

## KINDERGARTEN: WEATHER

### Standards Bundle

*Standards are listed within the bundle. Bundles are created with potential instructional use in mind, based upon potential for related phenomena that can be used throughout a unit.*

K-ESS2-1 Use and share observations of local weather conditions to describe patterns over time. (SEP: 4; DCI: ESS2.D; CCC: Patterns) **[Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.] [Assessment Boundary: Assessment of quantitative observations limited to whole numbers and relative measures such as warmer/cooler.]**

K-ESS3-2 Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather. (SEP: 1, 8; DCI: ESS3.B, ETS1. A; CCC: Cause/Effect) **[Clarification Statement: Emphasis is on local forms of severe weather.]**

### Content Overview

*This section provides a generic overview of the content or disciplinary core ideas as an entry point to the standards.*

By making observations about what the weather is like, patterns in local weather can be observed. Making observations about local weather can lead to questions about weather forecasting and how it helps keep people safe.

### Phenomena

*Phenomena can be used at varying levels of instruction. One could be used to anchor an entire unit, while another might be more supplemental for anchoring just a unit. Please remember that phenomena should allow students to engage in the SEP and use the CCC/DCI to understand and explain the phenomenon.*

- I need a coat in the morning but not in the afternoon.
- There were more sunny days in August when we started school than in October.
- Every time the news is on, a weatherman talks about the weather.
- There was a strong thunderstorm yesterday afternoon and I heard a siren go off.
- It was very snowy and windy yesterday and we didn't have school.
- It was sunny and warm here today but it was cold and rainy where my sister lives.
- I listened to the weatherman this morning on the radio so I brought my umbrella with me.
- The days at the start and end of the school year are warm. The days in the middle of the school year are cold.

### Storyline

*This section aims to decode not only the DCI connections, but also the SEP and CCC in a detailed account of how they possibly fit together in a progression for student learning, including both rationale and context for the bundle.*

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p><b>Analyzing and Interpreting Data</b></p> <ul style="list-style-type: none"> <li>Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions.</li> </ul>	<p><b>ESS2.D: Weather and Climate</b></p> <ul style="list-style-type: none"> <li>Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time.</li> </ul> <p><b>ESS3.B: Natural Hazards</b></p> <ul style="list-style-type: none"> <li>Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events.</li> </ul>	<p><b>Patterns</b></p> <ul style="list-style-type: none"> <li>Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.</li> </ul> <p><b>Cause and Effect</b></p> <ul style="list-style-type: none"> <li>Events have causes that generate observable patterns.</li> </ul>

Weather is a combination of sunlight, wind, rain, snow, and temperature. Students can observe changes in weather each day and as they experience different seasons.

Through these observations, students should be given opportunities to discuss their observations (sunny, cloudy, rainy, warm or cold) and be prompted to determine if there are patterns in their observations (e.g. Is the weather the same today as it was yesterday? Is the weather the same this month as it was last month?).

While making their observations students may naturally ask questions about why these patterns exist and they may have some ideas about reasons why this is happening. At this age the emphasis is not on a complete explanation for these patterns, but an attempt based on their observations of the patterns.

Observations about weather and weather patterns may also lead students to asking questions about who reports on the weather and why they do that? These questions provide an opportunity to help students gain information about weather forecasting and its ability to help people prepare for severe weather. Students can collect their own weather data in the classroom by keeping weather logbooks for a period of time. This allows students to track observable patterns.

### Formative Assessment

*Formative assessment is crucial because all learners benefit from timely and focused feedback from others. It promotes self-reflection, self-explanation, and social learning. It can also make learning more relevant. Each of the questions below might be used throughout the formative assessment process. Specific*

*prompts may focus on individual practices, core ideas, or crosscutting concepts, but, together, the components need to support inferences about students' three-dimensional science learning as described in a given bundle, standard or lesson-level performance expectation.*

**Resources to inform your formative assessment.**

<http://stemteachingtools.org/brief/30>

<http://stemteachingtools.org/brief/41>

<http://stemteachingtools.org/pd/sessionb>

**SEP Analyzing and Interpreting Data**

- Describe patterns in daily temperatures.
- Collect weather data twice a day for a week and describe patterns you find.

**CCC Patterns**

- What patterns do you see in daily morning and afternoon temperatures?

**CCC Cause and Effect**

- Why is it warmer during the day than at night?
- Why is it warmer in August than in December?
- Why do people listen or watch weathermen?

**Performance Outcomes**

*These are statements of how students use knowledge and are similar to the standards in how they blend DCI, SEP, and CCC, but at a smaller grain-size. These are potential outcomes for instruction as it plays out in lessons and activities in the classroom. It is important to also think of these as smaller outcomes that build toward the larger goal of mastering the standards.*

- **Gather evidence** that weather is a combination of sunlight, wind, snow or rain, and temperature in a certain place *over a short period of time*.
- **Construct explanations that describe changes** in the weather they **observe**.
- **Make observations** about weather and **describe patterns** associated with weather over time.
- **Raise questions from observations** about severe weather and *how weather scientists forecast severe weather so that they can protect communities*.
- **Communicate using evidence** that certain kinds of severe weather are *more likely* than others in a given region.