students the importance of water in their lives and how to protect and conserve it. This resource can be found at: <https://www.youtube.com/watch?v=l67HwLegDLE>

- Exploring Earth's Resources: The students will understand that different natural resources are used for building materials and growing plants. This resource can be found at: [http://rpsec.usca.edu/workshops/SISSI/LessonPlans/Earth\\_Resources.pdf](http://rpsec.usca.edu/workshops/SISSI/LessonPlans/Earth_Resources.pdf)
- 1.E.4A .1-3
  - Soil Website: This is an informative website that explores the properties of soil along with activities for students and teachers. This resource can be found at: <http://www.soil-net.com/>
  - Soil Activities: This website offers interactive resources for all ages about different types of soil. This resource can be found at: <http://www.soils4kids.org/>

### Sample Formative Assessment Tasks/Questions

Additional sample formative assessment tasks/questions for grade bands are located at the end of each of the SEP Support Doc

([http://ed.sc.gov/scdoe/assets/File/Instruction/standards/Science/Support%20Documents/Complete\\_2014SEPsGuide\\_SupportDoc2\\_0.pdf](http://ed.sc.gov/scdoe/assets/File/Instruction/standards/Science/Support%20Documents/Complete_2014SEPsGuide_SupportDoc2_0.pdf))

- 1.E.4A.1
  - Sorting Rocks: Students will be able to sort rocks according to the different attributes. These resources can be found at: [https://www.perotmuseum.org/media/files/Programs/Educator\\_Resources/Lesson\\_Resources/Rocks\\_and\\_Soil\\_-\\_Rock\\_Sort.pdf](https://www.perotmuseum.org/media/files/Programs/Educator_Resources/Lesson_Resources/Rocks_and_Soil_-_Rock_Sort.pdf)  
[http://www.eduplace.com/marketing/expsci/pdf/166015\\_rockssoilfossils/act\\_166015.pdf](http://www.eduplace.com/marketing/expsci/pdf/166015_rockssoilfossils/act_166015.pdf)
- 1.E.4A.2
  - Identifying Landforms and Bodies of Water: Students will develop and use models to explore and identify different landforms and bodies of water on maps. This resource can be found at: [https://pmm.pps.eosdis.nasa.gov/education/sites/default/files/lesson\\_plan\\_files/LandformsSCS.pdf](https://pmm.pps.eosdis.nasa.gov/education/sites/default/files/lesson_plan_files/LandformsSCS.pdf)
- 1.E.4A.3
  - Soil Soaking: Students will investigate the relationship between soil and water. This resource can be found at: [http://www.soil-net.com/sm3objects/activities/Activity\\_SoilSoaking.pdf](http://www.soil-net.com/sm3objects/activities/Activity_SoilSoaking.pdf)

**Unit Title:**

Earth Science: Earth’s Natural Resources

**Standard**

[http://ed.sc.gov/scdoe/assets/file/agency/ccr/Standards-Learning/documents/South\\_Carolina\\_Academic\\_Standards\\_and\\_Performance\\_Indicators\\_for\\_Science\\_2014.pdf](http://ed.sc.gov/scdoe/assets/file/agency/ccr/Standards-Learning/documents/South_Carolina_Academic_Standards_and_Performance_Indicators_for_Science_2014.pdf)

1.E.4 The student will demonstrate an understanding of the properties and uses of Earth’s natural resources.

**Conceptual Understanding:**

1.E.4B. Natural resources are things that people use that come from Earth (such as land, water, air, and trees). Natural resources can be conserved.

**New Academic Vocabulary**

Some students may need extra support with the following academic vocabulary in order to understand what they are being asked to understand and do. Teaching these terms in an instructional context is recommended rather than teaching the words in isolation. A great time to deliver explicit instruction for the terms would be during the modeling process. Ultimately, the student should be able to use the academic vocabulary in conversation with peers and teachers. These terms are pulled from the essential knowledge portion of the Support Doc 2.0 (<http://ed.sc.gov/instruction/standards-learning/science/support-documents-and-resources/>) and further inquiry into the terms can be found there.

Air	Compost	Conservation	Earth materials	Erosion	Land
Landfill	Natural resources	Recycle	Reduce	Reuse	Trees
Water					

**Performance Indicators**

Text highlighted below in *orange* and *italicized/underlined* shows connections to SEP’s.

1.E.4B.1 *Obtain and communicate information* to summarize how natural resources are used in different ways (such as soil and water to grow plants; rocks to make roads, walls, or buildings; or sand to make glass).

1.E.4B.2 *Obtain and communicate information* to explain ways natural resources can be conserved (such as reducing trash through reuse, recycling, or replanting trees).

### \*Science and Engineering Practices

Support for the guidance, overviews of grade level progressions, and explicit details of each SEP can be found in the Science and Engineering Support Doc ([http://ed.sc.gov/scdoe/assets/File/instruction/standards/Science/Support%20Documents/Complete\\_2014SEPsGuide\\_SupportDoc2\\_0.pdf](http://ed.sc.gov/scdoe/assets/File/instruction/standards/Science/Support%20Documents/Complete_2014SEPsGuide_SupportDoc2_0.pdf)). It is important that teachers realize that the nine science and engineering practices are not intended to be used in isolation. Even if a performance indicator for a given standard only lists one of the practices as a performance expectation, scientists and engineers do not use these practices in isolation, but rather as part of an overall sequence of practice. When educators design the learning for their students, it is important that they see how a given performance expectation fits into the broader context of the other science and engineering practices. This will allow teachers to provide comprehensive, authentic learning experiences through which students will develop and demonstrate a deep understanding of scientific concepts.

**1.S.1A.8 Obtain and evaluate** informational texts, observations, data collected, or discussions to (1) generate and answer questions about the natural world, (2) understand phenomena, (3) develop models, or (4) support explanations. **Communicate** observations and explanations clearly through oral and written language.

### \*Cross Cutting Concepts (<http://www.nap.edu/read/13165/chapter/8>)

The link above provides support from the Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas (2012) The text in blue and *italicized/underlined* below provides a brief explanation of how the specific content ties to the CCC's.

2. **Cause and effect: Mechanism and explanation:** The National Research Council (2012) states “events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts” (p. 84). [\*The Earth will not exist if its natural resources are not replenished.\*](#)

3. **Scale, proportion, and quantity:** The National Research Council (2012) states that “in considering phenomena, it is critical to recognize what is relevant at different measures of size, time, and energy and to recognize how changes in scale, proportion, or quantity affect a system’s structure or performance” (p. 84). [\*Analyze and use the data from measurements and observations to interpret how Earth’s natural resources have changed and thus altered the shape of the land through due to time and erosion.\*](#)

6. **Structure and function:** The National Research Council (2012) states that “the way in which an object or living thing is shaped and its substructure determine many of its properties and functions” (p. 84). [\*The movement of water can change the shape of the land over time and can therefore change the earth and the plant and animal life in and around the area.\*](#)

*\*Teachers have the discretion to enhance the selected SEP’s and CCC’s.*

1<sup>st</sup> grade Instructional Unit Resource SCDE | Office of Standards and Learning

### Prior Knowledge

- K.L.2A.2 – Plants need water to live and grow
- 1.L. 5B.1 – Plants need water, etc. to live and grow

### Subsequent Knowledge

- H.E.3B - Natural resources

### Possible Instructional Strategies/Lessons

Strategies and lessons that will enable students to master the standard and/or indicator.

- 1.E.4B.1
  - What Are Natural Resources?: Students will obtain and communicate information about natural resources and the products people make from them. This resource can be found at:  
<http://www.calrecycle.ca.gov/Education/Curriculum/CTL/K3Module/Unit1/Lesson1.pdf>
- 1.E.4B.2
  - Earth's Natural Resources: Students will develop and use models to understand that natural resources are limited. This resource can be found at: [http://www.doe.virginia.gov/testing/sol/standards\\_docs/science/2010/lesson\\_plans/grade1/earth\\_resources/sess\\_1-8a.pdf](http://www.doe.virginia.gov/testing/sol/standards_docs/science/2010/lesson_plans/grade1/earth_resources/sess_1-8a.pdf)
  - Reduce, Reuse, and Recycle: Students will understand the 3 R's and why it is important to Reduce, Reuse, and Recycle. Students will also understand what a landfill is, the purpose of the landfill, and the importance of keeping things that can be reduced, reuse, and recycled out of the landfill. This resource can be found at: <http://rpsec.usca.edu/workshops/SISSI/SISSIK-2AikenJune2015/lessons/GrK1RecyclingSISSI-lesson.pdf>
  - Natural Resources and Conservation: Students will develop and use models to explore ways to use the 3 R's to help the earth. This resource can be found at :  
[http://rpsec.usca.edu/Workshops/SISSI/LessonPlans/NaturalResourcesandConservation/Natural\\_Resources\\_and\\_Conservation.pdf](http://rpsec.usca.edu/Workshops/SISSI/LessonPlans/NaturalResourcesandConservation/Natural_Resources_and_Conservation.pdf)

## Resources

- 1.E.4B.1
  - Earth's Natural Resources and Human Impact: This PowerPoint offers facts on natural resources and the impact that humans have on Earth's environment and resources that are available. This resource can be found at: <http://tinyurl.com/hwfu6ov>
  - Solid Waste: Learn About Recyclables: This website offers facts about recycling materials. This resource can be found at: [https://www.greenvillecounty.org/solid\\_waste/recycling/education.asp](https://www.greenvillecounty.org/solid_waste/recycling/education.asp)
  - Natural Resources BINGO: This editable Bingo game activity uses natural resource vocabulary. This resource can be found at: <http://www.calacademy.org/educators/lesson-plans/natural-resources-bingo>
- 1.E.4B.2
  - Reduce, Reuse, and Recycle: The Incredible Edible Landfill Activity: The 3 R Scramble activity is for students to be able to distinguish which items can be dropped into the appropriate sorting group. This resource can be found at: <http://rpsec.usca.edu/workshops/SISSI/SISSIK-2AikenJune2015/lessons/GrK1RecyclingSISSI-lesson.pdf>

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Additional sample formative assessment tasks/questions for grade bands are located at the end of each of the SEP Support Doc

([http://ed.sc.gov/scdoe/assets/File/Instruction/standards/Science/Support%20Documents/Complete\\_2014SEPsGuide\\_SupportDoc2\\_0.pdf](http://ed.sc.gov/scdoe/assets/File/Instruction/standards/Science/Support%20Documents/Complete_2014SEPsGuide_SupportDoc2_0.pdf))

- 1.E.4B.1
  - Nature Walk: Students will take a walk around the school campus and sketch the natural resources that they already know. This resource can be found at: [https://pmm.nasa.gov/education/sites/default/files/lesson\\_plan\\_files/LandformsTG.pdf](https://pmm.nasa.gov/education/sites/default/files/lesson_plan_files/LandformsTG.pdf)
- 1.E.4B.2
  - Sorting Trash: Students will sort a variety of trash into landfill, recycling, and compost bins. This resource can be found at: <http://www.classroomfreebiestoo.com/2012/03/sorting-trash-earth-day-lesson.html>

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*Lesson 1: What are Natural Resources? [PDF]. (n.d.).* California Department of Resources Recycling and Recovery. Retrieved from Slow Land Changes Lesson Plans and Lesson Ideas | BrainPOP Educators. (n.d.). Retrieved October 14, 2016, from <https://educators.brainpop.com/bp-jr-topic/slow-land-changes/>  
<http://www.calrecycle.ca.gov/Education/Curriculum/CTL/K3Module/Unit1/Lesson1.pdf>

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*Models of Land and Water [PDF]. (n.d.).* NASA Global Precipitation Measurement Mission. Retrieved from [https://pmm.nasa.gov/education/sites/default/files/lesson\\_plan\\_files/LandformsTG.pdf](https://pmm.nasa.gov/education/sites/default/files/lesson_plan_files/LandformsTG.pdf)

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