A cloud in a bottle

You can make a cloud form in a bottle.

You need a large glass bottle and fit with a rubber stopper carrying a 10-cm length of glass tubing. Place about 2.5 cm of warm water in the bottle and dust a little chalk dust into the air inside. Connect the glass tube to a bicycle pump with a piece of rubber tubing.

Hold the stopper in the bottle and have a pupil pump air in. When the air has been compressed inside the bottle let the stopper blow out and observe what happens.

If you do not get a good cloud, introduce a little smoke from a smoldering match or cigarette.

When the air expands it cools, thus reducing the temperature in the bottle below the dew point. The moisture condenses as a cloud. When warm air rises above the earth the air pressure is reduced. The air expands, cools and clouds form when the cooling goes below the dew point.