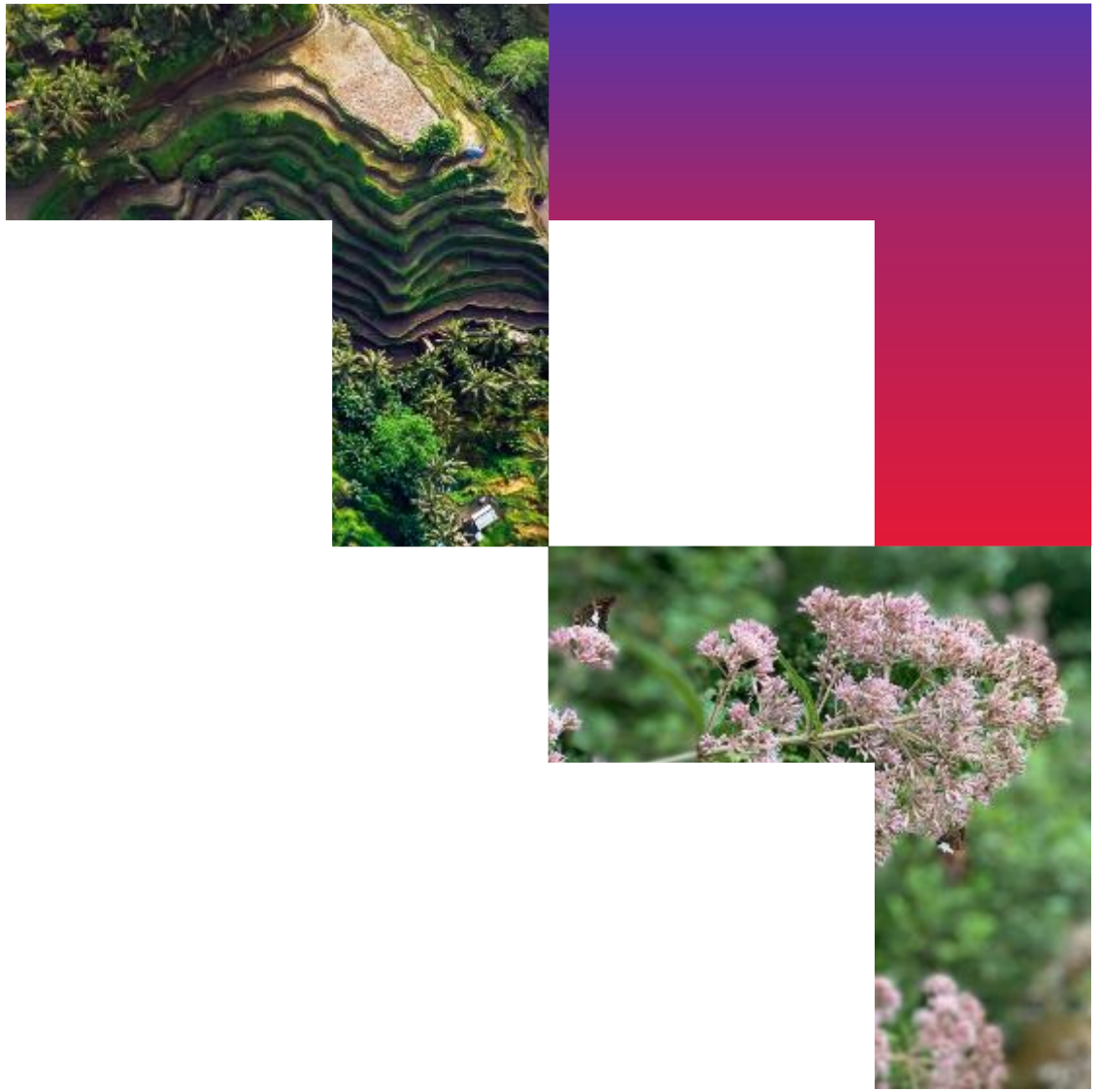
STEM@CGI
SCIENCE - TECHNOLOGY - ENGINEERING - MATHEMATICS



Climate Change Pt 1

Ages 5 to 10

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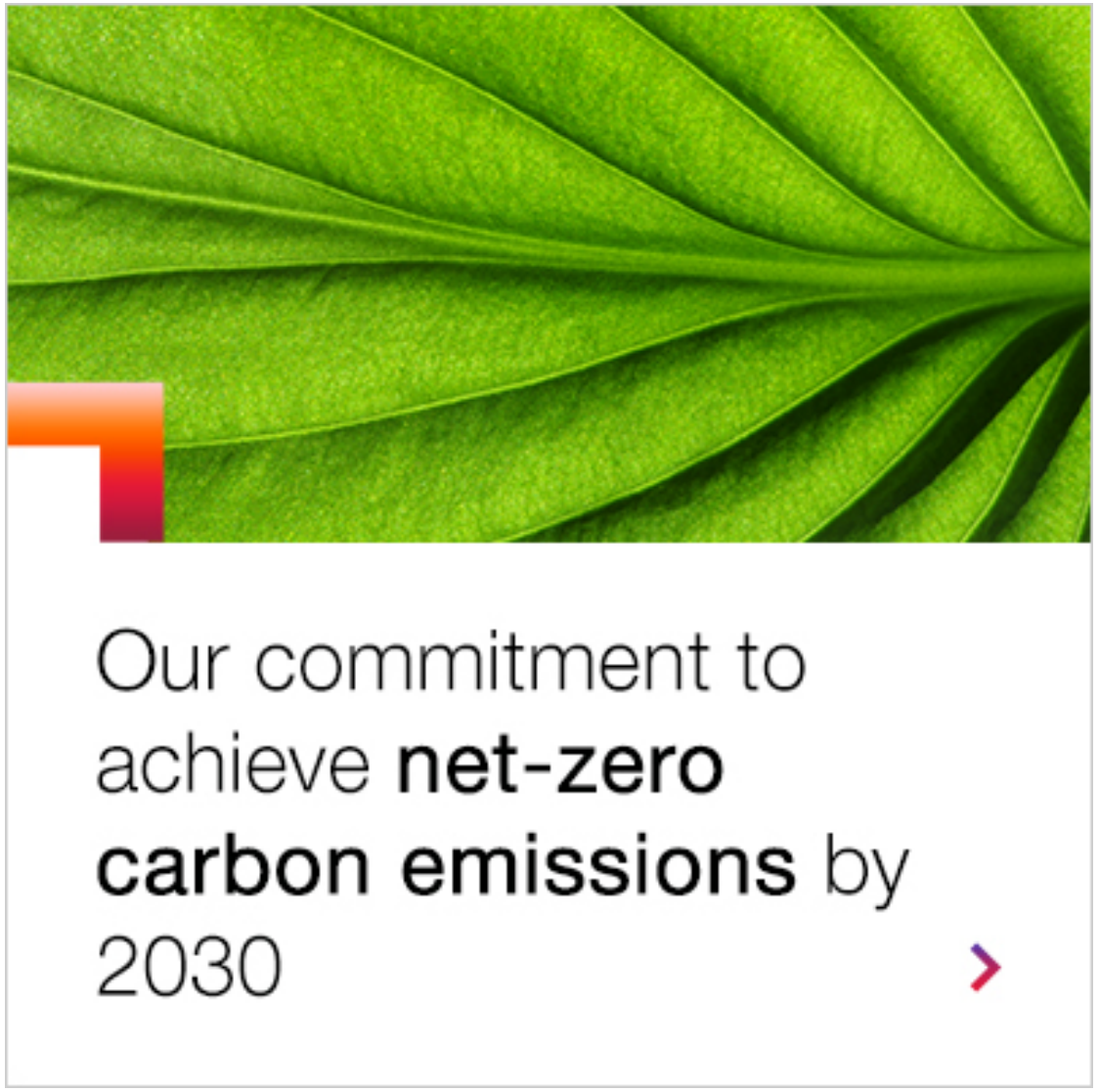
What's happening NOW?

Check out these links on how CGI is working on Climate Change around the world!

[CGI commits to net-zero carbon emissions by 2030 | CGI.com]

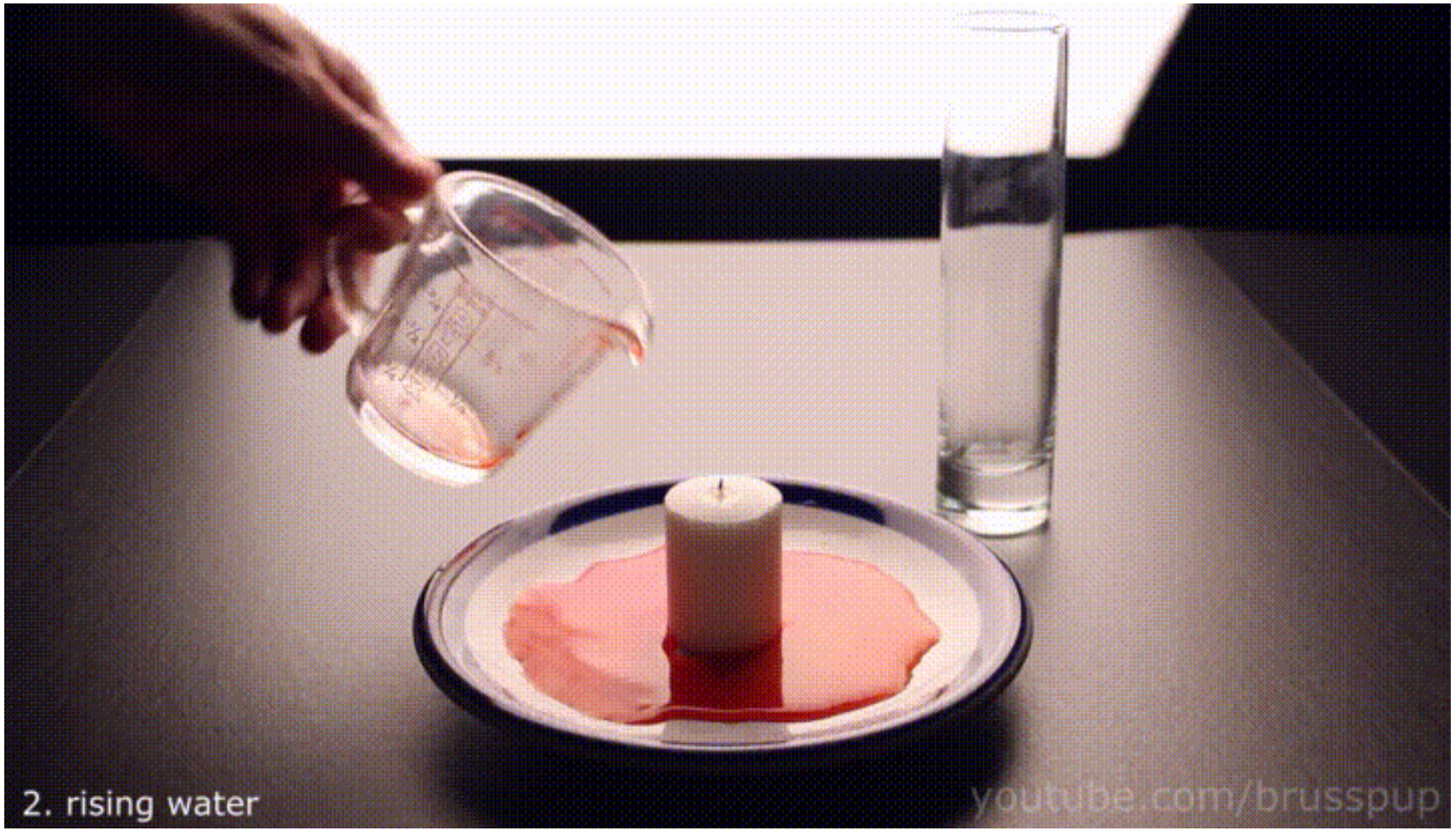
[Four keys for environmental regulatory collaboration | CGI United States]

[Combining technology and community engagement to improve air quality | CGI.com]



Introduction to Climate Change

Candle ‘trick’ phenomena



What is climate change and weather?

Climate Change - is a measure of the average pattern of weather over long periods.

Weather – a natural phenomenon that changes daily.

Climate is always changing! Why?

Nature

Volcanic activity pushes heat and gases into the air

The Sun

Changes in the sun's energy reaching the Earth

Humans

Human activities like driving cars, generating electricity and running factories release create a *greenhouse effect*.

What are the effects of climate change?

A direct effect of climate change is the *Greenhouse Effect*.

The *Greenhouse Effect* happens when carbon dioxide gas is released into the air and the earth's temperature increases.

This *creates more intense weather* (more intense heat, cold spells, hurricanes, flooding and drought).

Part 1
Be the scientist!

How do scientists measure climate change?

JOIDES Resolution (JR) Research Vessel

Image retrieved from: https://joidesresolution.org/about-the-jr/

Be the scientist!

Go to video retrieved from: Iceberg Alley and Subantarctic Ice and Ocean Dynamics – JOIDES Resolution viewed on Youtube.

According to polar researchers on the *JR,* global sea level will rise about one meter (around 3.2 feet) by 2100 due to the melting of Antarctic Ice Sheet.

Be the scientist!

"Spash! -- Iceberg calving off glacier." by Tolka Rover is licensed under CC BY-NC-SA 2.0

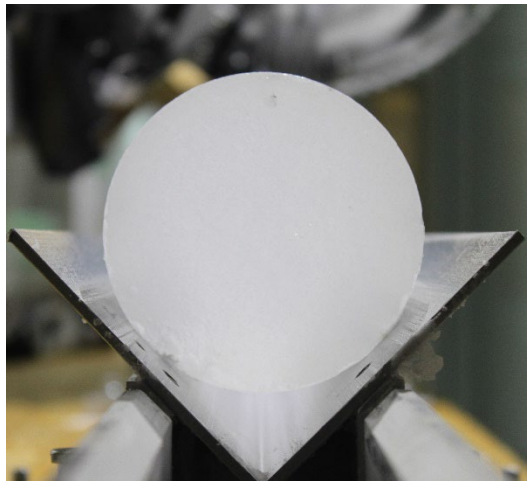
Calving

Icebergs break or “*calve*” and travel in warm waters around the ice sheet

By Bruce Molnia US Geological Survey - American Geological Institute, Ice rafting - Wikipedia

Iceberg rafted debris

Icebergs melt and drop dirt, dust, and rocks to the ocean floor as “*iceberg rafted debris*”



The EastGRIP ice core freshly cut
By Helle Astrid Kjær is licensed under CC BY 4.0

Core drilling

Scientists then collect the iceberg rafted debris through “*core drilling*”

Be the scientist!

Purpose:

To demonstrate the calving of icebergs.

Materials needed:

- Clear jar or drinking glass
- Grass, gravel and dirt
- 3 small paper cups

Be the scientist!

Procedure:

1. Fill paper cups with water until they are 2/3^{rds} filled
2. Place grass in one cup, dirt in the next and gravel in the last
3. Place cups in the freezer for 3-4 hours

Be the scientist!

Procedure:

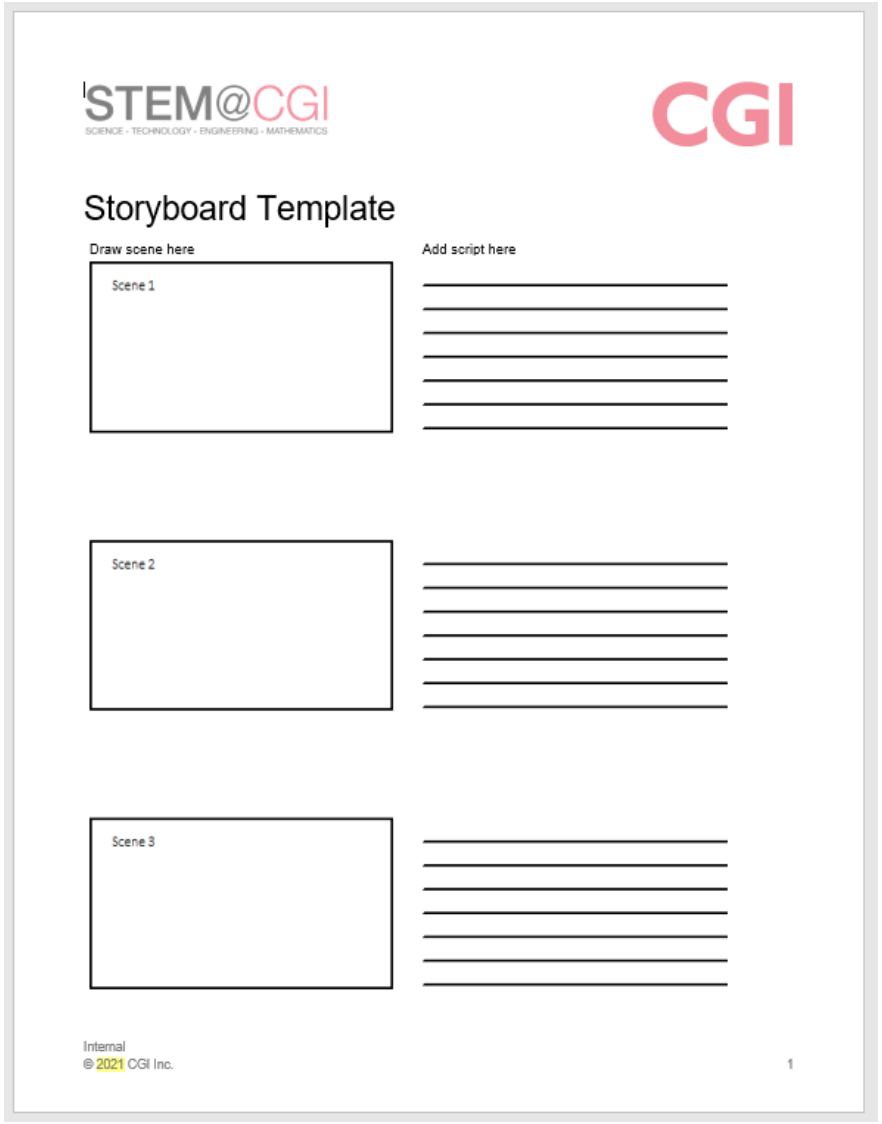
4. Fill the jar with water until it is 2/3^{rds} filled
5. Remove the cups from the freezer and remove the ice cubes
6. Place ice with the debris in the jar of water.
7. Observe the rafted debris fall to the bottom of the jar as the ice melts.

Storyboard template

Scientists always document what they have learned from their experiments! You can too!

Use the storyboard template found in the supplemental materials for this pack to present what you have learned!

STEM@CGI at Home Activity Pack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Storyboard Template
Draw scene here
Add script here
Scene 1
Scene 2
Scene 3
Internal
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Credits

Our commitment

We are passionate about helping students in our communities become the next generation of information technology professionals.

Insights you can act on

Founded in 1976, CGI is among the largest IT and business consulting services firms in the world.

We are insights-driven and outcomes-based to help accelerate returns on your investments. Across hundreds of locations worldwide, we provide comprehensive, scalable and sustainable IT and business consulting services that are informed globally and delivered locally.

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Citations

- Mckenna, T., & Zieminski, C. (2021, February 12). Phenomena for NGSS. Retrieved from Creating the Next Generation of Student Engagement: https://www.ngssphenomena.com/
- Observatory, U. S.-D. (2021, February 12). About the JR -- Joides Resolution. Retrieved from International Ocean Discovery Program: https://joidesresolution.org/about-the-jr/
- *TEDEd*. (2021, 02 18). Retrieved from What's the difference between weather and climate?: https://ed.ted.com/best_of_web/jyOdrQUt
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