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| **Na Grade 5** | **Lesson:**  **Landforms Part 1**  **Weathering, Erosion and Deposition** | | Reference to English Interconnections Lesson  Shaping the land pg. 11 | |
| **Science Standard(s): Standard II Objective 1** | | | | |
| **Content Objective(s):** | | **Language Objective(s):** | | |
| Students will identify examples of weathering, erosion and deposition and explain how they change the surface of the earth by completing an exit ticket independently.  ***I can label examples of weathering, erosion and deposition and explain how they change the surface of the earth by completing an exit ticket independently.***  **能够标记出风化、侵蚀和沉积并能在退出卡中说明这些因素对地球表面的影响。** | | Students will be able to orally state how weathering, erosion and deposition change the surface of the earth by looking at a picture of a landform and explaining how the landform was changed with a partner.  ***I can tell a partner* how weathering, erosion and deposition change the surface of the earth by looking at a picture and explaining how the landform was changed.**  **通过图片我能告诉伙伴，风化、侵蚀与沉积以及它们是如何改变地球表面的并且给他们解释各种地貌是如何形成的。** | | |
| **Essential Questions:**  *How is the Earth’s surface changing slowly and over time?*  地球表面是如何随着时间的变化而改变的？ | | **Required Academic Vocabulary for Word Wall:**  **Listen:** Weathering, Erosion, surface, ice and glaciers, plants and animals, abrasion, gravity, water, wind, deposition  **听：风化、侵蚀、地表、冰层、冰川、动植物、磨蚀、重力、水、风和沉积。**  **Speak:** Weathering, Erosion, Deposition, water, wind, glaciers, plants, gravity, animals  说：**风化、侵蚀、沉积、水、风、冰川、植物、重力和动物。**  **Read:** Weathering, Erosion, surface, ice and glaciers, plants and animals, abrasion, gravity, water, wind, deposition  读：**风化、侵蚀、地表、冰层、冰川、动植物、磨蚀、重力、水、风和沉积。**  **Write:** break down, rock, movement, weathered, collection, eroded  写：破碎、岩石、运动、被风化，采集和侵蚀  **Sentence Frames:**  How does/do \_\_\_\_ (wind, water, animals and people, acid, plants, gravity, glaciers) change Earth’s surface?  \_\_\_\_\_\_ (wind, water, animals and people, acid, plants, gravity, glaciers) changes the Earth’s surface by \_\_\_\_\_\_.  Is the picture an example of weathering, erosion, or deposition and why?  It is an example of \_\_\_\_\_\_\_ because \_\_\_\_\_\_\_\_.  \_\_\_\_\_\_(风、水、动物、人类、酸雨、植物、重力和冰川)是如何改变地表的？(风、水、动物、人类、酸雨、植物、重力和冰川)是通过\_\_\_\_\_\_来改变地表的？图片中是风化，侵蚀和沉积的哪一种？并说明你的原因。 | | |
| **Materials:**   * Vocabulary Cards * Paper holes from a paper punch or paper confetti * Clear plastic container * Big Picture Card of Grand Canyon * Small Pictures Cards- 1 set for each partnership cut out * Exit Ticket | | **Additional Lesson Vocabulary:**  **Rocks, Landform, movement, collection, earth’s surface, canyon, river, waterfall, arch**  **岩石、地貌、移动、聚集、地表、峡谷、河流、瀑布和拱门** | | |
| **Lesson:** | | | | **Instructional Time: 45 Minutes** |
| **Opening:** **(7 minutes)**  **T: “The surface of our Earth is constantly changing. There are many forces that cause these changes to occur. Today we will be learning about three of them: weathering, erosion, and deposition. I know you have talked about a couple of these processes before, but let’s review them to make sure that we are all on the same page.”** Post your Weathering vocabulary card on the board. **“What is weathering? Can anyone remember from last year?”** Wait five seconds and/or accept answers as they come.  老师：我们的地表是时常变化的，而这样的变化是由许许多多的外力造成的。今天我们就要学习其中的三种：风化、侵蚀和沉积。我知道大家之前就已经学习、讨论过这些了，但是我们今天再复习一下，这样大家都能够对它们有全面的了解和认识。“什么是风化？有没有谁还记得去年学过的内容呢？”  *S: (Weathering is the disintegration and decomposition of rocks and minerals by natural processes*.) *It is the breaking down of rocks.*  *学生：(风化是指石头以及其中矿物质解体和分解的自然过程。)就是岩石的破碎过程。*  **T: “Right! Weathering is the breaking down of rocks. Often, this breaking down of rocks creates soil. Let’s make a hand action to help us remember weathering.”** Together, with the class, create a hand action that demonstrates the breaking down of rocks. You could hold both hands as a fist and, as you say ‘breaking’, hit make them together and make them break. **“weathering is the breaking,”** hit your fists together, **“down of rocks. Say it with me and do the actions. Ready? Go.”**  **老师：“对了！风化就是岩石的破碎过程。通常，破碎后的岩石会变成土壤。让我们一起做手势来记住风化。”“风化就是岩石的破碎过程”“和我边说边做做手势好吗？准备好了吗？开始。”**  *S: Weathering is the breaking down of rocks.*  *学生：风化就是岩石的破碎过程。*  **T:** Do it as many times as you need to in order to make sure that everyone is with you. **“Great!”** Post your Erosion vocabulary card on the board. **“What is erosion? Can anyone remember?”** Wait five seconds and/or accept answers as they come.  老师：“什么是侵蚀？有谁还记得吗？”  *S: (Erosion loosens and carries away the rock debris caused by weathering.) Erosion is the movement of weathered materials*.  学生：(侵蚀就是被风化的岩屑变为松软并且消失的过程。)侵蚀是指被风化物质的移动。  **T: “Very nice. Weathering breaks down rocks and erosion moves it. Let’s come up with a hand action for erosion—the movement of weathered materials.”** Together, create another action. You could put your hands as fists, break them, and then wiggle your fingers away. **“Erosion is the movement,** do the action, **“of weathered materials. This time, say it with me and do the actions.”**  **老师：“说的很好！风化使岩石破碎而侵蚀使之移动。让我们来做手势演示侵蚀吧—被风化物质的移动。”“侵蚀是被风化物质的移动。这一次，边说边做手势好吗？”**  *S: Erosion is the movement, (d*o the action*) of weathered materials.*  *学生：侵蚀就是被风化物质的移动，（做动作）*  **T:** Do it as many times as you need to in order to make sure that everyone is with you. **“Great!”** Put up your Deposition vocabulary card. **“Now, deposition may be a new word, but I am sure that you have all seen it before. Deposition occurs when erosion moves Earth’s materials and deposits them somewhere else. In other words, when erosion moves the broken down pieces of rock and soil, it starts to collect, like this.”**.Show them the picture of water deposits on the definition card. **“That is deposition. Let’s make a hand motion to represent deposition.”** Together, with the class, create a hand action that demonstrates the collection of weathered materials. You could wiggle your fingers out and then put them into fists. **“Deposition is the collection of eroded materials.”** Do the actions as you say it. **“Now, do it with me. Ready? Go.”**  **老师：“现在要学的沉积可能是个新词汇，但是我相信大家从前一定听过这个词汇。沉积是指地表物质被侵蚀后移动并聚集到其他的地方”也就是说，当侵蚀移动岩屑时，它们就开始像这样聚集”“这就是沉积，让我们做手势来演示沉积”“沉积就是被侵蚀物质的聚集”“现在和我一起做手势，准备好了吗？开始。”**  *S: Deposition is the collection of materials that have been eroded.*  *学生：沉积是被侵蚀物质的聚集过程。*  **T: “Since we all know the definition of weathering, erosion, and deposition,”** do the action, **“Let’s take a look at our learning objective today.”** Point to the student objective ‘I can label examples of weathering, erosion and deposition and explain how they change the surface of the earth by completing an exit ticket independently.”**“In your partnership, I want one of you to be partner 1 and one of you to be partner 2. Take 5 seconds to decide.”**  **老师：“现在大家都明白了什么是风侵蚀和沉积的”“现在让我们来看看今天的学习任务”“ 我能标记出风化、侵蚀和沉积并能在退出卡中说明这些因素对地球表面的影响。”“ 现在我们做两人一组练习，给大家5秒钟时间决定谁做伙伴1谁做伙伴2.”**  Students turn to their neighbors and decide who is partner 1 and who is partner 2. Then regain their attention.  **T: “Partner 1, when I say “go” you will ask your partner, ‘What are we going to do today?’”** Write the question on the board.  **“Partner 2, you will read the objective on the board.”** Point to the objective. **“Then Partner 2, you will ask, ‘What is one thing we will learn today and how will we know we learned it?’”** Write the question on the board. **“Partner 1 will respond to the question by explaining one thing the class will learn today and how they will know they learned it. Let’s Practice.”**  **老师：“伙伴1，当我说“开始”时，你们问伙伴2：今天我们的学习任务是什么？”把问题写在黑板上。“伙伴2，你们要仔细阅读写在黑板上的学习任务，并且回答伙伴1的问题，然后你们问伙伴1“我们今天要学的其中一项内容是什么以及我们怎样知道已经掌握了所学内容？””把问题写在黑板上。“伙伴伙伴1必须回答伙伴2提出的问题，回答今天我们要学习的内容以及如何知道我们都掌握了。”**  *Use the Modeling Cycle:*  *Teacher Does:*   * Use a puppet, stuffed animal, or imaginary partner to use as your partner to model.   **T: “I am Partner 1 and my (puppet, stuffed animal, imaginary partner) is Partner 2. As Partner 1, I will ask, ‘What are we going to do today?’”** Point to the question on the board. **“My partner will say, ‘I can label examples of weathering, erosion and deposition and explain how they change the surface of the earth by completing an exit ticket independently. What is one thing we will learn today and how will we know we learned it?”** Point to the question on the board**. “As Partner 1 I will say something like, ‘We are going to look at examples of weathering, erosion and deposition and label them and explain how they change the earth. I will know I learned it by showing what I learned in an exit ticket by myself.’”**  ***老师：我是伙伴1，我的（小道具，小动物或想象的任何事物）是伙伴2. 那我就会问 , “*今天我们的学习任务是什么？” *它就会回答：”*能够标记出风化、侵蚀和沉积并能在课后测试中说明这些因素对地球表面的影响。我们今天要学的其中一项内容是什么以及我们怎样知道已经掌握了所学内容？”“我就会说：我们要看一些有关风化，侵蚀，和沉积的例子，并能标记出和解释它们如何改变地表的。通过退出卡来判断我掌握了哪些知识。”**  *Teacher Does with Student:*   * Select a student to come up and model with you.   **T: “I am Partner 1 and \_\_\_\_\_\_\_\_\_ is Partner 2. As Partner 1, I will ask, ‘What are we going to do today?’”** Point to the question on the board. **“My partner will read the objective.**  **老师：“我是伙伴1\_\_\_\_\_\_\_\_\_是伙伴2. 我会问“我们今天的学习任务是什么？”伙伴2讲就会读出今天的学习任务”**  *S: I can label examples of weathering, erosion and deposition and explain how they change the surface of the earth by completing an exit ticket independently***.**  **学生：我能标记出风化、侵蚀和沉积并能在退出卡中说明这些因素对地球表面的影响。**  **T: “Now my partner will ask this question.”** Point to the board.  老师：“现在伙伴2就会问这个问题”  *S: What is one thing we will learn today and how will we know we learned it?*  *学生：***我们今天要学的其中一项内容是什么以及我们怎样知道已经掌握了所学内容？**  **T: “We are going to explain the how weathering, erosion and deposition change the surface of the earth and label examples of them. I will know I learned it by showing what I learned in an exit ticket by myself.”**  **老师：“我们要解释风化、侵蚀和沉积是如何影响地表并能辨别它们。通过退出卡来判断我掌握了哪些知识。”**  *Two Students Do:*   * Select two students to come up and model with you.   **T: “Who would like to be Partner 1 and Partner 2? Take 5 seconds to decide.”**  **老师：“谁愿意做伙伴1和伙伴2？给大家5秒钟时间决定。”**  Students decide who is Partner 1 and who is Partner 2.   * Point to the first question on the board.   *S1:* **What are we going to do today?**  **学生1：今天的学习任务是什么？**   * Point to the objective.   *S2: I can label examples of weathering, erosion and deposition and explain how they change the surface of the earth by completing an exit ticket independently***.**  **学生：我能标记出风化、侵蚀和沉积并能在退出卡中说明这些因素对地球表面的影响。**   * Point to the other question on the board.   *S2: What is one thing we will learn today and how will we know we learned it?*  *学生2：***我们今天要学的其中一项内容是什么以及我们怎样知道已经掌握了所学内容？**  *S1: We are going to label examples of weathering, erosion and deposition and we are going to explain how weathering, erosion and deposition change the surface of the earth. I will know we learned it by completing an exit ticket all by myself.*  *学生1：***我们要学习标记出风化、侵蚀和沉积并能解释它们如何改变地表的。通过退出卡来判断我掌握了哪些知识。**  *All Students Practice:*   * Give the class 1-2 minutes.   **Introduction to New Material (Direct Instruction): (12 minutes)**  **T: “Over time, these three forces, Erosion, Weathering, and Deposition,”** point to each as you say them. **“work together to change the surface of the Earth. Let’s look at some of the ways these changes take place. Let’s start by talking about wind. Wind is an agent in weathering, erosion, and deposition. Have you ever been in a wind storm? What happens? What do you notice? Turn to your partner and tell them what it is like to be in a wind storm. You have 30 seconds. Ready? Go.”**  **老师：“长期以来，侵蚀、分化和沉积这三种外力一起改变了地球表面的地貌。我们来看一看他们是如何改变地表的。首先我们先讨论一下风力，因为风力是侵蚀、风化和沉积发生的原动力。大家有谁经历过风暴了吗？当时发生了什么？你看到了什么？告诉你的伙伴那是一种什么感觉。给大家30秒的时间，准备好了吗？开始。”**  *S:**trees and plants moving, leafs blowing away, dirt blowing around, etc.*  *学生：树木和植物都被吹得东倒西歪，叶子会被吹落，到处都是吹起的尘土。*   * Regain their attention and have a few students share their experiences with wind storms.   **T: “Let’s experiment to see how wind affects the Earth’s surface.”**  **老师“让我们来做个实验看看风力是如何影响地球表面的。”**   * Place paper holes from a paper punch or paper confetti in a clear plastic container to form a layer several holes deep. This does not need to be an even layer or completely cover the pan.   **T “These paper holes will represent a layer of soil. Now let’s add the wind.”**  **老师“这些纸孔就代表了土壤层，现在让我们加点风力”**   * Have one student come to the front of the room and gently blow into the pan from the side.   **T: “This is similar to a gentle breeze blowing. What happened? Turn to your partner and tell them what you noticed. Go!”**  **老师“这就像是柔软的微风吹来。会发生什么呢？告诉你的伙伴你观察到了什么？快！”**  *S: The holes moved slowly. Some of them landed in a pile on one side.*  *学生：纸孔慢慢地移动，有些成堆地移到了另外一边。*   * Regain their attention and have a few students share.   **T**: “What do you think would happen if the breeze became stronger? Turn to your partner and make a prediction of what would happen to the holes if there was a stronger wind. Ready? Go.”  老师：“如果微风变成强风时，你们认为会发生什么？告诉你的伙伴你的猜测。准备好了吗，开始。”  *S:**They would blow farther. More would land in a pile at the bottom.*  学生：他们会被吹得更远。更多的就会堆积到底部。   * Regain their attention and have a few students share. * Choose another student to be a stronger breeze and repeat the experiment   **T: “Did you all see what happened? The holes really flew that time. Look how many are moved, or eroded, and deposited in this spot here.”** Point to where the holes have collected. **“I want you to give me a thumbs up if your prediction was correct, thumbs down if your prediction was not correct, and in the middle if it was partially right.”** Do the thumb actions as you explain. **“Ready? Go.”** Give them a few seconds to show you. This is a good time to evaluate their understanding. **“This experiment represented exposed soil. When the wind blows on exposed soil, it picks up the dirt and moves it all around. Then, when the wind stops, it collects somewhere else. Not all soil is exposed to the wind; some of it is covered by plants or rocks. When the soil is covered, it is harder for the wind to pick it up and move it around. In our experiment, we saw the three processes that change the surface of the earth. At first, the wind broke up our pile. That’s weathering! Then it moved the separated pieces. That’s erosion! Finally, it left the pieces in a pile, here.”** Point to the pile.**“That is deposition!”**  **老师：“你们看到发生了什么了吗？纸孔确实被吹得飞了起来。看看有多少被吹走了？或是侵蚀、沉积到了这里。猜对的同学竖起你们的拇指，没猜对的拇指朝下，猜对一部分的拇指竖起一半。准备好了吗，开始。这个实验代表着裸露的土壤，当风吹向这些土壤的时候，尘土就会被吹起到四处。当风停止时，尘土就会沉积在别处。但并不是所有的土壤都是暴露而被风吹起的。有些被植被和岩石掩盖着，这些被掩盖的土壤，风很难将其吹到各处的。在我们的试验中，我们看到了改变地表的三种过程。首先，风吹散了我们的土堆，这就是风化；接着，风力把分开的部分吹走，这就是侵蚀；最后，吹走的部分在这里堆积，这就是沉积。”**  **T: “Wind isn’t not the only force that changes the earth’s surface. Water, glaciers, acid, plants, gravity, animals and even people can cause weathering, erosion and deposition to occur. Remember our definitions: Weathering breaks rocks down. Erosion is the movement of weathered materials. And deposition is the collection of eroded materials. First things get weathered and broken down, then they erode and move, then they deposit in a new place. This is how the earth’s surface is changed over time. We’re going to look at a couple of pictures of landforms and decide how they were changed by weathering, erosion and deposition.”**  **老师：“风力并不是能够改变地表的唯一力量。水，冰川，酸雨，植被，重力，动物甚至是人类都可以引起风化，侵蚀和沉积。大家要记住这些定义:风化就是使岩石破碎。侵蚀是被风化物质的移动。沉积是被侵蚀物质的聚集。”**   * Post the large picture of the Grand Canyon.   **T: “Who has ever visited The Grand Canyon? “**  **老师：“有谁去过大峡谷了？”**  Students raise their hands.  **T: “If you’ve ever visited The Grand Canyon or have seen pictures of it, then you have seen weathering, erosion and deposition in action! Let’s look for evidence of each of these things and explain how they made this beautiful landform! First, let’s look for weathering. Quickly, turn to your neighbor and explain to them what weathering is.”**  **老师“如果去过大峡谷或是看过大峡谷图片的同学就该知道风化、侵蚀和沉积是如何作用的了。我们现在就来找找看这三种外力的行迹并且解释它们是如何形成这美丽的地貌的。首先我们来找风化。大家快告诉你的同桌什么风化”**  *S: Weathering breaks rocks down.*  *学生：风化就是岩石破碎的过程。*  **T: “Great! Weathering breaks rocks down. Let’s see if there is evidence of weathering in the picture of the grand canyon. When I say go, turn to your partners and decide if there is evidence of weathering and explain how weathering might have broken rocks down to form this canyon. Go!”**  **老师：“很好！风化就是岩石破碎的过程。我们来看看大峡谷的图片中有没有风化的痕迹。当我说开始时，大家就转向你的伙伴，一起先看看能不能找到风化的痕迹，然后解释分化是如何使岩石破碎并形成峡谷的，开始。”**  Students discuss with their partners for 30 seconds to 1 minute.  **T: “Excellent discussions! Let’s see what you’ve all decided. When I say go, give me a thumbs up if you think there is evidence of weathering or a thumbs down if you don’t see evidence of weathering.”**  **老师：“大家讨论的很好！让我们看看到家都有什么结论。我说开始的时候，如果同学们发现了风化的痕迹就竖起拇指，如果没有发现的就将拇指朝下。”**  Students should show thumbs up.  **T: “Exactly, there is definitely evidence of weathering. Which partnership can explain to me how weathering might have broken rocks down to form this canyon?”**  **老师：“是的，确实有风化的痕迹。哪一组的同学能够向我解释分化是如何使岩石破碎并形成峡谷的？”**   * Choose a partnership to explain.   **T: “Perfect! This partnership discussed how (water- river, rain, wind, possibly even plants) caused the rocks to break down. Is there another force that might cause the weathering?”**  **老师：“非常好！现在我们小组讨论（水-河、雨、甚至植被）是如何让岩石破碎的。还有其它的外力能够造成风化吗？”**  Students should mention water, wind, or plants, whichever hadn’t been mentioned before.  **T: “Yes, there are a couple of ways this could have weathered. I’m sure the river and rain had to do with it. Wind probably helped too. Maybe even some of the plants helped the rocks break down. Now, let’s look for erosion. Quickly, turn to your neighbor and explain to them what erosion is.”**  **老师：“是的，还有其他的方式也能产生风化。河水和雨水就可以，风也是可以的。甚至有些植被也能造成风化。现在，我们来找找有没有侵蚀的痕迹。大家快和你们的伙伴讨论什么是侵蚀。”**  *S: Erosion is the movement of weathered materials.*  *学生：侵蚀是被风化物质的移动。*  **T: “Great! Erosion is the movement of weathered materials. Let’s see if there is evidence of erosion in the picture of the grand canyon. When I say go, turn to your partners and decide if there is evidence of erosion and explain how erosion might have moved weathered materials to form this canyon. Go!”**  **老师：“很好！侵蚀是被风化物质的移动。我们来看看大峡谷的图片上有没有侵蚀的痕迹。我说开始，大家就和你们的伙伴一起看看图片上有没有侵蚀的痕迹，并解释侵蚀是如何使被风化岩石移动并形成大峡谷的。开始。”**  Students discuss with their partners for 30 seconds to 1 minute.  **T: “Excellent discussions! Let’s see what you’ve all decided. When I say go, give me a thumbs up if you think there is evidence of erosion or a thumbs down if you don’t see evidence of erosion.”**  **老师：“大家讨论的很好！让我们看看到家都有什么结论。我说开始的时候，如果同学们发现了侵蚀的痕迹就竖起拇指，如果没有发现的就将拇指朝下。”**  Students should show thumbs up.  **T: “Exactly, there is definitely evidence of erosion. Which partnership can explain to me how erosion might have moved weathered materials to form this canyon?”**  **老师：“是的，确实有侵蚀的痕迹。哪一组的同学能够向我解释侵蚀是如何移动被风化的岩石并形成峡谷的？”**   * Choose a partnership to explain.   **T: “Perfect! This partnership discussed how (water- river, rain, wind) could have moved the weathered and broken down material. Is there another force that might cause the erosion?”**  **老师：“非常好！现在我们小组讨论（水-河、雨、风）是如何让被风化的物质移动的。还有其它的外力能够造成侵蚀吗？”**  Students should mention water or wind, whichever hadn’t been mentioned before.  **T: “Yes, there are a couple of ways this could have weathered. I’m sure the water in the river moved weathered materials. Wind probably helped too. Now, let’s look for deposition. Quickly, turn to your neighbor and explain to them what deposition is.”**  **老师：“是的，还有其他的方式也能造成侵蚀。河水可以移动被风化的物质，风也是可以的。现在，我们来找找有没有沉积的痕迹。大家快和你们的伙伴讨论什么是沉积。”**  *S: Deposition is the collection of eroded materials.*  *学生：沉积就是被侵蚀物质的聚集过程。*  **T: “Great! Deposition is the collection of eroded materials. Let’s see if there is evidence of deposition in the picture of the grand canyon. When I say go, turn to your partners and decide if there is evidence of deposition and explain how eroded materials collected through deposition to form this canyon. Go!”**  **老师：“很好！沉积就是被侵蚀物质的聚集过程。我们来看看大峡谷的图片中有没有沉积的痕迹。当我说开始时，大家就转向你的伙伴，一起先看看能不能找到沉积的痕迹，然后解释沉积是如何移动被侵蚀的物质并形成峡谷的，开始。”**  Students discuss with their partners for 30 seconds to 1 minute.  **T: “Excellent discussions! Let’s see what you’ve all decided. When I say go, give me a thumbs up if you think there is evidence of deposition or a thumbs down if you don’t see evidence of deposition.”**  **老师：“大家讨论的很好！让我们看看到家都有什么结论。我说开始的时候，如果同学们发现了沉积的痕迹就竖起拇指，如果没有发现的就将拇指朝下。”**  Students should show thumbs up.  **T: “Exactly, there is definitely evidence of deposition. Which partnership can explain to me how eroded materials collected through deposition to form this canyon?”**  **老师：“是的，确实有沉积的痕迹。哪一组的同学能够向我解释被侵蚀的物质如何聚集并形成峡谷的？”**   * Choose a partnership to explain.   **T: “Perfect! This partnership discussed how (water- river, rain, wind) could have helped the eroded, broken down material to collect in another place. Is there another force that might cause the erosion?”**  **老师：“非常好！现在我们小组讨论（水-河、雨、风）是如何让被侵蚀、破碎的物质聚集到其他地方的。还有其它的外力能够造成沉积吗？**  Students should mention water or wind, whichever hadn’t been mentioned before.  **T: “Yes, there are a couple of ways this could have weathered. I’m sure the water in the river helped the materials collect in a different place. Wind probably helped too. Let’s look at some other pictures with a partner and explain how weathering, erosion and deposition is changing the earth’s surface in these landforms.”**  **老师：“是的，还有其他的方式也能造成沉积。河水可以使被侵蚀的物质聚集到其他地方，风也是可以的。现在，我们一起来看看图片并解释风化、侵蚀和沉积是如何改变地球表面各种地貌的。”**  **Guided Practice: (14 minutes)**   * Post your sentence frames on the board and the attached picture of Delicate Arch with the words ‘Wind Weathering’ under your document camera.   由风造成的风化   * Pass out a picture example of weathering and erosion to each partnership. They should be labeled.   *Use the modeling cycle:*  **T: “This picture of Delicate Arch gives us a great example of how the wind can cause weathering, erosion, and deposition. We are going to use it to help us with a partner activity. We’re also going to use this picture card with the waterfall that gives us a good example of how water can cause weathering and erosion, and even other situations, even deposition.”**  **老师：“这张有名的拱门图片很好地解释了风是如何造成风化、侵蚀和沉积的。我们用这张图片来做小组活动。而这张有瀑布的图片却能很好解释水是如何造成风化、侵蚀甚至沉积的。”**  *Teacher Does:*  **T: “When I say ‘Go!’ Partner 1 will look at the picture and the label and ask, ‘How does wind** (point to the label on the picture so they know that you are using it to fill in the blank on the sentence frame) **change the surface of the earth?’ Partner 2 will answer in his/her own words, but may use the definitions of weathering, erosion, and deposition on the board to help him/her answer the question. Next Partner 2 will ask Partner 1, ‘Is that an example of weathering, erosion, or deposition and why?’ and Partner 1 will answer, ‘It is an example of \_\_\_\_\_\_\_\_\_\_.’ I am Partner 1 and this is my imaginary Partner 2 (you could also use a puppet, stuffed animal or other object to represent partner 2). When we are done, we need to have found an example of Weathering, Erosion, and Deposition.”** Point to the three words on the board as you say them.  老师：“我说开始时，伙伴1看着图片和标签问“风是如何改变地表的？”伙伴2可以参考黑板上风化、侵蚀和沉积的定义并用自己的话回答这个问题。接着，伙伴2问伙伴1“这是风化、侵蚀还是沉积？为什么？”然后伙伴1回答“这是\_\_\_\_\_\_\_\_\_\_”我是伙伴1，这是我的伙伴2（老师可用小道具，小动物或想象的任何事物）。当小组活动结束时，我们要找出风化、侵蚀和沉积的例子。  ”   * Refer to the sentence frames throughout the modeling cycle. * Hold up the picture of Delicate Arch with the words ‘Wind Weathering’. * 由风引起的风化   **T(1): “How does wind** (point to the label again) **change the surface of the earth?’’**  **老师：“（指着标签）风是如何改变地表的？”**  **T(2): “Wind changes the surface of the earth by blowing the dirt around and slowly rubbing on the rock. That broke it down and made the arch.”**  **老师：“风通过吹起地球表面的尘土并慢慢地磨损岩石来改变地表，使得岩石破碎并形成拱。”**  **T(1): “Is the picture an example of weathering, erosion, or deposition and why?”**  **老师：“这张图片是风化、侵蚀还是沉积，为什么？”**  **T(2): “It is an example of weathering because it broke the rock to make the arch. It is also an example of erosion because it MOVED it. It is also an example of deposition because it put it somewhere else.”**  **老师：“这是风化因为岩石破碎后形成了拱。这也是侵蚀因为被风化的物质移动了。同时也是沉积因为被侵蚀的物质聚集到了其他的地方。”**   * Hold up the picture card that with the waterfall that says ‘Water Weathering and Erosion’.   水引起的风化和侵蚀  **T(2): “Now I will choose a different card. How does water** (point to the label again) **change the surface of the earth??”**  **老师: “现在我要选一张不同的图片，来看看水是如何改变地表的。”**  **T(1): “Water changes the surface of the earth by breaking down the rock and moving the dirt and rocks that used to be under that waterfall somewhere else.”**  **老师: “水是通过风化并移动原本在瀑布之下的岩石和土壤从而改变地表的。”**  **T(2): “Is the picture an example of weather, erosion, or deposition and why?”**  **老师：“图片中是风化、侵蚀还是沉积，为什么？”**  **T(1): “It is an example of weathering because the water broke down the rocks. It is also an example of erosion because the water MOVED the rocks that broke down.”**  **老师：“是风化，因为水使岩石破碎。也是侵蚀，因为水使被风化的岩石移动了。”**  *Teacher Does with a Student:*   * Refer to the sentence frames throughout the modeling cycle and use the same picture. Call on a student to help model the process for you.   **T: “Class, as we do this, I want you to listen to see if we give an example of Weathering, Erosion, and Deposition. Put up a finger when you hear an example for each of those three words. Are you ready? Let’s Begin.”**  **老师：“同学们，接下来我要你们听，看看你们能不能听到风化、侵蚀和沉积，你们听到了其中的一个就竖起一个手指，准备好了吗，开始。”**   * As each example is given, hold up a finger so that the class sees that you are looking for an example of each. * Hold up the Delicate Arch picture again with the words ‘Wind Weathering’. * 由风引起的风化   **T: “How does wind change the surface of the earth?”**  **老师：“风是如何改变地表的?”**  *S: The wind changes the surface of the earth by blowing the dirt around and it makes piles of it somewhere else.*  *学生：风是通过吹起尘土并将它们堆积到别处来改变地表的。*  **T: “Is the picture an example of weather, erosion, or deposition and why?”**  **老师：“这张图片是风化、侵蚀还是沉积呢，为什么？”**  *S: It is an example of weathering because the wind broke down the rock to make the arch. It is also an example of erosion because it MOVED it.*  *It is also an example of deposition because it put it somewhere else.*  *学生： 这是风化，因为风使岩石破碎并且形成了拱。这也是侵蚀因为风移动了被侵蚀的物质，同样也是沉积，因为被侵蚀的物质堆积到了别的地方。*   * Hold up the picture card that with the waterfall that says ‘Water Weathering and Erosion’.   由水引起的风化和侵蚀  *S: How does water change the surface of the earth?*  *学生：水是如何改变地表的？*  **T: “Water changes the surface of the earth by breaking down the rock and moving the dirt and rocks that used to be under that waterfall somewhere else.”**  **老师: “水是通过风化并移动原本在瀑布之下的岩石和土壤从而改变地表的。”**  *S: Is the picture an example of weather, erosion, or deposition and why?*  **学生：“这张图片是风化、侵蚀还是沉积呢，为什么？”**  **T: “It is an example of weathering because the water broke down the rocks. It is also an example of erosion because the water MOVED the rocks that broke down.”**  **老师：“是风化，因为水使岩石破碎。也是侵蚀，因为水使被风化的岩石移动了。”**  *Two Students Do:*   * Call on another student to model it for the class with the student you worked with. Again, hold up your finger for each example they give. * Hold up the Delicate Arch picture again with the words ‘Wind Weathering’.   由风引起的风化  *S1: How does wind change the surface of the earth?*  **学生1：“风是如何改变地表的?”**  *S2: The wind changes the surface of the earth by blowing the dirt around and it makes piles of it somewhere else*  *学生2：风是通过吹起尘土并将它们堆积到别处来改变地表的。*  *S1: Is the picture an example of weather, erosion, or deposition and why?*  **学生1：“这张图片是风化、侵蚀还是沉积呢，为什么？”**  *S2: It is an example of weathering because the wind broke down the rock to make the arch. It is also an example of erosion because it MOVED it.*  *It is also an example of deposition because it put it somewhere else.*  *学生2： 这是风化，因为风使岩石破碎并且形成了拱。这也是侵蚀因为风移动了被侵蚀的物质，同样也是沉积，因为被侵蚀的物质堆积到了别的地方。*   * Hold up the picture card that with the waterfall that says ‘Water Weathering and Erosion’.   由水引起的风化和侵蚀  *S2: How does water change the surface of the earth?*  *学生2：水是如何改变地表的？*  *S1: The water changes the surface of the earth by breaking down the rock and moving the dirt and rocks that used to be under that waterfall somewhere else.*  **学生1: “水是通过风化并移动原本在瀑布之下的岩石和土壤从而改变地表的。”**  *S2: Is the picture an example of weather, erosion, or deposition and why?*  **学生2：“这张图片是风化、侵蚀还是沉积呢，为什么？”**  *S1: It is an example of weathering because the water broke down the rocks. It is also an example of erosion because the water MOVED the rocks that broke down.*  **学生1：“是风化，因为水使岩石破碎。也是侵蚀，因为水使被风化的岩石移动了。”**  **T: “That was really well done! Class, raise your hand if you heard an example of wind weathering.”** Wait and look around 3 seconds**. “Raise your hand if you heard an example of wind erosion.”** Wait and look around 3 seconds**. “Raise your hand if you heard an example of deposition.”** Wait and look around 3 seconds. **“Great! Now, it is time for you to try this with your partners. You have a picture with some type of Earth changing process. Do your best to look at the picture figure out how the process changes the surface of the earth. I will give you 5 minutes to do this because you might need to talk about what the picture is showing you. Ready? Go!”**  老师：“大家做的太棒了，同学们如果你听到了由风引起的风化，请举手。如果听到有风造成的侵蚀请举手，听到沉积的请举手。太棒了。现在我们来小组练习。你们有一张地表改变过程的图片。仔细观察图片，找到是哪一种改变地表的方式。给大家5分钟时间因为你们有可能要解释图片的内容。”  *All Students Practice:*   * Walk around the room observing and helping where needed. Ensure students are staying in the target language. * Get the students’ attention and have a few partnerships with different types of weathering/erosion share. Show their pictures on your document camera as they share so that the class can see multiple examples. You will need to spend a lot of time on this. Make sure that they can identify how the picture shows the different types of weathering and erosion.   **Independent Practice: (7 minutes)**   * Place the exit ticket under the document camera for the class to see.   **T: “To see if we met our objective, we’re going to complete this exit ticket. There are two parts. Part one says, ‘Explain how weathering, erosion and deposition change the earth’s surface.’ You will define and explain each of these using the definitions we practiced and in your own words. Part two says, ‘Look at the following situations. Write a W, if it is an example of Weathering, an E, if it is an example of Erosion, and a D, if it is an example of Deposition. You will work on this independently. Your papers will be passed out and when I say, ‘Go’ you will write your names and begin. Turn your paper over when you are finished.”**  **老师：“我们来做这个退出卡来看看大家是否完成了我们今天的学习任务。测试有两部分：第一部分是要求大家解释风化、侵蚀和沉积是如何改变地表的。大家要用自己的话来解释这三个过程，可以参考我们刚才练习时用到的定义。第二部分是让大家看一些场景，如果你认为是风化的就写下字母W，侵蚀就写E，沉积就写D。大家自己独立完成这个测试。我说开始的时候，测试纸会传给大家，先写上名字然后再答题。做完了就把测试纸交给我。”**   * Pass out the exit tickets to the students.   **T: “Go!”**  **老师：开始**   * Give students 5 minutes to write their five sentences. Walk around the class and ensure students are understanding the directions and what they are to do. After five minutes, collect students’ papers.   **Closing: (5 minutes)**  **T: “On the board you will see our learning objective for today. Let’s see if we met our objective.”**  老师：“大家可以在黑板上看到我们今天学习的任务。让我们看看大家是否都完成了。”   * Point and refer to the objective on the board: I can label examples of weathering, erosion and deposition and explain how they change the surface of the earth by completing an exit ticket independently***.*** * **我能标记出风化、侵蚀和沉积并能在退出卡中说明这些因素对地球表面的影响。**   **T: “When I say ‘go’ you will turn to your partner and you will both read the objective on the board together. Go.”** Give the class 20 seconds.  老师：“我说开始时，大家就和你们的伙伴一起读出黑板上的学习任务。”  Students read the objective.  **T: “When I say ‘go’ Partner 1 will turn to Partner 2 and explain what we learned today in your own words.”**  **老师：“我说开始，伙伴1用自己的话对伙伴2解释我们今天学到了什么。”**  *S1: We labeled examples of weathering, erosion and deposition and explained how they change the surface of the earth by looking at different landforms.*  *学生：我们辨别了风化、侵蚀和沉积并且通过观察不同的地貌来解释它们是如何改变地表的。*   * Get the students’ attention.   **T: “When I say ‘go’ Partner 2 will turn to Partner 1 and explain how we know we met our goals.”**  **老师：“我说开始，伙伴2对伙伴1解释我们如何知道已经掌握了所学知识。”**  *S2: We wrote on an exit ticket and explained how weathering, erosion, and deposition change the surface of the earth and labeled examples of each on our own.*  *学生：我们写在退出卡上并解释风化、侵蚀和沉积是如何改变地表的，并用自己的话标记出它们。*   * Call on a high, medium and low student in that order to share what they learned.   **T:**  When applicable, ask students the question, **“How do you know that you learned that?”**  **老师：你们如何知道自己掌握了所学内容？**  **T: “Okay, just as a final assessment, let’s see how good we feel about what we learned today. If you feel like you can meet the objective independently, you will stand up. So if you can explain the forces that change the Earth’s surface, stand up. If you could do it with a little help, you’ll stay seated. If you cannot do it at all even with some help, or if you feel like you need a lot of help kneel on the floor. When I say, ‘Go’ you will either stand, sit, or kneel. Go!”**  **老师：“好的，今天我们要做的最后一点就是看看我们对自己所掌握知识的评价。如果你觉得你已经很好的完成了今天的学习任务请站起来。如果你能够解释改变地表的各种外力，请站起来。如果你需要一点帮助才能回答这个问题的请继续坐着。如果你需要一些帮助或是很大帮助的才能回答这个问题的请跪在地板上，当我说开始时，大家开始做。”**  Students should stand, sit or kneel to show their level of mastery.   * Commend students on their hard work and their honesty in showing you how confident they feel with the content. Take note of the students who need a little or a lot of help.   **T: “Great! Now you can a sit in your regular seats. In our next lesson we are going to look a little closer at how these processes have shaped the earth around us.”**  **老师：“很好！现在请坐到自己的位置上。下节课，我们将学习这些外力是如何改变我们周围地表的。”** | | | | |
| **Assessment:** | | | | |
| Observe students in the guided practice and watch for language production and errors in reasoning  Correct the Exit Tickets | | | | |
| **Extra Ideas:** | | | | |
| Demonstrate these other examples and experiments.  *Plants*   * Mix Plaster of Paris and pour into a disposable 16 oz. cup. * "Plant" several bean seeds in the wet mix so that some are covered and are just below the surface and the others are resting on the surface (about half submerged). * Assign a student to keep a wet folded paper towel on top of the cup. It must be moistened every day. (Note: Soaking the seeds for 24 hours ahead of time will accelerate their growth.)   *Animals and Humans*   * Animals, including humans, can also be agents of weathering, erosion, and deposition. * How do you think animals might cause changes in the Earth’s surface? (Brainstorm and discuss student ideas.) * Take students outside to see if they can identify way animals and humans have changed the landscape of your school grounds and surrounding areas   Ice   * Fill a plastic Easter egg with water.   Glaciers are also powerful agents of erosion. The evidence of erosion left by glaciers can be seen in the Uinta and Wasatch Mountains. Glaciers erode valleys into a gentle "U" shape, as opposed to landscapes eroded by water, which create a "V" shaped valley.   * Create a control by filling an ice cube tray with regular water and freezing it. * Create a glacier by filling an ice cube tray half full with sand, covering the sand with water, and freezing it. * Give each student a piece of newspaper and small piece of chalk. * Remove the regular ice cubes and give one to each student. * Have the students rub the ice cube over the newspaper and chalk. * Do the same with the glacier cube and compare   Abrasion is a very common agent of weathering.   * Give each student a fingernail file and six-sided pencil. * Rube the file back and forth again the ridge of the pencil. * Observe and record the results. The ridges of the pencil will be worn down. The file has a rough, grainy surface. Tiny pieces are cut from the pencil as the file moves back and forth across it.   *Chemical Weathering*   * Weathering can also be chemical. * Use a pipette to drip vinegar on a piece of chalk. * The chalk is dissolved by the vinegar. Vinegar is an acid that reacts chemically with the chalk dissolving it. Chemicals in our world (like acid rain) can dissolve rocks as well. | | | | |

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 姓名

Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 考试日期

Exit Ticket **退出卡**

**Part 1**

**Explain how weathering, erosion and deposition change the earth’s surface.**

**第一部分：请解释风化、侵蚀和沉积是如何改变地表的。**

1. Weathering: 1. 风化：\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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2. Erosion: 2.侵蚀\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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3. Deposition: 3.沉积\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Part 2**

**Look at the following situations. Write a W if it is an example of Weathering, an E if it is an example of Erosion, and a D if it is an example of Deposition.**

**第二部分：看下面的场景：如果你认为是风化的就写下字母W，侵蚀就写E，沉积就写D。**

1. A river carries the pieces of broken rock down stream
2. Rain splashes dirt from a garden onto the sidewalk
3. A glacier deposits soil from the top of a mountain to the bottom
4. A hiker walks off the trail and makes a new one Kids on the baseball field make a pathway around the bases
5. A glacier breaks through the mountain and creates a canyon
6. Wind carries sand in the desert and thins down the mountain around it.
7. A river moves rocks that break apart as they hit together
8. A glacier pulls dirt and twigs along as it moves down the mountain
9. An arch formation falls
10. A river deposits a mound of sand near the bottom a hill
11. Plant roots grow through rocks and break them down into soil
12. When you get home from the beach, you shower, and leave a pile of sand in the tub.
13. After hiking on a muddy trail, you end up taking the soil home with you, and you leave your muddy boots on the back porch.

1.河流把破碎的岩石带到小溪里。

2.雨水把院子里的土冲到路边。

3.冰川使山顶的土壤堆积到山脚。

4.远足者者行走于远足路上，开辟出一条新路。在棒球场上的孩子们在垒的附近踩出了一条小路。

5．冰川冲破山脉形成峡谷。

6.风吹起沙漠里的沙土缩小了附近的山脉的范围。

7.岩石相互撞击而产生的岩屑被河水冲走了。

8.冰川把山顶上的土壤和树枝冲到山下。

9.拱门垮倒。

10.河流在山脚下冲积了大量的沙土。

11.生长在岩石中植物的根弄碎了岩石并形成了土壤。

12.从海滩回家的你洗澡时发现浴盆里有一小堆沙子。

13.你远足回家发现带了很多路上的土回家，于是就把弄脏了的鞋子放在房后的走廊上。

姓名 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 班级 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 日期 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**退出卡**

Bùfèn jiěshì fēnghuà qīnshí chénjī rúhé gǎibiàn dìbiǎo

**第一部分：请解释风化、侵蚀和沉积是如何改变地表的。**

**fēnghuà**

1. 风化：

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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qīnshí

2.侵蚀:

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chénjī

3.沉积:

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Bùfèn chǎngjǐng rúguǒ rènwéi xiě mǔ qīnshí chénjī

**第二部分：看下面的场景，如果你认为是风化的就写下字母W，侵蚀就写E，沉积就写D。**

héliú pòsuì yánshí dài xī

1.河流把破碎的岩石带到小溪里。

Yuàn chōng

2.雨水把院子里的土冲到路边。

shǐ dǐng rǎng duījī

3.冰河使山顶的土壤堆积到山脚。

Pá tiáo xīnlù bang lěibāo fùjìn cǎi tiáo

4.爬山的人在山上走出一条新路。孩子们在棒球场的垒包(base)附近踩出了一条小路。

Bīnghé liúdòng chōngpò mài xíngchéng xiágǔ

5. 冰河流动的时候，冲破山脉形成峡谷。

chuīqǐshāmò shā shǐ mài biàn dī

6.风吹起沙漠里的沙，使山脉变低了。

Liúdòng shǐ xiānghù zhuàngjī ér pòsuì bìngqiě bèi chōng

7.河水流动，使河里的石头因为相互撞击而破碎，并且被河水冲走了。

bīnghé dǐng tǔrǎng zhī

8.冰河把山顶上的土壤和树枝冲到山下。

Shí gǒngmén kuǎ

9.石拱门垮了。

héliú liú chōngjī liàng shātǔ

10.河流流到山脚下，在那儿冲积了大量的沙土。

Yán zhíwù gēn shǐ yánshí pòsuì xíngchéng tǔrǎng

11.生长在岩石中的植物的根使岩石破碎，形成了土壤。

Dāng cóng hǎitān hòu xǐzǎo fāxiàn yùpén duī shā

12.当你从海滩回家后，在洗澡时发现浴盆里有一小堆沙子。

Dāng pá fāxiàn ní yú zāngxié láng

13.当你爬山回家后，发现脚上带了很多泥土回家，于是就把脏鞋放在后院的走廊上。

**Answer Key and Possible Examples for Lesson**

Erosion Examples

* A river carries the pieces of broken rock down stream
* A hiker walks off the trail and makes a new one
* Rain splashes dirt from a garden onto the sidewalk
* A glacier pulls dirt and twigs along as it moves down the mountain
* Kids on the baseball field make a pathway around the bases

侵蚀的例子：

河流把破碎的岩石带到小溪里。

远足者者行走于远足路上，开辟出一条新路。

在棒球场上的孩子们在垒的附近踩出了一条小路。

雨水把院子里的土冲到路边。

冰川把山顶上的土壤和树枝冲到山下。

Weathering Examples

* A glacier breaks through the mountain and creates a canyon
* Wind carries sand in the desert and thins down the mountain around it.
* A river moves rocks that break apart as they hit together
* Plant roots grow through rocks and break them down into soil
* An arch formation falls

风化的例子：

冰川冲破山脉形成峡谷。

风吹起沙漠里的沙土缩小了附近的山脉的范围。

岩石相互撞击而产生的岩屑被河水冲走了。

生长在岩石中植物的根弄碎了岩石并形成了土壤。

拱门垮倒。

Deposition Examples

* A river deposits a mound of sand near the bottom a hill
* When you get home from the beach, you shower, and leave a pile of sand in the tub.
* After hiking on a muddy trail, you end up taking the soil home with you, and you leave your muddy boots on the back porch.
* A glacier deposits soil from the top of a mountain to the bottom

沉积的例子：

河流在山脚下冲积了大量的沙土。

从海滩回家的你洗澡时发现浴盆里有一小堆沙子。

你远足回家发现带了很多路上的土回家，于是就把弄脏了的鞋子放在房后的走廊上。

冰川使山顶的土壤堆积到山脚。



**The Grand Canyon- 大峡谷**

**Water, Wind, Plant Weathering, 水、风和植被引起的风化**

**Water, Wind Erosion 水和风引起的侵蚀**

**Water, Wind Deposition 水和风引起的沉积**



Animals and People Weathering and Erosion 动物和人类引起的风化和侵蚀



Water and Acid Weathering

水和酸雨引起的风化



Water Weathering

水引起的风化

[](http://www.google.com/imgres?imgurl=http://www.onegeology.org/extra/kids/images/organicWeathering.jpg&imgrefurl=http://www.onegeology.org/extra/kids/earthprocesses/weathering.html&h=449&w=400&sz=24&tbnid=sR3RT-iUY_bqMM:&tbnh=92&tbnw=82&zoom=1&usg=__O5o571yt4vHzL4u92yn6rJVQlow=&docid=vgOItSmdfYRjrM&hl=en&sa=X&ei=vz8WUNHlDcWIqwGGqIGAAg&sqi=2&ved=0CEIQ9QEwAA&dur=1705)

Plant Weathering 植被引起的风化

[](http://www.google.com/imgres?imgurl=http://www.teamcarterlces.com/images/erosion2.jpg&imgrefurl=http://intellectualengagement.blogspot.com/&h=267&w=400&sz=43&tbnid=M-1YN6uXYduglM:&tbnh=88&tbnw=132&zoom=1&usg=__qtUd6ErEoAYvw6AvXaY0ns-IcP8=&docid=atGNHKcAIIthRM&hl=en&sa=X&ei=xkEWUN_GOMHVqgGs-YC4Cw&sqi=2&ved=0CGsQ9QEwDA)

Water Weathering, Erosion and Deposition 水引起的风化、侵蚀和沉积



Glaciers Weathering and Erosion 冰川引起的风化和侵蚀

[](http://www.google.com/imgres?imgurl=http://www.motorhomemagazine.com/assets/0/151/152/3ea6fd45-779a-4d87-9735-ea3825274395.jpg&imgrefurl=http://www.motorhomemagazine.com/motorhome-travel/destinations/fallen-arch-in-utah-wall-arch/&h=375&w=500&sz=257&tbnid=4k0xLTsA8u0bjM:&tbnh=100&tbnw=133&zoom=1&usg=__1IYwTLCAWA7_9JIB66IGS4rGsAU=&docid=iyfXfaCAyPk1IM&hl=en&sa=X&ei=AEMWUNPQEcm7rQH7poAo&sqi=2&ved=0CGwQ9QEwDQ&dur=1033)

Gravity Weathering—collapsed in 2008

重力引起的风化—垮于2008年

[](http://www.google.com/imgres?imgurl=http://www.bbc.co.uk/scotland/education/geog/coastline/enhanced/content/images/physical/process/weathering/slumping/slumping3_tn3.jpg&imgrefurl=http://www.bbc.co.uk/scotland/education/geog/coastline/standard/physical/process/weathering/?topic=slumping&select=image&number=3&h=245&w=327&sz=38&tbnid=7y9Om9zdCPp0kM:&tbnh=91&tbnw=122&zoom=1&usg=__iD_MKi2OZ029oQgW-XslBYKQ9FQ=&docid=HPbtEhmKzEIlLM&hl=en&sa=X&ei=E0IWUID_BcakrAGl34DIDQ&sqi=2&ved=0CGcQ9QEwCQ&dur=1166)

Gravity Weathering and Erosion

重力引起的分化和侵蚀

[](http://www.google.com/imgres?imgurl=http://s0.geograph.org.uk/photos/15/14/151475_9e303cd8.jpg&imgrefurl=http://www.geograph.org.uk/photo/151475&h=480&w=640&sz=67&tbnid=sMvIjhFndt4e_M:&tbnh=96&tbnw=128&zoom=1&usg=__h8SoHiChnpQdRzdzJrAuiAbonvU=&docid=BhUQ1m-uibrx1M&hl=en&sa=X&ei=3kMWUI2jLsqsqQHL1oGABg&sqi=2&ved=0CE4Q9QEwBQ&dur=2138)

Water Weathering, Erosion and Deposition

水引起的风化、侵蚀和沉积



Wind Weathering and Erosion

风引起的风化和侵蚀



Water Weathering and Erosion

水引起的风化和侵蚀



Wind Weathering, Erosion and Deposition

风引起的风化、侵蚀和沉积

**Vocabulary Cards**

**词汇图片**

|  |
| --- |
| Cave Chamber  **Weathering** is the  breaking down of  rocks.  **风化***是岩石的破碎过程* |
| Photo: Waterfall and turquoise water on Baffin Island  **Erosion** is the  movement of  weathered materials.  侵蚀是指被风化物质的移动。 |
| **Deposition** is the  collection of  eroded materials.  *沉积是被侵蚀物质的聚集过程。* |