

# Ocean Conveyor Belt and Climate Change

EMPACTS Project

Final Presentation

Spring 2022

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Rachel Budge, Keeli Moore, Dylan Norman, Chris Plunkett,  
Will Smith, Charmayne Webb, and Molly Woodbury

Introduction to Physical Science  
Professor C. Dianne Phillips, Instructor  
Northwest Arkansas Community College  
Bentonville, AR 72712

# Project Introduction

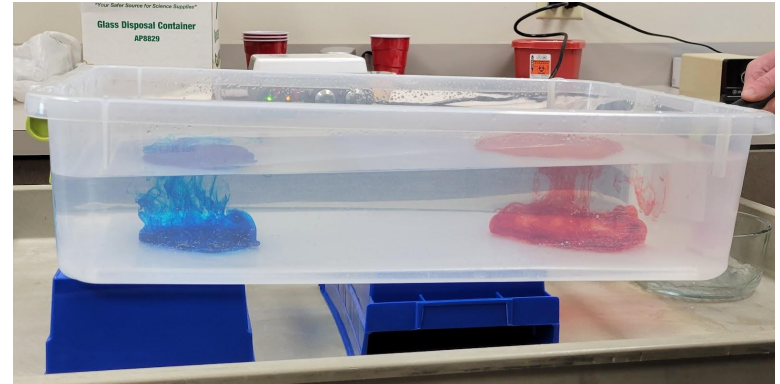
Water is not static, there is much movement, especially in the oceans.

Our team's objective was to research the influence of Global Warming on ocean currents.

In particular, we wanted to create a demonstration that showed how temperature and salinity influence ocean circulation.

We utilized a variety of resources such as salt, water dyes, ice, and changed the temperatures to manipulate the movement of water and its contents.

We created an informational presentation and laboratory demonstration which could be used by future STEM classes as a teaching tool.



# Presentation Contents

- Introduction
- Team
  - Demo team - Will, Dylan, Chris
  - Information Presentation - Molly, Rachel, Charmayne
  - Documentarian - Videos and Pictures - Neeli, Prof P.
  - Final Presentation - everyone - led by Prof P.
- Curricular goals
- Methods - research....blach
- technology
- Community Served
- Products of your learning experience
- citations

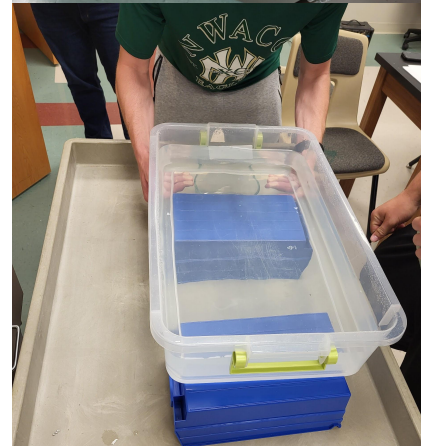
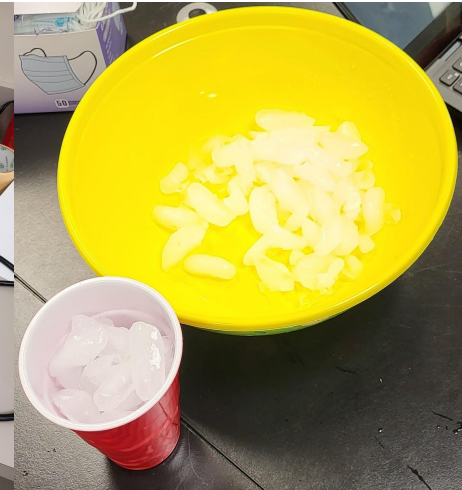
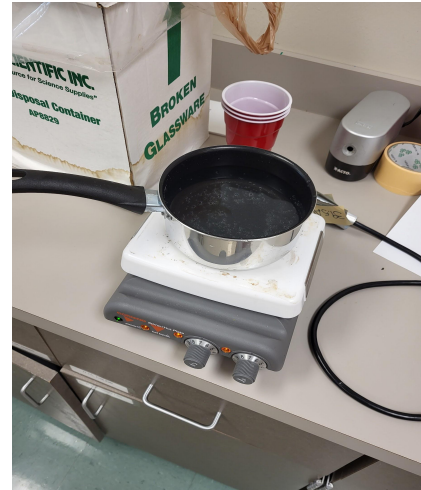
# Teams

- **Demo team** - Will, Dylan, Chris  
What did they do?
- **Information Presentation** - Molly, Rachel, Charmayne  
What did they do?
- **Documentarian** - Videos and Pictures - Neeli, Prof P.  
What did they do?
- **Final Presentation** - everyone - led by Prof P.  
What was the product of our learning experience?



# Demo Team

- We researched demonstration on youtube and developed our own demonstration set up, using the examples.
- We created a materials list and a process for constructing and testing our demo.
- Demo materials list:
  - big plastic bucket
  - red and blue dye
  - salt
  - water
  - ice
  - hot water
  - bowl



## **Demo team:** Experimentation with process

### Trial 1:

We began by adding salt to the ocean water of our demo. We did not have full contact with the heating element. We added four drops of each dye, and then poured in the ice.

### Trial 2:

We poured 500 ml of cold salted ice water into the ocean water demo, instead of putting the beaker in as a local source of cold.

# Demo team: Final experiment!

## Trial 3:

- We filled the Ocean Demo container with cold water and turned the hot plate on.
- We put the Demo container of water on blue bins to elevate one end of the container to rest over a glass bowl of hot water.
- We then went and filled a beaker (400ml) putting ice in it till it was very cold
- We Boiled the water and poured it into the glass bowl which then went under the bottom right side of the plastic container (ocean demo) (we also put styrofoam under the glass bowl to raise it to the plastic container.
- Then we added red dye (three drops) to the warm side and observed that it rose in response to being heated. then put the beaker itself of cold water into the other other side of the plastic bucket.
- We then added blue dye (two drops) to the cold side and a couple good shakes of salt to the cold side.

## College Curriculum - goals met with this project?



The Informational Presentation Team, researched the college level Earth Science curriculum of the role of ocean currents in regulating global weather patterns.

We also looked at the role of Climate Change, melting glaciers, and changing salinities of oceans on the global ocean conveyor belt.

Our team used Microsoft TEAMS to collaborate with a team member that was too ill to attend.



# The Documentation Team

Keeli Moore and Professor Phillips took pictures and videos of the teams working together.



# Methods

- Brainstormed about topics of interest
- Decided on a topic
- Determined what our final products would be
- Divided into teams
- Researched the interaction of ocean and wind currents in the global system
- Researched current demos of our topic



# Technology

- ❑ Team Google drive
- ❑ Google Slides
- ❑ Google Docs
- ❑ Campus Wifi
- ❑ Internet search engines
- ❑ Computers and laptops
- ❑ Cell Phones
- ❑ Microsoft Video Editor
- ❑ Wordpress Webpage Editor
- ❑ Microsoft Teams



# Community Served?

Our project webpage is accessible to all teachers via the internet.

We have an informational presentation and a video demonstration of our experiment.

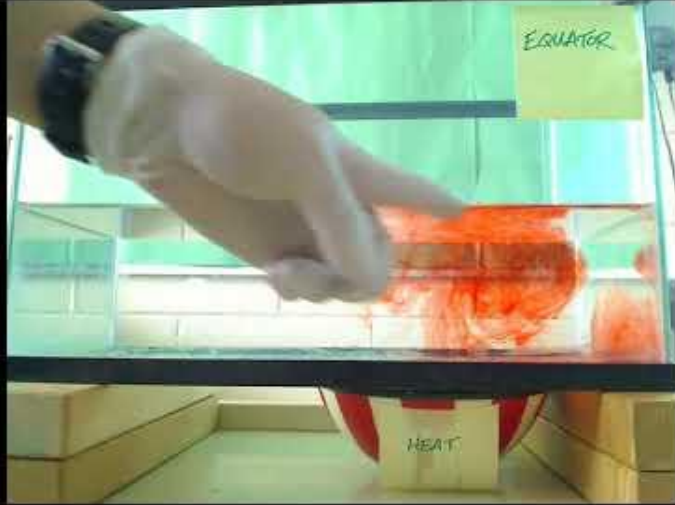


# Products of Learning Experience?

- We had fun working together and learning about planet earth.
- Informational Presentation that is available for STEM Faculty K-College to use as an instructional tool when teaching about Climate Change and the effects of Ocean Currents on global systems.
- Demonstration
  - Design document which outlines the procedure and materials needed to produce the demo
  - video of the demonstration that was the result of demonstration instructions document
- Final Presentation outlining the Capstone Project
- Web Page - EMPACTS student projects page

Demo videos

What we based our demo off



Our experiment video



# Citations

<https://youtu.be/60is0N8zOTI> (youtube video we based our demo)

See informational presentation for additional citations

<https://youtu.be/AGdyq0Tllho> (youtube video produced by our class for this project)

# Acknowledgements

- EMPACTS Lab for providing materials needed for our experiments
- NWACC Faculty for use of their bowl and ice from the faculty lounge ice maker.