Make your own cloud

Try this

Making clouds form by cloud seeding may sound like an unusual idea, but in this experiment you can try it for yourself.

You will need:

- 0.5–1.5 litre clear plastic bottle with lid
- warm water
- matches
- small thermometer (to fit into the bottle – optional)

What to do

1. Put the thermometer into the bottle and screw on the lid. Note the temperature.
2. Squeeze the bottle and notice that the temperature rises as the air inside is compressed (squeezed) and the pressure increases.
3. Put a few drops of warm water into the bottle. Shake it around a few times to ensure there is plenty of water vapour in the bottle. As the water evaporates the amount of water vapour in the bottle increases.
4. If the water you are using is too hot you will see condensation on the inside of the bottle. This is not a cloud and it is best to try again with slightly cooler water.
5. Squeeze the bottle again. You should be able to see the temperature rise when it is squeezed and fall when you release the bottle as before. Although the air is almost certainly saturated with water vapour, you will not see any clouds forming.
6. Unscrew the lid of the bottle, leaving the lid in place for a moment. Carefully light a match, blow it out and hold the smoking end at the mouth of the bottle for a few seconds. Remove and replace the lid.
7. Squeeze and release the bottle a few times again as before. Then squeeze the bottle hard for a few seconds before suddenly releasing.

What you see

You should see a cloud forming in the bottle when you release it, as the water vapour now has small particles (of smoke, soot, ash) known as Cloud Condensation Nuclei to condense on.

What is happening?

Clouds can only form when the air is saturated with water vapour and when there are condensation nuclei present. Cloud seeding experiments introduce extra Cloud Condensation Nuclei to the atmosphere, to influence the number and size of raindrops in a cloud.

The equipment needed for the experiment

Condensation inside the bottle. This is not a cloud but a result of the water being hot.

A cloud has formed inside the bottle. This is not the same as condensation as it is not on the inside surface of the bottle, but in the air inside.

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