

Weather and Seasons

Lesson 4c: Weather in Different Places

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| Grade: Kindergarten | Length of lesson: 42 minutes | Placement of lesson in unit: 4c of 5 lessons on weather |
| Unit central questions: Is weather the same everywhere all of the time? How do you know? | | Lesson focus question: How can we use what we know about weather patterns to make predictions? |
| Main learning goal: Different places have different weather patterns at different times of the year. | | |
| Science content storyline: Weather patterns are different in different places. Some places have sunny, warm weather with very little rain, while other places can be cooler with more clouds or precipitation. Graphing and analyzing weather data can help us identify weather patterns in different places, as well as similarities and differences in patterns from one place to another. We can also use weather data to make predictions about where or when an event takes place | | |
| Ideal student response to the focus question: Weather is different in different places at the same time of year. Some places, like Detroit, are mostly cold and snowy in January, while other places, like Pomona, are mostly cool or warm and sunny, with some rainy days. If we know what the weather is like in a place, we can predict where that place might be located. | | |

Preparation

Materials Needed

- Science notebooks
- Chart paper and markers
- Class weather calendars for Pomona from September and January
- Class weather and temperature graphs on chart paper for September and January (from handouts)
- *The Snowy Day* by Ezra Jack Keats (children’s book)
- 2–3 children’s storybooks showing different kinds of weather, including one featuring hot summer weather
- **Optional:** Map of the United States

Student Handouts

- 1.2 Pomona Weather Patterns for September (from lesson 1b)
- 1.4 Pomona Temperature Patterns for September (from lesson 1c)
- 2.1 Pomona Weather Patterns for January (from lesson 2a)
- 2.3 Pomona Temperature Patterns for January (from lesson 2c)
- **Optional:** 3.1 Alisa’s Trip to the Zoo (Teacher Master) (from lesson 3a)
- 4.1 Detroit Temperature Patterns for January (from lesson 4a)
- 4.2 Detroit Weather Calendar for January (from lesson 4a)

Ahead of Time

- Review the content background document.
- Review and modify the PowerPoint slides as needed.
- Display the class weather calendars and class weather and temperature graphs for September and January for students to refer to throughout the lesson.
- Select several picture storybooks that show different kinds of weather in a variety of settings.
- If there’s time at the end of the lesson, show live online weather-cam footage for three US cities and compare the weather in these cities with Pomona’s current weather.
- **ELL support:** Meet with ELL students in advance and introduce them to the lesson content, structure, materials, and activities so they know what’s expected and can participate more fully during the lesson. Identify vocabulary terms in the lesson plan to review with students in advance, including *weather/temperature pattern, data, predict/prediction, claim, and evidence*.

Lesson 4c General Outline

| Time | Phase of Lesson | How the Science Content Storyline Develops |
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| 3 min | Link to previous lesson: The teacher engages students in summarizing the weather patterns they identified when they compared January weather data for Pomona and Detroit. | <ul style="list-style-type: none"> Weather patterns are different in different places at the same time of year. We can use weather data to help us identify and compare weather patterns in different places. |
| 2 min | Lesson focus question: The teacher introduces the focus question, <i>How can we use what we know about weather patterns to make predictions?</i> Then students consider what the weather is like in storybooks and how the weather in Alisa’s story was different from Pomona’s weather. | |
| 5 min | Setup for activity: Students look at pictures in storybooks that show different kinds of weather and predict where and at what time of year the stories might take place. | <ul style="list-style-type: none"> Weather patterns are different in different places. |
| 10 min | Activity: The teacher reads a story about a snowy day, and students look for clues about where and at what time of year the story takes place. | <ul style="list-style-type: none"> Weather patterns are different in different places. Some places are cold and snowy, while other places are warmer and sunnier at the same time of year. |
| 10 min | Follow-up to activity: Working in pairs, students use what they know about weather patterns to make claims about where and at what time of year the <i>Snowy Day</i> story takes place. Then they share their claims and evidence in a class discussion. | <ul style="list-style-type: none"> Weather patterns are different in different places. Some places are cold and snowy, while other places are warmer and sunnier at the same time of year. We can use weather data to make predictions about where and when an event or story takes place. |
| 8 min | Synthesize/summarize today’s lesson: The teacher reviews the focus question, and students summarize their predictions about where and at what time of year the <i>Snowy Day</i> story takes place. Then students try to solve another weather mystery by making claims and supporting them with evidence. | <ul style="list-style-type: none"> Weather is always changing from month to month and throughout the day. Weather is also different in different places. We can collect weather data to help us identify weather patterns over time. We can also use weather data to make predictions about where and when an event or story takes place. |
| 4 min | Link to next lesson: The teacher announces that in the next lesson, students will use what they know about weather patterns to investigate another mystery city. | |

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| 3 min | <p>Link to Previous Lesson</p> <p>Synopsis: The teacher engages students in summarizing the weather patterns they identified when they compared January weather data for Pomona and Detroit.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> • Weather patterns are different in different places at the same time of year. • We can use weather data to help us identify and compare weather patterns in different places. | <p>Ask questions to elicit student ideas and predictions.</p> | <p>NOTE TO TEACHER: <i>Display the January weather calendars for Detroit (handout 4.2) and Pomona to visually cue students. Also display the class weather and temperature graphs for January from handouts 2.1, 2.3, and 4.1. You may also want to have students refer to their copies of these handouts during the review.</i></p> <p>Show slides 1 and 2.</p> <p>Last time, we compared the weather for Detroit and Pomona in January and discovered some different weather patterns.</p> <p>Let’s look again at our January weather calendars and our temperature graphs for Detroit and Pomona.</p> <p>ELL support: ELL students benefit from using visual aids to make comparisons. Displaying handouts (completed graphs) on a document reader for collective viewing will help students participate more fully in this review.</p> <p>Show slide 3.</p> <p>What did we notice about the weather patterns for Detroit and Pomona in January?</p> <p>NOTE TO TEACHER: <i>Give students a minute to review the January weather calendars and graphs for Detroit and Pomona. During this review, encourage students to respond to each other’s ideas by agreeing or disagreeing, asking questions, or</i></p> | <p>Pomona is sunnier in January than Detroit is.</p> <p>There are more</p> | <p>How do you know? What is your evidence?</p> |

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| | | | <p><i>adding on.</i></p> <p>What else did we notice about the weather patterns for these two cities?</p> <p>Show slide 4.</p> <p>So when we compared our weather data for Detroit and Pomona in January, we discovered that these two cities have different weather patterns. The weather pattern for Detroit in January is mostly cool or cold and snowy, and in Pomona, it's mostly cool or warm and sunny, with some rainy days.</p> | <p>sunny days on the graph we made for Pomona.</p> <p>It snows more in Detroit than here.</p> <p>It snowed eight days in Detroit and zero days in Pomona.</p> <p>Pomona had more warm days than Detroit in January.</p> <p>The temperature graph for Pomona is taller for the warm/hot days, and it's shorter on the Detroit graph.</p> | <p>What was our evidence for that?</p> <p>How do you know? Can you show us on the temperature graphs?</p> |

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| | | | <p>Today we're going to use everything we've learned about weather patterns to help us solve some puzzles.</p> | | |
| 2 min | <p>Lesson Focus Question</p> <p>Synopsis: The teacher introduces the focus question, <i>How can we use what we know about weather patterns to make predictions?</i> Then students consider what the weather is like in storybooks and how the weather in Alisa's story was different from Pomona's weather.</p> | <p>Set the purpose with a <u>focus question</u> or goal statement.</p> | <p>Show slide 5.</p> <p>Our focus question for this lesson is <i>How can we use what we know about weather patterns to make predictions?</i></p> <p>NOTE TO TEACHER: Write the focus question on the board and draw a box around it.</p> <p>Show slide 6.</p> <p>When you read a storybook, do you ever notice what the weather is like in the story?</p> <p>When we read the story about Alisa and trip to the zoo, we saw how quickly the weather changed, didn't we?</p> <p>What was the biggest weather difference between where Alisa was and where we are?</p> <p>ELL support: During the lesson preview, you might want to review the story about Alisa's trip to the zoo so that ELL students can participate more fully in this discussion.</p> <p>So we found out from Alisa's story that other places</p> | <p>It snowed!</p> <p>No! It only snows in the mountains.</p> | <p>Yes, it did. Does it ever snow here?</p> |

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| | | | have different weather than Pomona. Today we're going to be weather detectives and investigate the weather in some other places. | | |
| 5 min | <p>Setup for Activity</p> <p>Synopsis: Students look at pictures in storybooks that show different kinds of weather and predict where and at what time of year the stories might take place.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> Weather patterns are different in different places. | <p>Ask questions to elicit student ideas and predictions.</p> <p>Engage students in communicating in scientific ways.</p> | <p>Show slide 7.</p> <p>Have you ever read a story and wondered <i>where</i> and <i>when</i> it took place?</p> <p>Let's look at the pictures in this storybook and see if we can tell where it takes place.</p> <p>NOTE TO TEACHER: <i>Show students the pictures in a children's storybook that features hot summer weather.</i></p> <p>ELL support: To expose ELL students to different types of books about the weather, you could also show students some weather pictures from a science book or magazine (e.g., National Geographic or a science textbook).</p> <p>What is the weather like in these pictures?</p> <p>What kinds of clothes are the children wearing?</p> <p>So do you think this story could take place in Pomona in January? Show me a thumbs-up for yes and a thumbs-down for no.</p> <p>If you gave a thumbs-up, why do you think the story</p> | <p>The Sun is out.</p> <p>They're wearing shorts and T-shirts.</p> | |

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| | | Make explicit links between science ideas and activities before the activity. | <p><i>could</i> take place in Pomona in January?</p> <p>If you gave a thumbs-down, why do you think the story <i>couldn't</i> take place in Pomona in January?</p> <p>NOTE TO TEACHER: <i>Encourage students to respond to each other's ideas by agreeing or disagreeing, asking questions, or adding on. This will help them build their understandings collectively.</i></p> <p>Do you think the story could take place in Detroit in January? Why or why not?</p> <p>Today we're going to read another storybook and look for clues about where the story is taking place and what month or time of year it is.</p> | <p>Because it's sunny and warm here.</p> <p>Because it's not hot enough for shorts in January.</p> <p>Our temperature graphs for Pomona in January show mostly cool or warm temperatures, not hot temperatures.</p> <p>No! Because it's too cold in Detroit to wear shorts and T-shirts in January.</p> | What evidence do you have? |
| 10 min | <p>Activity</p> <p>Synopsis: The teacher reads a story about a snowy day, and students</p> | Engage students | <p>NOTE TO TEACHER: <i>Have students gather in a circle for the story and make sure that everyone can see the pictures.</i></p> <p>The story we're going to read is called <i>The Snowy</i></p> | | |

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| | <p>look for clues about where and at what time of year the story takes place.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> Weather patterns are different in different places. Some places are cold and snowy, while other places are warmer and sunnier at the same time of year. | <p>in using and apply new science ideas in a variety of ways and contexts.</p> <p>Make explicit links between science ideas and activities during the activity.</p> <p>Engage students in communicating in scientific ways.</p> | <p><i>Day.</i></p> <p>As I read the story, listen carefully and look for clues that might help us figure out where it takes place and what month it might be. Act like weather detectives and think about what we've learned about weather patterns in different places.</p> <p>First, let's look at the picture on the cover. What do you notice right away?</p> <p>NOTE TO TEACHER: <i>During this read-aloud, encourage students to make connections to their own experiences and the science ideas they've been learning about. Also encourage them to ask questions and respond each other's ideas.</i></p> <p>What is the little boy wearing?</p> | <p>It's snowing!</p> <p>It must be cold if it's snowing.</p> <p>He's wearing a red jacket with a hood and long pants.</p> <p>Because it's cold and snowy outside.</p> | <p>Yes, it's snowing.</p> <p>If it's snowing, do you think the temperature outside is hot, warm, cool, or cold?</p> <p>Why do you think he's wearing these clothes and not a T-shirt and shorts?</p> |

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| | | | <p>Now let's read the story together and see what clues we can find to help us figure out where this story takes place and what month it is.</p> <p>NOTE TO TEACHER: <i>As you read the story aloud, stop frequently to ask students what they notice about the weather. Also ask , "Where do you think this story takes place?" "What city do you think this could be? Why do you think so?" "What month do you think it could be?"</i></p> <p><i>Record on chart paper any clues students come up with about the location of the story and which month it might be. Students will need to review these clues during the follow-up activity.</i></p> | It's too cold for a T-shirt and shorts! | |
| 10 min | <p>Follow-Up to Activity</p> <p>Synopsis: Working in pairs, students use what they know about weather patterns to make claims about where and at what time of year the <i>Snowy Day</i> story takes place. Then they share their claims and evidence in a class discussion.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> Weather patterns are | <p>Engage students in analyzing and interpreting data and observations.</p> <p>Ask questions to probe student ideas and predictions.</p> <p>Ask questions</p> | <p>Show slide 8.</p> <p>Now let's look at the clues we wrote down on chart paper.</p> <p>We have a lot of different ideas, don't we?</p> <p>What do you think? <i>Where does the story take place?</i> Could it be Detroit or Pomona or some other place? What could our mystery city be?</p> <p><i>When does the story take place?</i> Could it be September, December or January? Or maybe some other month?</p> | | |

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| | <p>different in different places. Some places are cold and snowy, while other places are warmer and sunnier at the same time of year.</p> <ul style="list-style-type: none"> We can use weather data to make predictions about where or when an event or story takes place. | <p>to challenge student thinking.</p> <p>Engage students in constructing explanations and arguments.</p> <p>Engage students in making connections by synthesizing and</p> | <p>Show slide 9.</p> <p>Turn and Talk (3 min): Next, I want you to work together to come up with claims about where the story takes place and when it takes place. A <i>claim</i> is a sentence or statement that says what you think about something.</p> <p>When you make your claim, make sure to support it with evidence from our weather calendars and your weather and temperature graphs for Pomona and Detroit.</p> <p>NOTE TO TEACHER: <i>In addition to displaying the class weather calendars and graphs from previous lessons, have students take out their weather and temperature graphs from previous lessons (handouts 1.2, 1.4, 2.1, 2.3, 4.1, and 4.2) and use them as evidence to support their ideas. As pairs work together, walk around the room and ask probe and challenge questions about their ideas and evidence.</i></p> <p>Whole-class share-out: Let’s hear your claims about where the story takes place and what month it might be. Remember, a <i>claim</i> is a sentence or statement that says what you think about something. When you share your claim, make sure to support it with evidence from the data we’ve collected on weather patterns in different places.</p> <p>NOTE TO TEACHER: <i>Model for students how to make a claim and support it with evidence. Then</i></p> | | |

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| | | <p>summarizing key science ideas.</p> <p>Engage students in communicating in scientific ways</p> | <p><i>give them time to practice making simple claims before making claims about the location of the story.</i></p> <p>Show slide 10.</p> <p>First, let's talk about <i>where</i> this story takes place. Use the sentence starter on the slide to make your claim and support it with evidence.</p> <p><i>My claim is that the story takes place in _____. My evidence is _____.</i></p> <p>Where do you think this story takes place? What is your claim?</p> <p>Does anyone agree or disagree with this claim? Say "I agree or disagree because"</p> <p>So this story might take place in Detroit or another</p> | <p>My claim is that the story takes place in Detroit.</p> <p>My evidence is that our weather calendar shows that it snows in Detroit.</p> <p>I agree that it could be Detroit because Detroit has snow. But our claim is that it's Mount Baldy because we see snow on Mount Baldy.</p> | <p>What evidence did you use to make this claim?</p> |

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| | | | <p>place that gets snow, like Mount Baldy.</p> <p>Does anyone think this story takes place in Pomona?</p> <p>So do we all agree that this story could take place in Detroit or on Mount Baldy but not in Pomona?</p> <p>Show slide 11.</p> <p>Now let's talk about our second question: What month could this be? Could it be September? What about December or January or some other month?</p> <p>Use the sentence starter on the slide to make your claim and support it with evidence.</p> <p><i>My claim is that the story takes place in the month of _____. My evidence is _____.</i></p> <p>Who agrees or disagrees with this claim about September? Say "I agree or disagree because"</p> | <p>No!</p> <p>Because Pomona doesn't have snow.</p> <p>Yes!</p> <p>My claim is that the story couldn't take place in September because it's too warm to snow in September.</p> <p>I'm not sure. We don't really know what the weather is like in September in Detroit. But it's hot</p> | <p>Why do you think so?</p> |

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| | | | <p>Do you think the story might take place in December or January? What are your claims and evidence?</p> | <p>here in September, so I think it might be hot there, too.</p> <p>I don't think the weather in Detroit in September is hot like it is here, because we know that Detroit has very different weather than Pomona.</p> <p>We don't have any evidence for Detroit in September.</p> <p>We could measure the temperatures with a thermometer like we did for Pomona.</p> <p>My claim is that the story could take place Detroit in</p> | <p>What evidence do we have about the weather in Detroit in September?</p> <p>How could we find out what the weather is like in Detroit in September?</p> |

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| | | | <p>Let's hear some other claims and evidence.</p> <p>Other ideas about the month this story might take place?</p> | <p>January. My evidence is that it snowed eight days in January in Detroit.</p> <p>We agree that it's probably January!</p> <p>My claim is that the story takes place in December in Detroit. My evidence is that it usually snows at Christmastime, and Christmas happens in December.</p> <p>I disagree. It doesn't snow everywhere at Christmas. Like it doesn't snow in Pomona!</p> <p>I think the story might take place in February because that's a really cold month in the wintertime.</p> | <p>Does anyone agree or disagree?</p> <p>Does anyone agree or disagree?</p> <p>Does anyone</p> |

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| | | <p>Highlight key science ideas and focus question throughout.</p> | <p>So we already know what the temperatures are like in Detroit in January, but we don't know what they're like in September, December, or even February. That makes it kind of hard to predict when the story took place, doesn't it?</p> <p>Sometimes scientists don't have all of the data they need to help them answer a question, so they need to collect more data. But they can also use what they already know about weather patterns to predict what might happen.</p> <p>So if we already know from our weather calendar that it snows in Detroit in January, we can predict that it might snow in December or February, too because these are winter months.</p> <p>What evidence would we need to decide whether the story could take place in December or February?</p> | <p>I disagree because February isn't a cold month everywhere, like in Pomona!</p> <p>Maybe, but we don't know what the temperatures are in Detroit in February!</p> <p>We'd need weather calendars for</p> | <p>disagree?</p> <p>Do you think the story could take place in February in Detroit?</p> |

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| | | Summarize key science ideas. | <p>Show slide 12.</p> <p>OK. One claim we can make is that the story takes place in Detroit in January, and our evidence from our weather calendar is that it snowed in Detroit in January.</p> <p>Good thinking, everyone!</p> | December and February in Detroit. | |
| 8 min | <p>Synthesize/Summarize Today's Lesson</p> <p>Synopsis: The teacher reviews the focus question, and students summarize their predictions about where and at what time of year the <i>Snowy Day</i> story takes place. Then students try to solve another weather mystery by making claims and supporting them with evidence.</p> <p>Main science idea(s):</p> <ul style="list-style-type: none"> Weather is always changing from month to month and throughout the day. Weather is also | <p>Highlight key science ideas and focus question throughout.</p> <p>Engage students in making connections by synthesizing and summarizing key science ideas.</p> | <p>Show slide 13.</p> <p>Now let's revisit our focus question: <i>How can we use what we know about weather patterns to make predictions?</i></p> <p>How did we figure out that the story about a snowy day might take place in Detroit in January?</p> <p>So we made some good predictions based on what we know about weather patterns from the weather data we collected. But do we know <i>for sure</i> that the story takes place in Detroit in January?</p> | <p>We used what we know about weather in Detroit to make our predictions.</p> <p>We used our weather calendars and graphs.</p> <p>No. Because it could also be someplace else where it snows.</p> | Where else could |

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| | <p>different in different places.</p> <ul style="list-style-type: none"> We can collect weather data to help us identify weather patterns over time. We can also use weather data to make predictions about where and when an event or story takes place. | | <p>Can anyone think of another place where the story could take place?</p> <p>Do we know for sure that the story takes place in January?</p> <p>So if we stick to the weather data we already have, we know that the story could take place in January in a place like Detroit. But it could snow during other months, too.</p> <p>What other months could get snow in Detroit?</p> <p>We can't know for sure whether it snows in these other months without looking at weather and temperature data for those months. Scientists like to</p> | <p>It could take place in Colorado because my aunt and uncle live there, and they get snow.</p> <p>It might be Wisconsin, because it snows a lot there.</p> <p>Because my sister lives there, and she sends us pictures when it snows.</p> <p>No. But we know it snows in Detroit in January.</p> <p>December.</p> <p>February.</p> <p>November.</p> | <p>the story take place?</p> <p>How do you know it snows a lot in Wisconsin?</p> |

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| | | <p>Engage students in using and applying new science ideas in a variety of ways and contexts</p> <p>Engage students in analyzing and interpreting data and observations.</p> <p>Engage students in constructing explanations and arguments.</p> <p>Ask questions to probe student ideas and predictions.</p> <p>Ask questions to challenge student</p> | <p>have evidence to back up their claims. So all we can do is predict that it might snow in Detroit in November, December, or February.</p> <p>Show slide 14.</p> <p>Here’s one last puzzle for you to solve. Which of the pictures on this slide could have been taken in Pomona in January?</p> <p>Look at our January weather calendar for Pomona and your weather and temperature graphs. Then think about a claim you could make and the evidence you could use to support your claim.</p> <p>Individual think time.</p> <p>Whole-class share-out: So which pictures on the slide could have been taken in Pomona in January? Let’s hear your claims and evidence.</p> <p>Use the sentence starters, “<i>My claim is _____. My evidence is _____.</i>”</p> <p>NOTE TO TEACHER: <i>Call on several students using equity sticks or some other random method. Ask probe and challenge questions about students’ ideas and evidence. Encourage other students to agree or disagree, ask questions, or add on.</i></p> | <p>My claim is that pictures 1, 2, and 3 could be Pomona in January. My evidence is that our weather calendar shows we had rain, Sun, and clouds in January, but we didn’t have snow.</p> | |

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| | | <p>thinking.</p> <p>Engage students in communicating in scientific ways.</p> | <p>Show slide 15.</p> <p>So we've learned that weather patterns are different in different places at the same time of year, and we can use what we know about weather patterns to make predictions.</p> | | |
| 4 min | <p>Link to Next Lesson</p> <p>Synopsis: The teacher announces that in the next lesson, students will use what they know about weather patterns to investigate another mystery city.</p> | <p>Summarize key science ideas.</p> <p>Engage students in using and applying new science ideas in a variety of ways and contexts.</p> | <p>Show slide 16.</p> <p>Next time, we'll get to be weather detectives again and use what we know about weather patterns to investigate another mystery city.</p> <p>Optional closing activity: Before we wrap up today's lesson, let's look at some live weather cameras for different cities and see if the weather right now is the same as our weather here in Pomona.</p> <p>Show slide 17.</p> <p>NOTE TO TEACHER: <i>Use the links on the PowerPoint slide to show live online weather-cam footage of at least three cities to reinforce the key science idea that weather can be different in different places at the same time. The weather cameras show Miami, Florida; St. Louis, Missouri; New York City, New York; and other winter locations.</i></p> <p><i>Ask students to describe the weather in each city and compare the weather there with Pomona's weather.</i></p> | | |

| Time | Phase of Lesson and How the Science Content Storyline Develops | STeLLA Strategy | Teacher Talk and Questions | Anticipated Student Responses | Possible Probe/Challenge Questions |
|------|--|-----------------|---|-------------------------------|------------------------------------|
| | | | <i>Then tell students the name of each city and show them where it's located on a US map.</i> | | |