



# Melting Ice & Rising Oceans

Q69



# PURPOSE

I did this experiment to learn more about how melting ice on Earth affects sea level rise.

# HYPOTHESIS

I think the melting sea ice will cause the water level to rise more than the land ice.

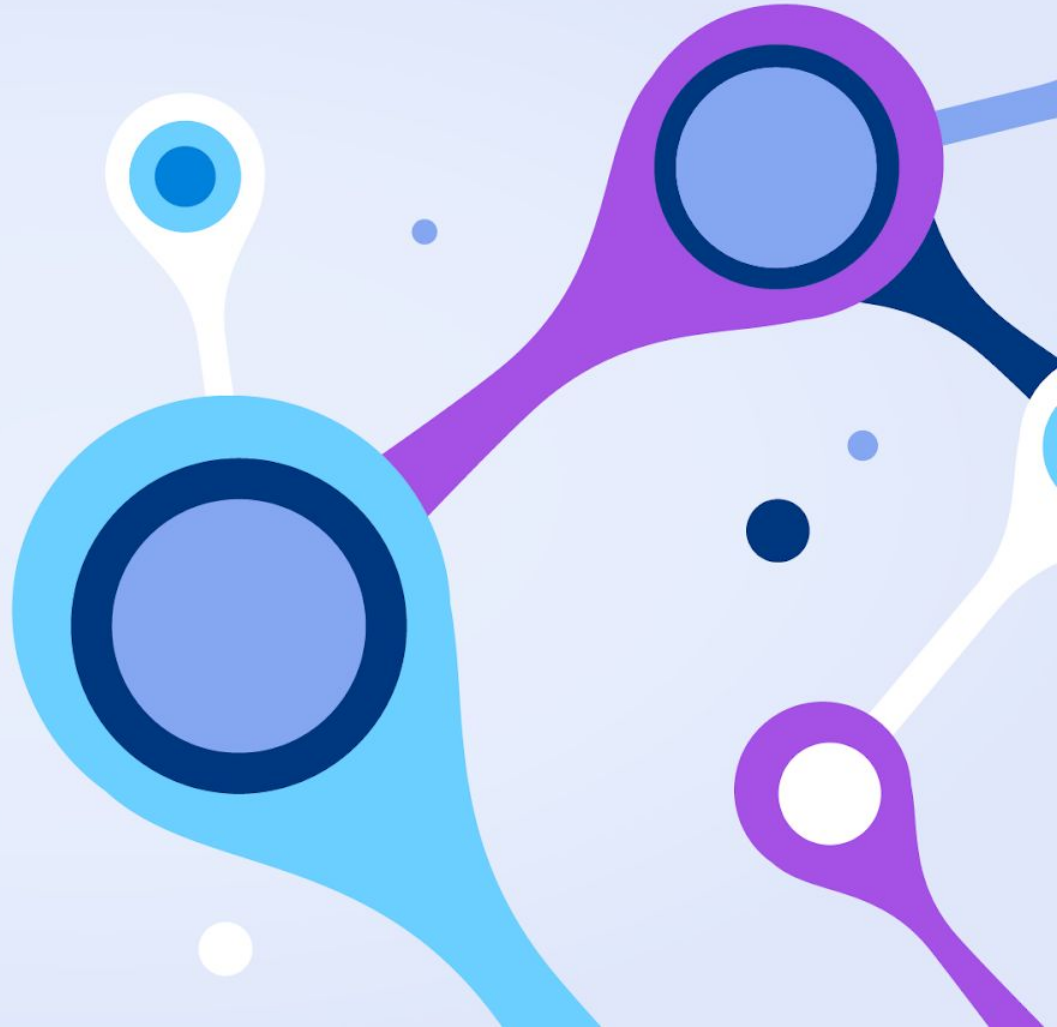
# MATERIALS

- Precise ruler
- 2 identical plastic containers
- Play Doh
- 8 identical ice cubes
- Cold water



# RESEARCH

- [www.jpl.nasa.gov/edu/learn](http://www.jpl.nasa.gov/edu/learn)
- Brainpop video on global warming
- Youtube video- “Archimedes Eureka : Measuring Volume by Displacement” by Manocha Academy
- [www.thisisclimatechange.org](http://www.thisisclimatechange.org)



# EXPERIMENT

In this container I put 4 ice cubes in the "sea" and made sure they were floating.

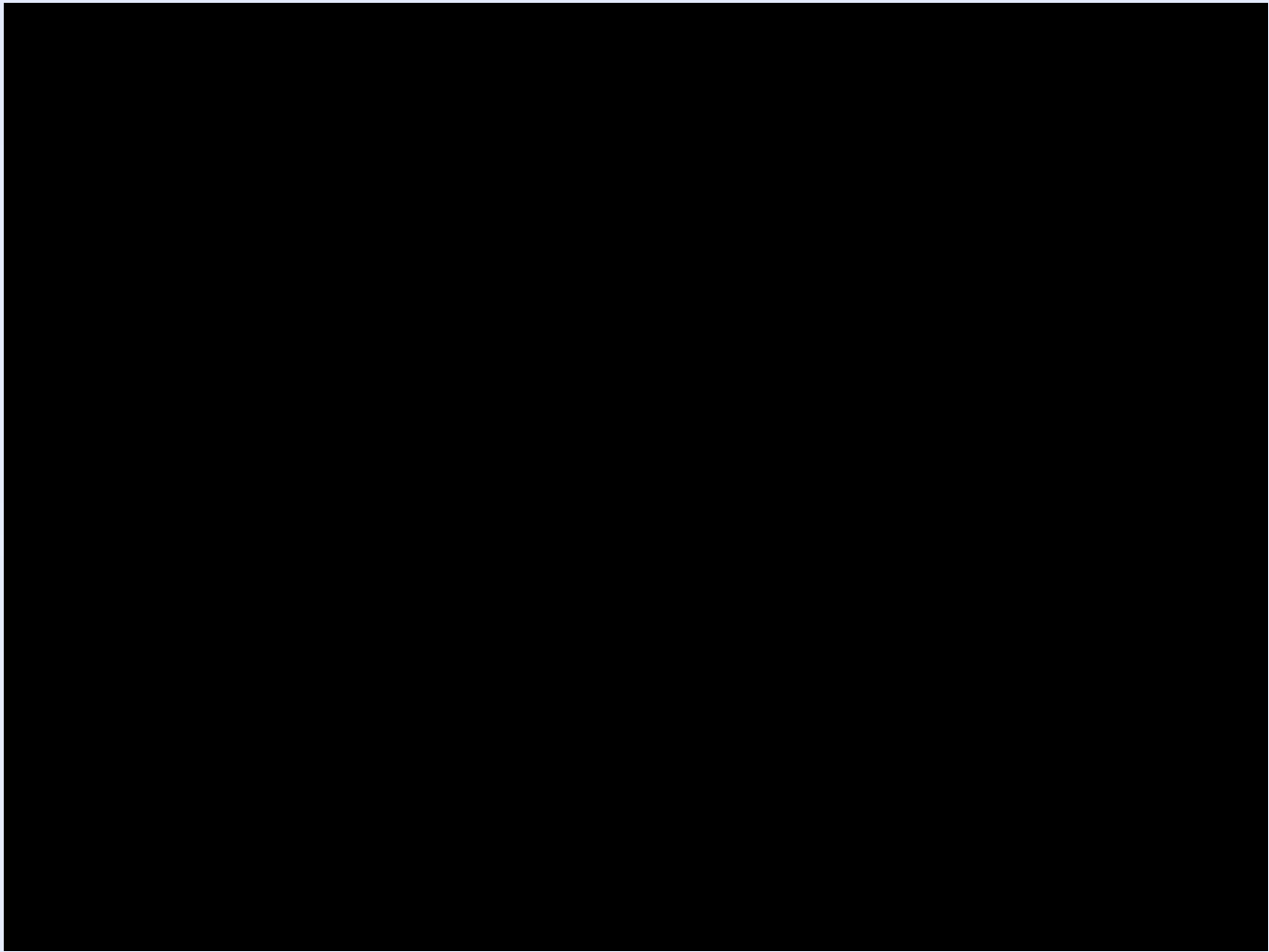
In this container I put 4 ice cubes on "land".



I immediately measured the water levels in mm before the ice started melting. Then I measured the water levels every one minute (and then longer intervals).

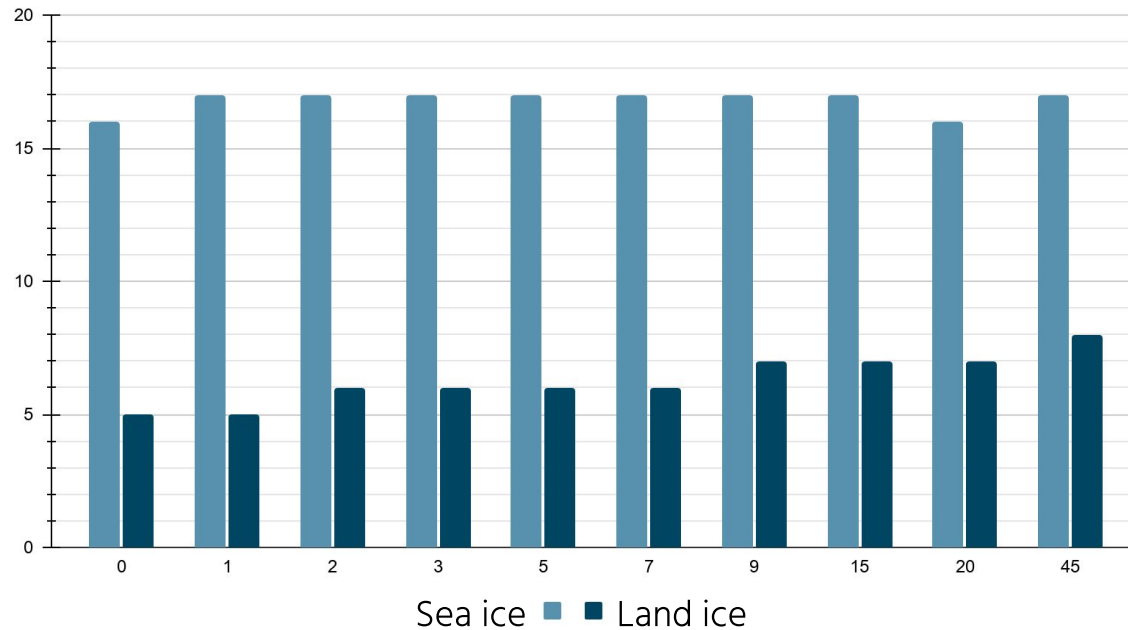


Sea Ice		Land Ice	
Time	water level in mm	water level in mm	
6:20	16	5	
6:50	17	5	
7:00	17	6	
7:10	17	6	
7:20			
7:30			
7:40	17	6	
7:50			
8:00			
8:10	17	7	
8:20	17	7	
8:30	16	7	
End	17	8	



# ANALYSIS

Time (minutes) vs. Water Level (mm)



**SEA ICE** increased from 16, 17 and decreased to 16 and ended at 17 mm. (No significant change)

**LAND ICE** increased from 5, 6, 7 and ended at 8 mm. (A 3 mm change)

# CONCLUSION

The land ice caused the water to rise more. This happened because of new water being added into the “sea”.

The sea ice had already “displaced” the water that is equal to the volume of the ice. This is the Archimedes effect, which tells us the water level will be the same once the ice has melted.

So in the end my hypothesis was **wrong**.

Think about a **full** glass of ice water.





# REAL WORLD CONNECTION

Because of global warming ice is starting to melt EVERYWHERE. Now I know that land ice causes oceans to rise more than ice that is already in the ocean.

In my research I also learned that the biggest cause of rising ocean levels is “thermal expansion” (heat causes the molecules in water to get bigger).



