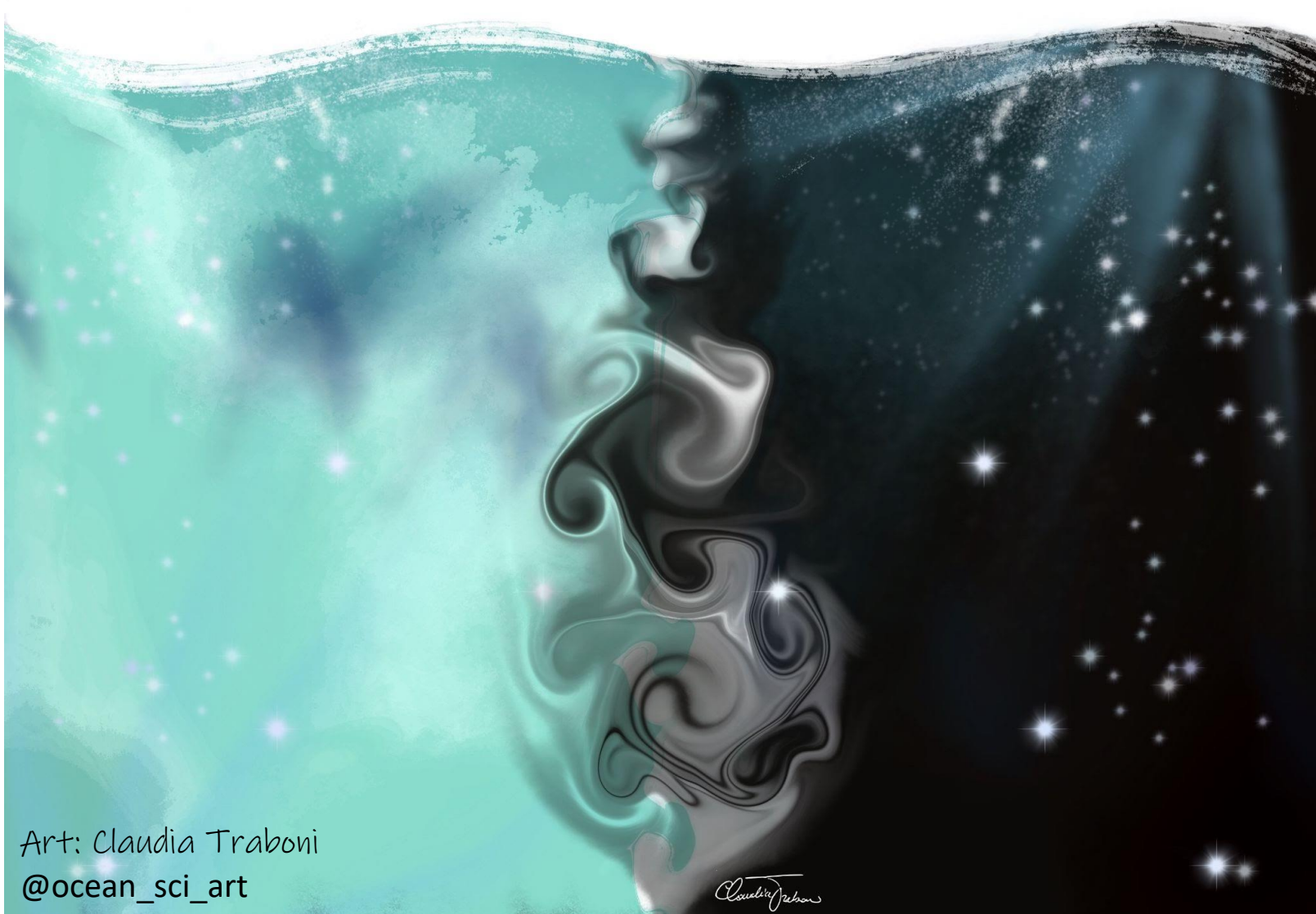


# Session 1:

## How do oceans move?



Art: Claudia Traboni  
@ocean\_sci\_art

Created by:

**\*Ocean scientists\***  
USC postdocs

Brittany Bennett  
Holland Elder  
Jake Weissman  
Jesse McNichol  
Nicole Ratib  
Suzana Leles  
Trang Nguyen

In collaboration with:  
LA public libraries & NeSci

# Experiment 1: saltwater versus freshwater

## Food for thought:

Have you ever tried floating in a river and in the ocean?

Where do you think it would be easier to float?

To answer this, let's think about the main differences between:  
**rivers/lakes** and the **ocean**!

# Experiment 1: saltwater versus freshwater

## What you will need:

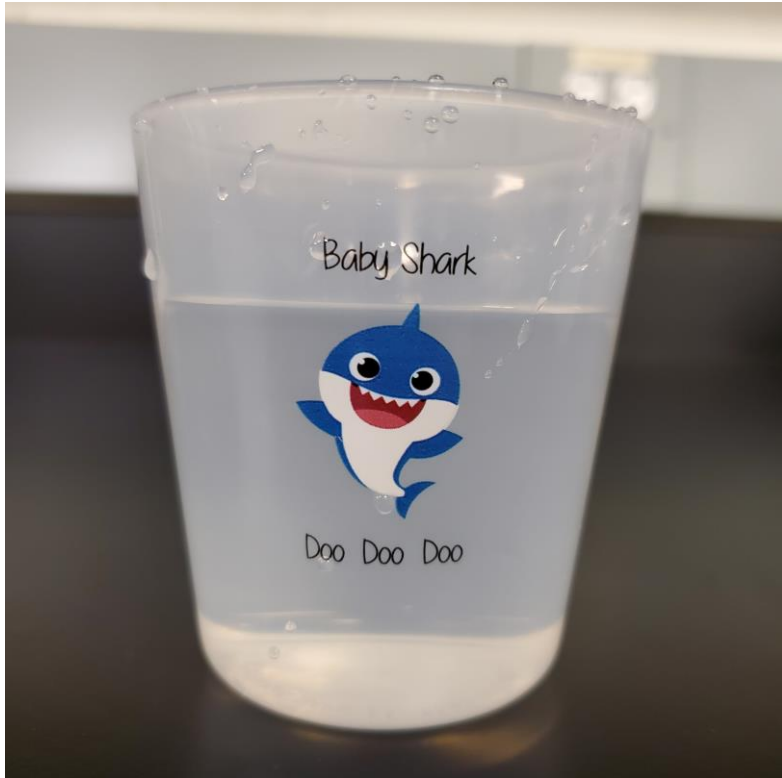
- ☐ 2 small ducks
- ☐ 2 plastic cups
- ☐ Table salt
- ☐ 1 short paper straw
- ☐ Tap water



# Experiment 1: saltwater versus freshwater

## Step 1:

Fill one cup with tap water.



## Step 2:

Gently, place one of the ducks on top of the water surface and observe. What happens?

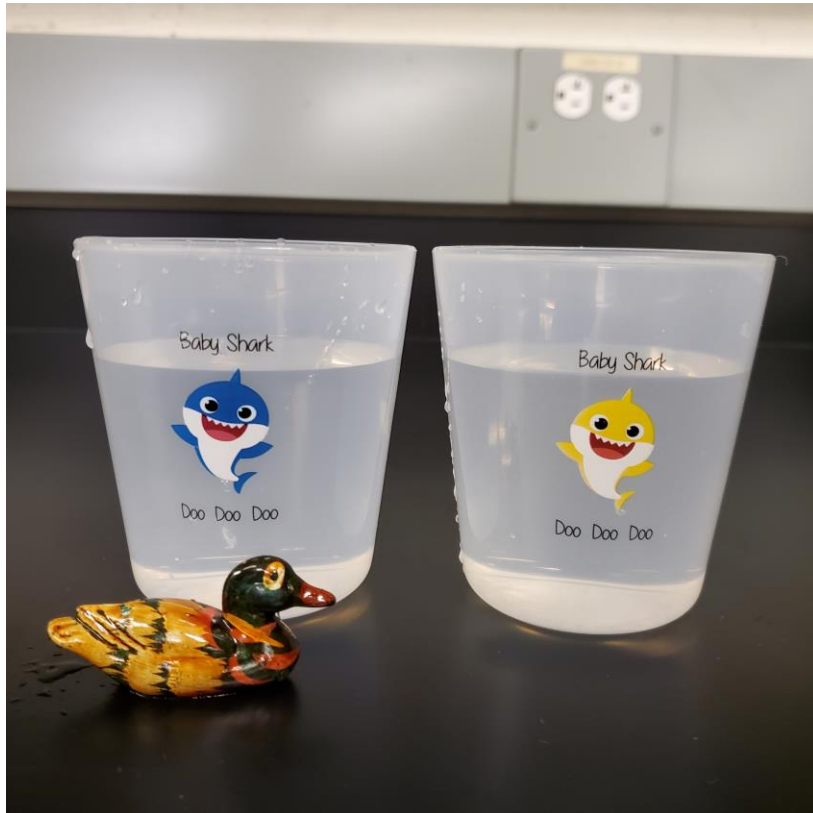




# Experiment 1: saltwater versus freshwater

## Step 3:

Fill the second cup with tap water.



## Step 4:

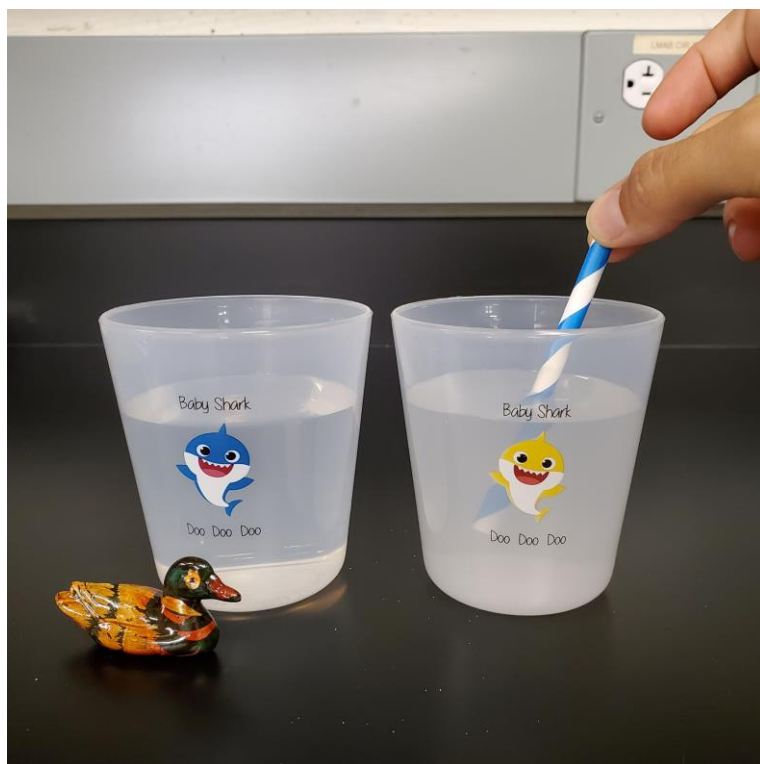
Add the table salt to the second cup.



# Experiment 1: saltwater versus freshwater

## Step 5:

Stir it well with your short paper straw.



## Step 6:

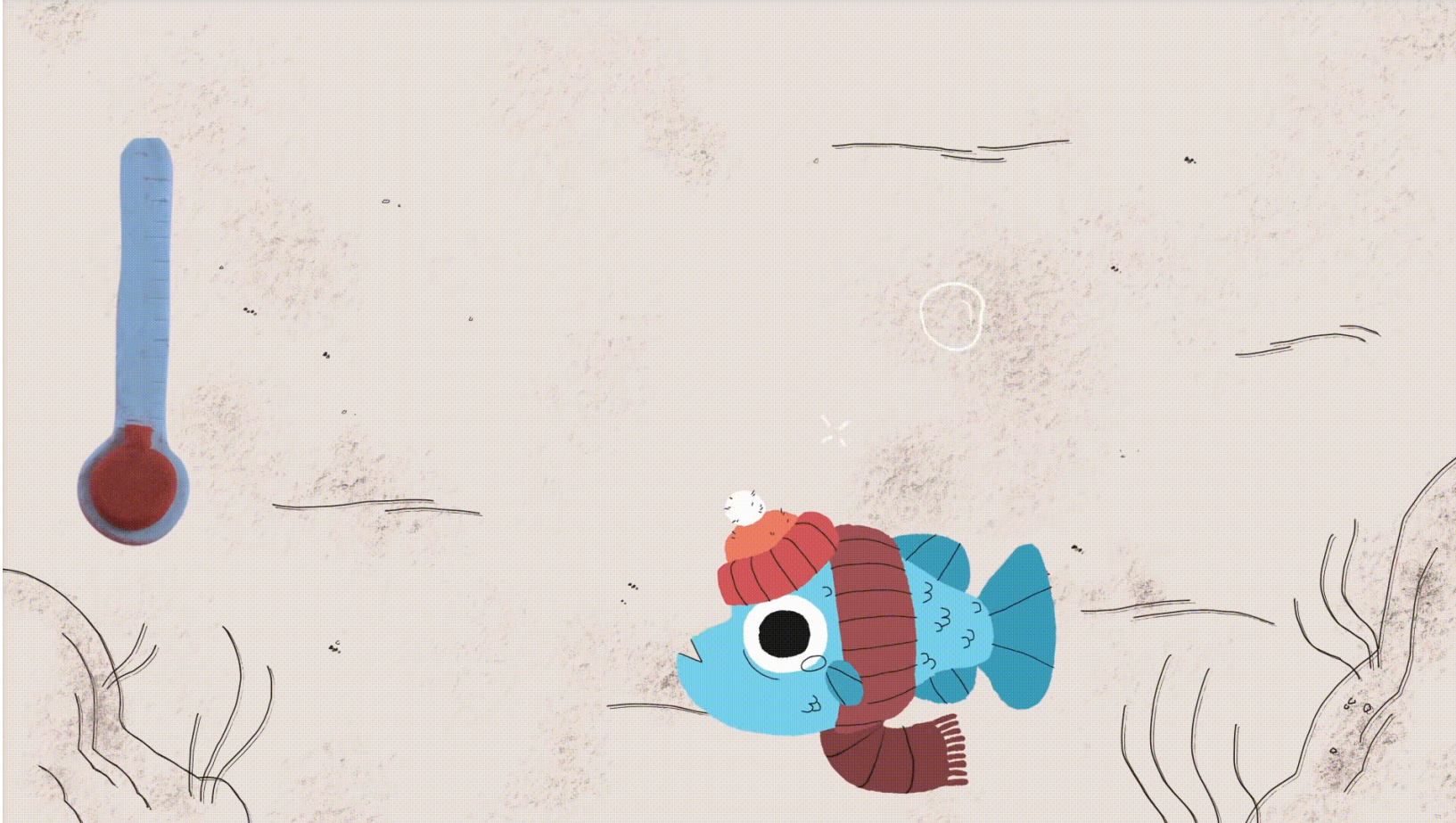
Gently, place the other duck on top of the water surface and observe. What happens?





# Experiment 1: saltwater versus freshwater

Now let's think about the ocean! Add your findings here!



[How do ocean currents work? - Jennifer Verduin - YouTube](#)





# Experiment 2: cold water versus warm water

Food for thought:

Have you ever noticed how  
the seawater changes  
across seasons?



© Fou '16



# Experiment 2: cold water versus warm water

## What you will need:

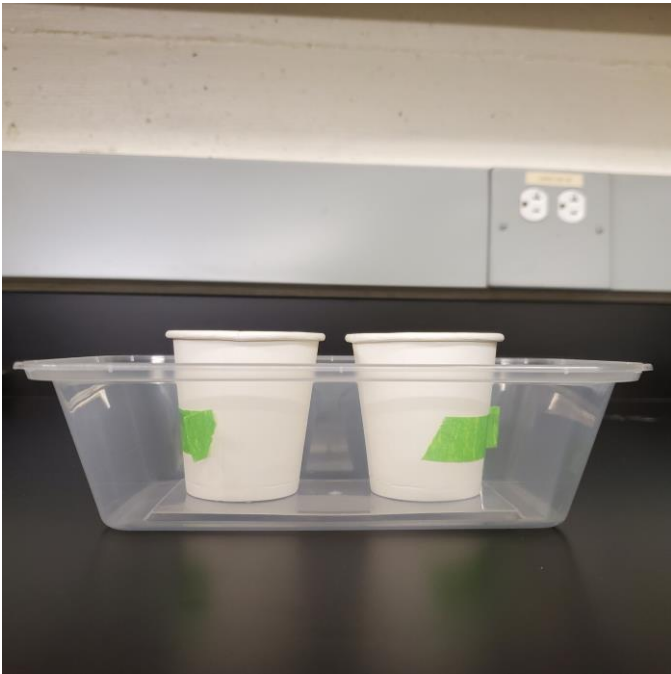
- ☐ 2 food coloring
- ☐ 2 paper cups
- ☐ 2 plastic cups
- ☐ 1 plastic tray
- ☐ 1 short paper straw
- ☐ Cold & warm water



# Experiment 2: cold water versus warm water

## Step 1:

Put the paper cups inside the tray, with the tapes facing sideways.



## Step 2:

Add cold water to one of the paper cups + 6 drops of the cold food coloring and stir it well.



# Experiment 2: cold water versus warm water

## Step 3:

Add warm water to the other paper cup + 12 drops of the warm food coloring and stir it well.



## Step 4:

Add tap water to the plastic tray until it is half full (make sure it does not surpass the level of water in the paper cups).





# Experiment 2: cold water versus warm water

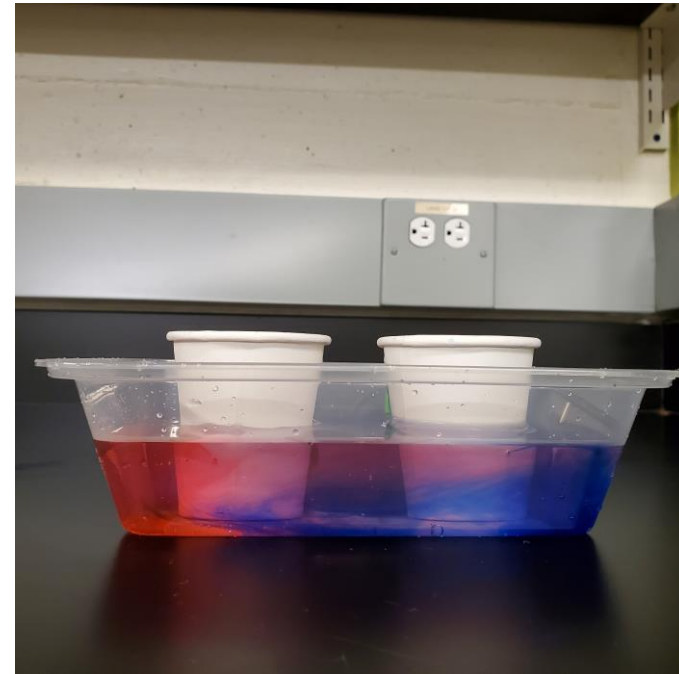
## Step 5:

Gently remove the tapes off the warm cup and then off the cold cup.



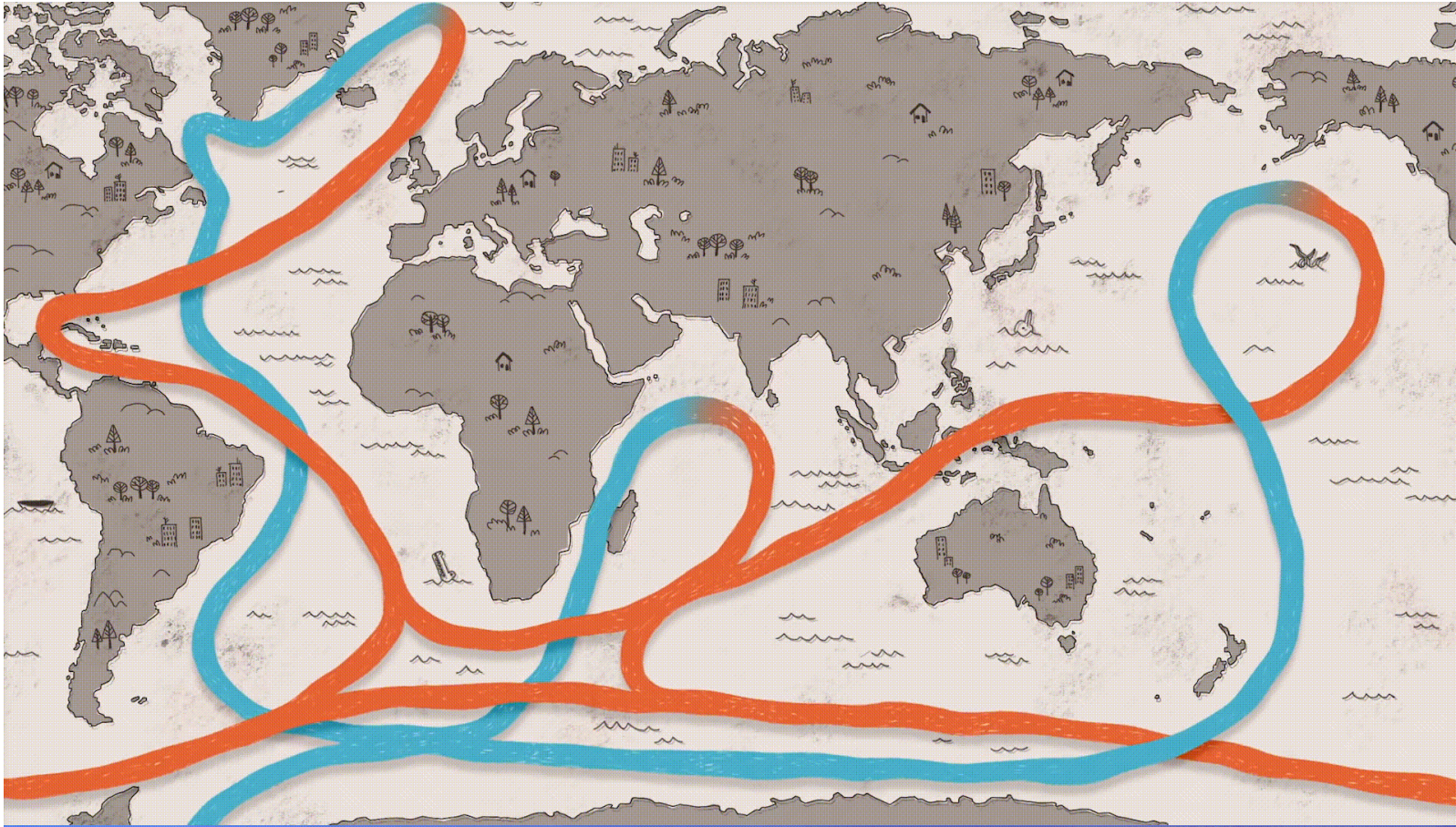
## Step 6:

Observe the colored flows you created for a few minutes. What happens?



# Experiment 2: cold water versus warm water

Now let's think about the ocean! Add your findings here!



[How do ocean currents work? - Jennifer Verduin - YouTube](#)





# Experiment 3: turbulence in the water

## Food for thought:

The ocean can be flat or very turbulent.  
What do you think is the major force that causes that?





# Experiment 3: turbulence in the water

## What you will need:

- ☐ 2 plastic cups
- ☐ 1 plastic funnel
- ☐ 1 food coloring
- ☐ 1 paper straw
- ☐ 1 short paper straw
- ☐ Cold & warm water



# Experiment 3: turbulence in the water

## Step 1:

Fill  $\frac{1}{4}$  of the plastic cup with cold water, add 6 drops of food coloring and stir it well.



## Step 2:

Fill  $\frac{2}{3}$  of the other cup with warm water and gently position the plastic funnel in it.



# Experiment 3: turbulence in the water

## Step 3:

Gently add a little bit of the cold colored water through the funnel.



## Step 4:

Gently remove the funnel and check what happens at the bottom of the cup.

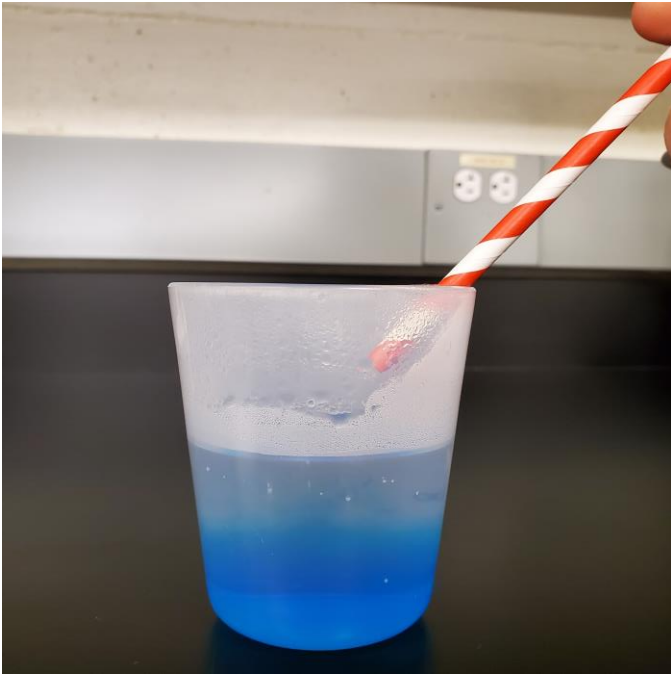




# Experiment 3: turbulence in the water

## Step 5:

Position the straw in a diagonal angle (but do not touch the water surface).



## Step 6:

Now blow through the straw and look to the side of the cup! What happens?



# Experiment 3: turbulence in the water

Now let's think about the ocean! Add your findings here!

