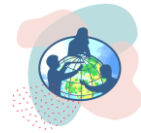


2023 GLOBE Regional Meeting, Riga

Fires and Climate Change – Fire Fuel Protocol in practice

Ivica Štrbac, Elementary school Josip Pupačić Omiš, Croatia

Zrinka Klarin, Elementary school Šime Budinića Zadar, Croatia



CLIMATE CHANGES

Global warming is an increase in the average temperature of the air and oceans, and climate change is a long-term change in the Earth's climate. Global warming refers to an increase in surface temperature, while climate change includes global warming and everything that affects the increase in the amount of greenhouse gases - such as melting glaciers, heavy rainstorms, droughts, fires...

Key terms: climate change, global warming, density of salt water, solubility of ice in air, melting of glaciers, density of fresh water, water temperature, solubility of ice in water, change in sea salinity.

TASK 1.

MATERIALS REQUIRED FOR WORK

2 medium-sized plastic / glass containers (equal size and transparent)

clay

"head" pins

ice cubes

water

a wooden stick

food blue paint

marker pen

camera

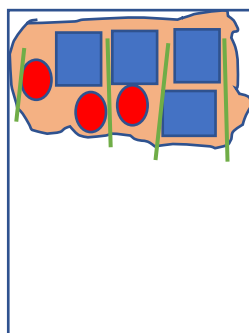
Legend:

 - ice cubes (ice on land and ice at sea)

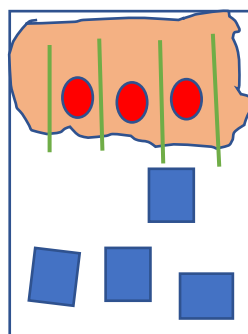
 - clay (soil, land)

 - pins (objects, buildings)

 - "channels"



A



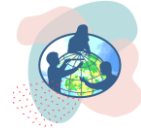
B

2023 GLOBE Regional Meeting, Riga

Fires and Climate Change – Fire Fuel Protocol in practice

Ivica Štrbac, Elementary school Josip Pupačić Omiš, Croatia

Zrinka Klarin, Elementary school Šime Budinića Zadar, Croatia



PROCEDURE:

- Place a piece of clay in the plastic/glass container A and B as in the picture. Clay press well on the bottom and at least two walls of the container. In both containers, the height of the clay should be the same.
- Stick pins on the clay.
- Mix water with blue paint.
- Pour an equal amount of water into containers A and B so that the water level is 1 cm below surface of the clay in the container.
- Place an equal number of ice cubes in containers A and B. In container A, put ice cubes on clay (represents ice on land, glacier), in container B put ice cubes in water (represents ice in the sea, icebergs).
- Record the liquid level on containers A and B with a felt-tip pen.
- Start the stopwatch.
- Take a photo every 3 minutes or record a video (watch the accelerated animation)
- Record the liquid level with a felt-tip pen when the ice melts.

QUESTIONS:

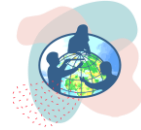
1. Which melting of ice, on land or on water, will cause a faster rise in sea level?
Explain.
2. How the melting of ice affects:
 - a) seas and oceans
 - b) living beings in seas and oceans
 - c) climate in the future
3. What should be done to slow down the melting of the ice?

2023 GLOBE Regional Meeting, Riga

Fires and Climate Change – Fire Fuel Protocol in practice

Ivica Štrbac, Elementary school Josip Pupačić Omiš, Croatia

Zrinka Klarin, Elementary school Šime Budinića Zadar, Croatia



CLIMATE CHANGES

Global warming is an increase in the average temperature of the air and oceans, and climate change is a long-term change in the Earth's climate. Global warming refers to an increase in surface temperature, while climate change includes global warming and everything that affects the increase in the amount of greenhouse gases - such as melting glaciers, heavy rainstorms, droughts, fires...

Key terms: climate change, global warming, density of salt water, solubility of ice in air, melting of glaciers, density of fresh water, water temperature, solubility of ice in water, change in sea salinity.

TASK 2.

MATERIALS REQUIRED FOR WORK

2 transparent containers of equal volume
ice cubes
room temperature water
stopwatch
waterproof felt-tip pen
a ruler
camera

PROCEDURE

- Place an equal number of ice cubes (10 cubes) in container A and container B.
- In container A, add water up to a height of 1 cm from the bottom of the container.
Leave only ice cubes in container B.
- Start the stopwatch.
- Look at container A and B every 3 minutes and measure the change in water level with a ruler.
- Record the time needed to melt the ice in containers A and B.

2023 GLOBE Regional Meeting, Riga

Fires and Climate Change – Fire Fuel Protocol in practice

Ivica Štrbac, Elementary school Josip Pupačić Omiš, Croatia

Zrinka Klarin, Elementary school Šime Budinića Zadar, Croatia



Time / minutes	Water height / cm	
	Container A	Container B
0		
3		
6		
9		
12		

QUESTIONS:

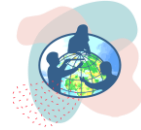
1. Where did the ice melt faster, container A or container B?
2. Explain why the ice melted faster in one container?
3. If the climate were to remain stable, without further warming, the melting of ice would continue. Why?

2023 GLOBE Regional Meeting, Riga

Fires and Climate Change – Fire Fuel Protocol in practice

Ivica Štrbac, Elementary school Josip Pupačić Omiš, Croatia

Zrinka Klarin, Elementary school Šime Budinića Zadar, Croatia



CLIMATE CHANGES

Global warming is an increase in the average temperature of the air and oceans, and climate change is a long-term change in the Earth's climate. Global warming refers to an increase in surface temperature, while climate change includes global warming and everything that affects the increase in the amount of greenhouse gases - such as melting glaciers, heavy rainstorms, droughts, fires...

Key terms: climate change, global warming, density of salt water, solubility of ice in air, melting of glaciers, density of fresh water, water temperature, solubility of ice in water, change in sea salinity.

TASK 3

MATERIALS REQUIRED FOR WORK

2 glass cups - marked A and B (A - fresh water, B - salt water)

2 ice cubes (water and a few drops of blue food coloring)

water - room temperature

salt water - room temperature

camera

PROCEDURE

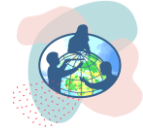
- Prepare equal amounts of salt and fresh water. Pour fresh water into glass A, salt water into glass B.
- Put one ice cube in glass A and B.
- Start the stopwatch.
- Look at the containers every 3 minutes to see what changes are happening in cups and record in the table.

2023 GLOBE Regional Meeting, Riga

Fires and Climate Change – Fire Fuel Protocol in practice

Ivica Štrbac, Elementary school Josip Pupačić Omiš, Croatia

Zrinka Klarin, Elementary school Šime Budinića Zadar, Croatia



Time / minutes	Water height / mL	
	Container A	Container B
0		
3		
6		
9		
12		

QUESTIONS:

- 1. What is the difference in the melting of ice cubes in glasses?*
- 2. What caused the different colors in the glasses? Connect with temperature and density of water.*
- 3. What happens to the sea/ocean as a result of the melting of the ice in the seas, which was proven by this experiment?*

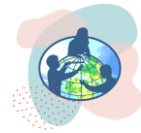
2023 GLOBE Regional Meeting, Riga

Fires and Climate Change – Fire Fuel Protocol in practice

Ivica Štrbac, Elementary school Josip Pupačić Omiš, Croatia

Zrinka Klarin, Elementary school Šime Budinića Zadar, Croatia

THE 17 SUSTAINABLE DEVELOPMENT GOALS (SDGS)



The Global Goals are universal goals that all members of the United Nations are expected to use in creating their programs and policies for the period up to 2030 to put the world on a sustainable path.

Task: Look at the pictures and remember the 17 UN Global Goals for Sustainable Development. Match each picture number with its meaning.



- | | |
|--|--|
| ___ reduced inequalities; | ___ no poverty; |
| ___ zero hunger; | ___ sustainable cities and communities; |
| ___ good health and well-being; | ___ responsible consumption and production; |
| ___ climate action; | ___ quality education; |
| ___ gender equality; | ___ life below water; |
| ___ life on land; | ___ clean water and sanitation; |
| ___ affordable and clean energy; | ___ peace, justice, and strong institutions; |
| ___ partnerships for the goals; | ___ decent work and economic growth. |
| ___ industry, innovation and infrastructure; | |