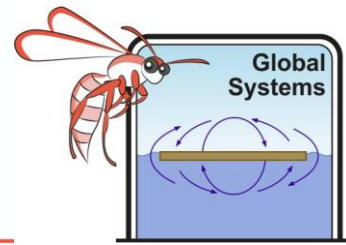


## Global Conveyor Belt - Student Activity



### Factors that drive deep ocean currents - Temperature and density

Four fifths of our planet is covered by sea. Deep ocean currents are more important than marine surface currents or air currents in the atmosphere in the transport of heat around the world. Driven by temperature and salinity they create a "**Global Conveyor Belt**" which moves vast quantities of heat around the surface of the planet within the oceans. It may move more slowly than air currents but can transport more heat and is absolutely critical to our understanding of the forces that drive climate change.



What do we mean by density? \_\_\_\_\_

\_\_\_\_\_

How can a change in temperature result in a change in density? \_\_\_\_\_

\_\_\_\_\_

You may visit: <https://ed.ted.com/lessons/why-does-ice-float-in-water-george-zaidan-and-charles-morton> for a 3.55minute animation and explanation

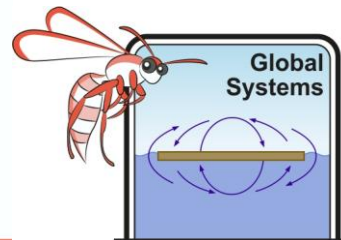
**The Global Conveyor Belt (GBC)** starts as a downward flow of water near the poles.

**Aim** To demonstrate how cold can initiate a downward flow of water



#### Materials per group

- A large glass beaker or transparent container almost full of water at room temperature
- A plastic bag with ice cubes
- A clothes peg or grip to hold the bag in position
- A dropper bottle with food dye or a small beaker of food dye and a Pasteur/transfer pipette



## Global Conveyor Belt - Student Activity

### Method

1. Hang the bag of ice to one side of the transparent container (as above).
2. Leave for two minutes to allow the current to become established.
3. Gently drop food colouring onto the water's surface at the centre of the container.
4. Observe and note observations.

### Results/observations

What did you observe? \_\_\_\_\_

\_\_\_\_\_

### Conclusion

What conclusion do your observations draw you towards? \_\_\_\_\_

\_\_\_\_\_

### Discussion

Explain how chilling water could create a downward current. \_\_\_\_\_

\_\_\_\_\_

At our poles, warm seawater comes in contact with frozen ice caps, chilling winds and sea ice. What effect will these produce?

\_\_\_\_\_

How can this activity be improved? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_