3rd Grade Mystery Science Weather and Climate Patterns

Lesson Alignment and Support

Salt Lake City School District 2020

Mystery Science Lesson Rationale:

Mystery Science Lessons seek to promote engagement and inspire excellence in students' mastery of science and engineering. The lessons support our vision and mission of equity and access in elementary science. The sequence of Mystery Science Full Lessons and Mini-Lesson below support third grade students' sense-making with respect to Weather and Climate Patterns using three-dimensional instruction. The sequenced Mystery Science Lessons support third grade teachers in implementing the new Utah SEEd Standards about weather and climate identified specifically in the Prioritized SEEd Pacing Guide. Lessons include a video focused on a weather and climate-based phenomenon, a hands-on activity, and an assessment. The lessons are designed to take students approximately 60 minutes to complete. Most lessons use minimal materials, such as paper printouts and pencils. Additionally, most paper printouts can be downloaded individually from the Mystery Science Lessons websites in the form of an editable document that can be assigned through Canvas. Some lessons suggest markers, group work, or demonstrations. Teachers can make easy modifications to these lessons based on students' and teachers' resources.

Note: Use a Science Notebook or print the Mystery Science PDF Booklet for students to complete the lesson series below! You can also print individual lesson materials by following the links in the ***Materials per Student and Assessments***.

Strand 3.1: Weather and Climate Patterns (Big Ideas) Weather is a minute-by-minute, day-by-day variation of the atmosphere's condition on a local scale. Scientists record patterns of weather across different times and areas so that they can make weather forecasts. Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over a long period of time. A variety of weather related hazards result from natural processes. While humans cannot eliminate natural hazards, they can take steps to reduce their impact.

Standard 3.1.1: Analyze and interpret data to reveal patterns that indicate typical weather conditions expected during a particular season. Emphasize students gathering data in a variety of ways and representing data in tables and graphs. Examples of data could include temperature, precipitation, or wind speed. (ESS2.D)

Mystery Science Weather and Climate Lesson	Suggested Date and SEEd Alignment	Materials and Assessments	Remote Learning Modifications
Lesson 1: Where do clouds come from? In this Mystery, students examine clues about how clouds look and feel to discover what they're made of and how they form. In the activity, Gas Trap, students add hot water to clear cups to observe	**October 19** **Disciplinary Core Ideas:** ESS2.D (Weather and Climate) **Science and Engineering Practice:** Analyzing and Interpreting Data **Crosscutting Concept:** Patterns	Materials per Student: • Pencil • Clear Plastic Cup with Lid • Scissors • PDF Booklet Page 3 (Gas Trap Experiment Printout) • Assessments: PDF Booklet Page 4-5 (Where do	• Send each student home with the *Gas Trap Experiment* printout. Students will need to cut out part of the printout, so a digital version will not work. • Adult supervision is

evaporation firsthand. They observe the condensation of the water vapor on the sides of the cup. They use this model to understand how clouds are formed.		clouds come from? Assessment) Teacher Answer Keys: • Where do clouds come from? Answer Key	advised when students are working with the warm water.
Lesson 2: What makes hurricanes so dangerous? Mini-Lesson Mystery Doug explores the question, "What makes hurricanes so dangerous?" **AND** Which is worse: a hurricane or a tornadoes? Mini-Lesson Mystery Doug explores the question, "Which is worse a hurricane or tornado?"	**October 26** **Disciplinary Core Ideas:** ESS2.D (Weather and Climate) **Science and Engineering Practice:** Analyzing and Interpreting Data **Crosscutting Concept:** Patterns	Materials per Student: • What makes hurricanes so dangerous? Discussion (can be copied and pasted into an assignment): 1. Describe what makes hurricanes so dangerous. 2. What did this lesson make you curious about? What other questions do you have about hurricanes? Bonus Activity: If you lived in an area with hurricanes, what could you do to protect your home? How could you make sure the windows don't break? How could you prevent the roof from flying off? How could you make sure it doesn't flood? Make a drawing of your home and all the things you could	• None.

		add to protect it from a hurricane. 1. Which is worse: a hurricane or a tornado? Discussion (can be copied and pasted into an assignment): 1. What's worse: a hurricane or a tornado? 2. What did this lesson make you curious about? What other questions do you have? Bonus Activity: Hurricanes and tornadoes are both dangerous. But what about earthquakes? Do you think an earthquake is worse than a hurricane or tornado? Why or why not? Just like hurricanes and tornadoes, it might depend on how you look at it. Why are earthquakes more dangerous? Why are earthquakes less dangerous? Draw or write your ideas.	
Lesson 3: <u>How can we predict when it's going to storm?</u> In this Mystery, students learn how	**November 2** **Disciplinary Core Ideas:** ESS2.D (Weather and Climate)	Materials per Student: • Pencil • PDF Booklet Page 6 (<u>Storm Spotter's Guide Printout</u>)	• None.

to make predictions about the weather by observing clouds and their changes. In the activity, Storm Spotter's Guide, students create a small book to record their notes, identify different types of clouds, and think about wind direction to figure out if a storm is heading their way.	**Science and Engineering Practice:** Analyzing and Interpreting Data **Crosscutting Concept:** Patterns	• PDF Booklet Page 7-9 (Will It Storm? Printout) • Assessments: PDF Booklet Page 10-11 (How can we predict when it is going to storm? Assessment) Teacher Answer Keys: • Will It Storm? Answer Key • How can we predict when it is going to storm? Answer Key	
Lesson 4: Why are tornadoes so hard to predict? Mini-Lesson Mystery Doug explores the question, "Why are tornadoes so hard to predict?"	**November 9** **Disciplinary Core Ideas:** ESS2.D (Weather and Climate) **Science and Engineering Practice:** Analyzing and Interpreting Data **Crosscutting Concept:** Patterns	Materials per Student: • What makes hurricanes so dangerous? Discussion (can be copied and pasted into an assignment): 1. Why are tornadoes so hard to predict? 2. What did this lesson make you curious about? What other questions do you have about tornadoes? • Bonus Activity: Most people try to get away from tornadoes. But the scientists known as storm chasers rush into storms to study them. Their cars keep them safe while	• None.

		they are there. If you were a storm chaser, what would you add to your car to make it safe in a tornado? How would you keep it from blowing away? How would you stop things from breaking the windows? Draw and label your special car.	
Standard 3.1.2: Obtain and communicate information to describe climate patterns in different regions of the world. Emphasize how climate patterns can be used to predict typical weather conditions. Examples of climate patterns could be average seasonal temperature and average seasonal precipitation. (ESS2.D)			
Lesson 5: Why are some places always so hot? In this Mystery, students are introduced to the concept of "climate" and explore the world's five major climates. In the activity, Climate Decoder, students color one part of a world map to figure out the different climates of that region. Students then combine maps and search for global climate patterns.	**November 16** **Disciplinary Core Ideas:** ESS2.D (Weather and Climate) **Science and Engineering Practice:** Obtaining, evaluating, and communicating information **Crosscutting Concept:** Patterns	Materials per Student: • Pencil • Ruler • Red, Yellow, Blue, Purple, Orange, Brown Colored Pencils or Crayons • PDF Booklet Page 12-13 (Americas Map and Climates Printout) • PDF Booklet Page 14-15 (Europe & Africa Map and Climates Printout) • PDF Booklet Page 16-17 (Asia & Australia Map and Climates Printout) • Assessments: PDF Booklet Page 18 (Why are some places	• Send each student home with one of the maps (a digital version will not work). • Then share a complete map over video conference with your students so they can make observations.

		always so hot? Assessment) Teacher Answer Keys: • Map and Climate Answer Key • Why are some places always so hot? Answer Key	
Lesson 6: How can you keep a house from blowing away in a windstorm? In this Mystery, students explore the effects of natural hazards, such as tornadoes, hurricanes, and dust storms. In the activity, Design a Windproof House, students build paper house models. Then, using limited materials, students design multiple solutions that will make their houses sturdy enough to survive a windstorm, and compare the merits of their solutions.	**November 23** **Disciplinary Core Ideas:** ESS2.D (Weather and Climate) **Science and Engineering Practice:** Obtaining, evaluating, and communicating information **Crosscutting Concept:** Patterns	Materials per Student: • Pencil • Scissors • PDF Booklet Page 19 (Paper House Model Printout) • PDF Booklet Page 20 (Windmaker Printout) • PDF Booklet Page 21-22 (Design a Windproof House Printout) • Assessments: PDF Booklet Page 23-24 (How can you keep a house from blowing away in a windstorm? Assessment) Teacher Answer Keys: • How do you keep a house from blowing away in a windstorm? Answer Key	• Send each student home with 1 piece of paper, 6 toothpicks, 5 paper clips, 4 stickers.
Lesson 7: Unit Summative Assessment	**November 30**	Materials per Student: • Pencil	

		• PDF Booklet Page 25-26 Unit Summative Assessment Teacher Answer Keys: • Stormy Skies	