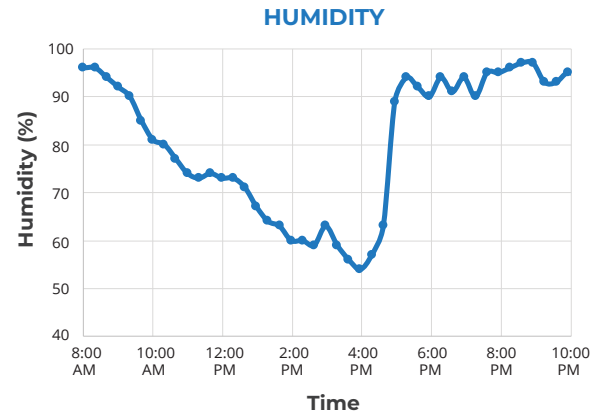
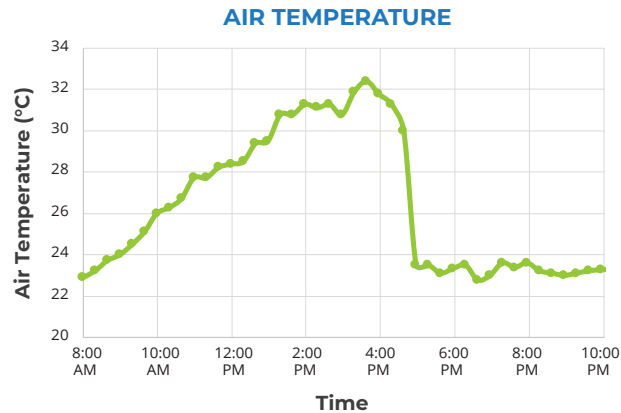


Learning Sequence 1 Assessment: From Cloud to Storm

An isolated storm happened in Rockwall, Texas, on August 26, 2017. The graphs below show how humidity and air temperature changed during the day. Use the data in the graphs below to answer the following questions.



1. What time do you think the storm occurred? Explain your reasoning using the temperature and humidity data.

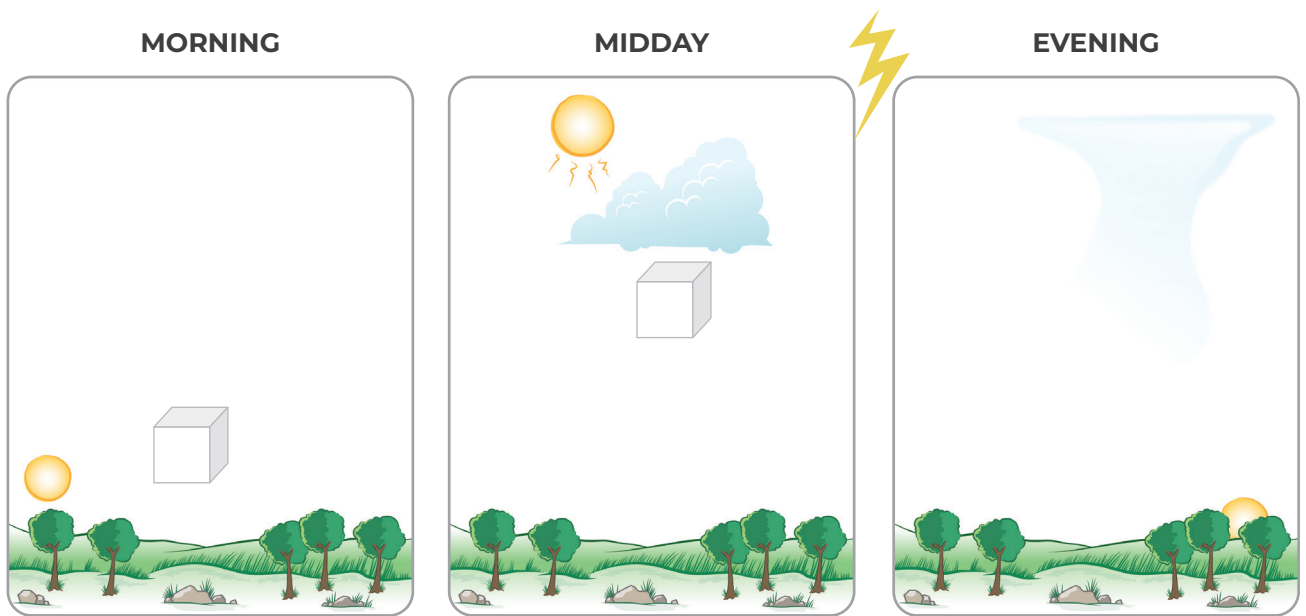
2. Sunrise in Rockwall, Texas, was at 6:57 a.m. on August 26. Explain why the air temperature changed the way it did from between 8:00 a.m. and 12:00 p.m.

3. The air temperature was measured about one meter above the ground. Draw a line on the air temperature graph to show how you think the temperature of the ground changed over the day. Then, explain why you think the surface temperature would change like this.

- The air temperature near the surface is different from the air temperature higher in the atmosphere. Explain how they are different and why this difference is necessary for a storm to form.

The pictures below show one location at three different times during one day: morning, midday, and evening. The day was sunny in the morning and then a thunderstorm formed around 3:00 p.m., which lasted an hour.

The boxes in the pictures represent a “pocket” of air that moves over time. In the morning, the air is near the ground. At midday (12:00 p.m.), the pocket of air has moved higher in the atmosphere. Answer the questions below to complete the model and to explain what it shows about the thunderstorm.



- Draw a box to show where you think the pocket of air might be on the “Evening” diagram.
- Explain why you put the box where you did.

7. Do you think the temperature and humidity of the air in the box is increasing, decreasing, or staying the same during the morning and midday (just before storm)? Circle your answers for each time in the table to the right.

Explain why you think the temperature and humidity would change like this during the morning and then midday, just before the isolated storm occurred.

	TEMPERATURE	HUMIDITY
MORNING	Increasing Decreasing Staying the same	Increasing Decreasing Staying the same
MIDDAY	Increasing Decreasing Staying the same	Increasing Decreasing Staying the same

8. One student claims that the box would get larger between morning and midday, assuming that the molecules can't escape from the box. Do you agree or disagree? Explain your reasoning.
9. Another student claims that if there was another box of air high in the atmosphere at midday, it would be colder than the air below so it would sink toward the ground. Do you agree or disagree? Explain your reasoning.
10. Use what you learned about temperature and humidity patterns on a stormy day to explain why the storm happened in the afternoon instead of the morning.
11. Describe how energy from the Sun helps to cause the storm.