## Experiment M-4
# Relative humidity and Dew point

## Objectives

- To learn about relative humidity and dew point.
- To investigate these factors by measuring them inside a container with a moist sponge.

## Modules and Sensors

- PANDA-1 Panda Multi-sensor

## Materials

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| ▪ Plastic container with a partition (that the panda and a sponge can fit in without getting the panda wet) |
| ▪ Lid for plastic container |
| ▪ Moist sponge |

## Introduction

Relative humidity is the most common way for describing atmospheric moisture, but it does not describe the actual amount of water vapor in the air. Instead, it indicates how close the air is to being saturated. The relative humidity (RH) is the ratio between the amount of water vapor actually in the air and the maximum amount of water vapor required for saturation at that specific temperature (and pressure). When the amount of moisture in the air remains constant and the temperature increases, relative humidity decreases. Dew point temperature is a better indicator of the amount of moisture in the air.

Dew point temperature is defined as the temperature at which dew begins to form. Dew is the water you may find on the grass or on your car early in the morning (on solid surfaces). The water appears due to the condensation of water vapor in the air. The current dew point will always be lower or equal to the current temperature. A high dew point means there is a high amount of moisture in the air. The tropics are characterized by high dew points while desert regions are characterized by low dew points.
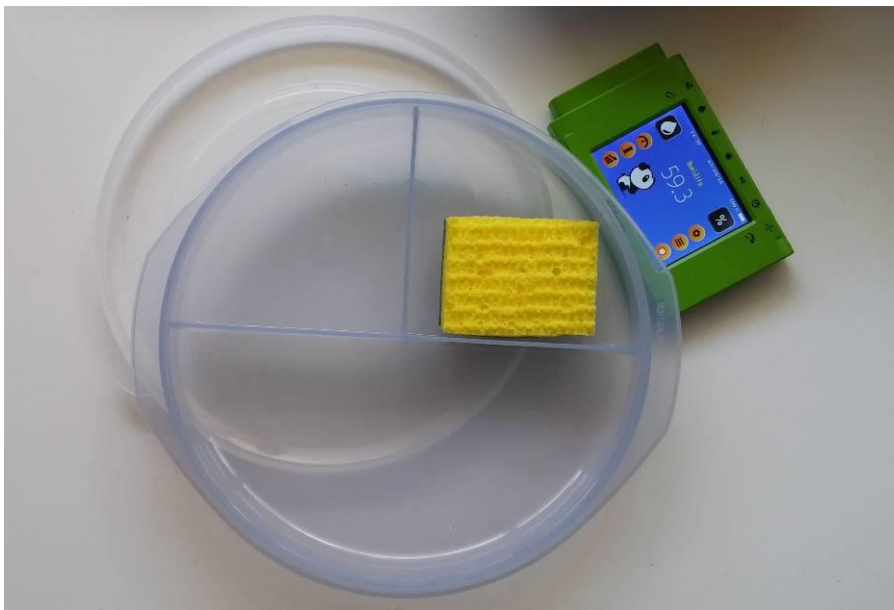
In this experiment, you will measure relative humidity and dew point inside a container with a moist sponge in it.

## Procedure

### Experiment setup

1.    Get a small sponge wet and then squeeze some of the water out of it.

2.    Put the sponge inside a container.

3.    Make sure the sponge will not touch the Panda.

> It is very important not to get the panda wet!



### Settings

4.    Press on the **Sound sensor** icon 🔊 on the top left of the screen.

5.    Use the arrows ⌃ ⌄ to select the humidity sensor.

6.    Click on the **Record** icon ⬤.

7.    Set the duration of 30 minutes using the arrows ⌃ ⌄.

8.  Press on the **Add sensor** icon ▬ on the top right of the screen.

9.  Select the dew point sensor.

Testing and measurements

10.  Click on the **Record** icon 🔴 to start the measurement.

11.  Immediately insert the Panda to container and close the lid.

    It is very important not to get the panda wet!



12.  Wait for half an hour until the end of the experiment.

13. Your graph should be similar to the following:



14. We can see that the relative humidity and dew point both increased during the experiment. The water from the sponge vaporized slowly into the air and made it more humid.

## Summary questions (includes challenge experiment)

1. Draw the expected rest of the graph (include the measured part also) for a period of two hours.
Explain.

If you have more time available conduct the same experiment (after the relative humidity displayed on the sensor is like it was before the experiment – the relative humidity of the air in the room). For this experiment set then duration for two hours.

It is very important not to get the panda wet!

Was the graph similar to what you expected? If not, explain what is the difference.

2.    In a different scenario, the temperature decreases and moisture in the air remains the same. What will happen to the relative humidity?

What will happen to the dew point?