EXPANSION OF WARM WATER

(Level: primary to middle and high school)

SUBJECT: CONSEQUENCES OF CLIMATE CHANGE
EXPERIMENTS TO DO IN CLASS

1. THE QUESTION

Céline: "Does water expand when heated?"

To answer this question, the association Planète Sciences proposes the following experiment.

2. MATERIAL

- 1 Erlenmeyer or test tube with a perforated stopper
- 1 container of warm water
- Food coloring
- 1 transparent glass tube (pipette) with the same diameter as the hole in the stopper
- Marking pen

3. EXPERIMENT

1. Slide the glass tube into the stopper but do not let the glass tube stick out the other side.
2. Color some cold water with food coloring and fill the Erlenmeyer/test tube. Put the stopper on, which will force the colored water to rise a bit into the glass tube/pipette. Mark the level of water with the marking pen.
3. Place the Erlenmeyer/test tube into the container of hot water. Wait and observe the level of colored water in the glass tube/pipette.

4. GOING FURTHER

In this experiment we imitated ocean warming due to the planet's rising temperature by slowly heating up the cold Erlenmeyer in the container of hot water. The water level in the glass tube/pipette rose even though we didn't add any water !
The water expanded, i.e. water molecules in the Erlenmeyer moved further apart from each other after getting warmer, taking up more space in the flask.

With the warming of the planet, oceans can expand and take up more space, as demonstrated in the experiment above. Added to this is the risk of land-ice melt (see Land Ice Melt Experiment), which would also increase the rise in ocean levels.

This experiment was designed by the association Planète Sciences.

tara EXPEDITIONS
www.taraexpeditions.org

Planete Sciences
une aventure pour les jeunes