These cloud heights can vary by location and time of year.
Heat Up, Rise Up

How does a thermometer measure temperature? This simple thermometer will show you and give you the temperature too.

Gather the following materials:
• empty glass soda bottle (8–12 oz., 25 liters, etc.)
• red food color
• 2 transparent straws
• some crushed ice
• a steel can (like a soup can)
• a thermometer that can get wet and fits inside the can
• some dry ice

Here’s how to do it:
1. Start some water boiling, enough to fill 1/2 full of the large jar. Add 2–3 drops of yellow food coloring. Pour it into the large jar. The water should fill 2/3 of the large jar.
2. Place the straw in the bottle so that the bottom of the straw is about 2 inches (5 centimeters) below the water level.
3. Get some water from the refrigerator and pour it into the large jar. The water should fill 2/3 of the large jar. Add 2–3 drops of yellow food coloring.
4. When the water boils, pour it into the small jar and add red food coloring—red since this water is hot.
5. Using the straw, gently lower the small jar into the large jar.
6. What’s going on
If everything went well, you saw the red water rise through the yellow water, and now you’ve got a layer of orange water on top of a layer of yellow water. Why did the red (hot) water rise through the yellow (cold) water? Because hot water is less dense than the cold water. Hot air does the same thing; it rises through cold air. This is how clouds start to form.

Rise Above It All

What does hot air have to do with clouds? Why does hot air rise? How can water and air interact in the same way? In this experiment, you’ll learn how clouds rise above it all.

Gather the following materials:
• a large glass or plastic jar
• a smaller glass jar (like a baby food jar)
• red and yellow food coloring
• string
• water

Here’s how to do it:
1. Start some water boiling, enough to fill the small jar.
2. While the water is heating up, tie the string around the small jar, below the neck. Tie it tight so that it won’t slip off. Leave a string tail long enough to lower the small jar into the larger one. Practice putting the small jar into the larger jar.
3. Get some water from the refrigerator and pour it into the large jar. The water should fill 2/3 of the large jar. Add 2–3 drops of yellow food coloring.
4. When the water boils, pour it into the small jar and add red food coloring—red since this water is hot.
5. Using the string, gently lower the small jar into the large jar.
6. What’s going on
If everything went well, you saw the red water rise through the yellow water, and now you’ve got a layer of orange water on top of a layer of yellow water. Why did the red (hot) water rise through the yellow (cold) water? Because hot water is less dense than the cold water. Hot air does the same thing; it rises through cold air. This is how clouds start to form.

How Wet is the Air?

The air is filled with invisible water vapor, but how much? This tool will allow you to measure and find out.

Gather the following materials:
• pint-sized milk carton, empty and clean
• some crushed ice
• a steel can (like a soup can)
• a thermometer that can get wet and fits inside the can
• some dry ice

Here’s how to do it:
1. Cut a piece of shoelace 1 inch long (2.54 centimeters) below the water level.
2. While holding the straw at this point...