

# NGSS Transition Support Guide

Publisher	Kit Title
FOSS	Air and Weather
	Grade 1 – <a href="#">Space Systems: Patterns and Cycles</a>

## IMPORTANT INFORMATION ABOUT CHANGES TO YOUR KIT!

You will notice that Investigation 4 (Looking for Change) has been moved to the beginning of your Investigations guide. This change is to better support and align to the Next Generation Science Standards for 1<sup>st</sup> Grade ESS1-1 and ESS1-2 (see link above). It is recommended that you begin with Investigation 4.3 – The Night Sky – and begin collecting moon observations immediately. The following guide suggests a revised scope and sequence to more closely align to the Performance Expectations in the Standard above.

This shift is also due to the amount of data students need to collect in order to engage in analysis and interpretation. You will need to collect about 5 weeks of data to be able to observe and predict patterns. Data can be collected on a daily basis while you engage in other Investigations from the guide.

## Directions for Using this Guide

Before teaching this unit, please review the *Science and Engineering Practices* and *Crosscutting Concepts* for each investigation. This guide highlights what the teacher and student does in each investigation to support the *Science and Engineering Practices* and *Crosscutting Concepts* that are already implicit in the instructional materials. If you need support on using *Science and Engineering Practices* refer to [Appendix F](#) and for *Crosscutting Concepts* refer to [Appendix G](#) in the *Next Generation Science Standards*. For example, in Investigation 4- the *Science and Engineering Practice* is Analyzing and Interpreting Data. Therefore, the teacher should use guiding questions to elicit student responses and model recording observations on a class chart. The students will observe and record data in their own science notebooks.

## Learning Progression for this Kit

From Earth, we see objects in the sky.



Some objects appear to move in regular patterns (daily, monthly, yearly).



Patterns in the apparent motion of the sun, moon and stars can be observed, described and predicted.



Common Student preconceptions to be aware of include:

- Phases of the moon happen due to the moon entering Earth's shadow.
- Different places on Earth see different phases of the moon each day.
- The moon makes its own light.

## For More Information

If you have questions about this guide or its content, please direct your inquiry to your science materials center, or Regional Science Coordinator.

Publisher	Kit Title	Grade Level
<b>FOSS</b>	<b>Air and Weather</b>	<b>1st Grade</b>

<b>Investigation 4.3 (teach first)</b>	<b>Classroom Instruction</b>	<b>Science and Engineering Practice</b>	<b>Crosscutting Concept</b>	<b>Helpful Modifications</b>
<b>Looking for Change- The Night Sky</b>		<p><b>Analyzing and Interpreting Data</b></p> <p>Students organize and graph moon data over a period of 5 weeks.</p>	<p><b>Patterns</b></p> <p>Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.</p>	<p><b>Core Idea – from NRC Framework and NGSS Performance Expectation</b></p> <p>How can we use patterns (observations and data) to explain the motion of the sun, moon and stars?</p> <p>1 – ESS1-1</p>
	What the student does	Students make and record observations of the appearance of the moon in their science notebooks (pg 14). Continue to add to this data throughout the investigation and allow students to share and discuss their thinking about patterns.	Students discuss the changes the moon goes through during the month.	<p>Moon observations can begin at any time during the month, but data should be collected for 5 weeks to show the complete pattern.</p> <p>If weather inhibits observing the moon, use an online lunar calendar to complete the charts as a class.</p>
<b>New activity – Moon Phase Models</b>		<p><b>Develop and Use a Model</b></p> <p>Students using Moon Phase cards to predict the change in appearance of the moon during its cycle. Students tape their models to cardstock and</p>	<p><b>Patterns</b></p> <p>Students create models based on observable patterns and revise these models by applying data collected through observations.</p>	<p>Change the focus question of the investigation to <b>“Is there a pattern to the way the moon changes? How long does it take to go from ____ (phase you began collecting)</b></p>

		revise models as new data is collected.		<p>to ____ (phase you started collected)?”</p> <p>Use Moon Phase cards and have students place them in an order that represents a pattern (does not have to be a correct lunar phase pattern). As more observations are collected, have students revise their models of the pattern, eventually using the names for the phases of the moon.</p>
<b>Throughout the investigation:</b>	What the teacher does	Use guiding questions to illicit student response. Model recording data with class content chart.	N/A	<p>Integrate literacy connections through Science Resources book, “Changes in the Sky” pages 26-37.</p> <p>Have students respond to the focus question using Claims-Evidence writing scaffolds.</p>

Investigation <b>4.1 &amp; 4.2</b>	Classroom Instruction	Science and Engineering Practice	Crosscutting Concept	Helpful Modifications
<b>Weather Graphs &amp; Comparing the Seasons</b>		<b>Analyzing and Interpreting Data</b> Students make observations and/or measurements to produce data to serve as the basis for an explanation of a phenomenon.	<b>Patterns</b> Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.	<b>Core Idea – from NRC Framework and NGSS Performance Expectation</b> What are the predictable patterns caused by Earth’s movement in the solar system?
	What the student does	Students make and record observations of weather. Use the student data chart provided but paste into science notebooks. Continue to add to this data throughout the investigation and allow students to share and discuss their thinking about cause and effect.	Students discuss the patterns observable in weather: daily changes in temperature, precipitation and cloud cover can be compared over time.	Students need to collect 4 weeks of weather data before they complete this investigation. This can be completed in conjunction with Moon observation data.
<b>Throughout the investigation:</b>	What the teacher does	Use guiding questions to illicit student response. Model recording data with class content chart.	Pose deeper thinking questions about the apparent motion of the Sun and Moon throughout the data collection: <i>How would you predict weather patterns will look in the winter (summer/fall)? Why do you think that might be?</i>	To help students make the connections to seasonality, include measurements of the length of the day. This information can be obtained through The Weather Channel website or local papers. Include “Seasons” reading on pages 54- 61 in the Science Resources.