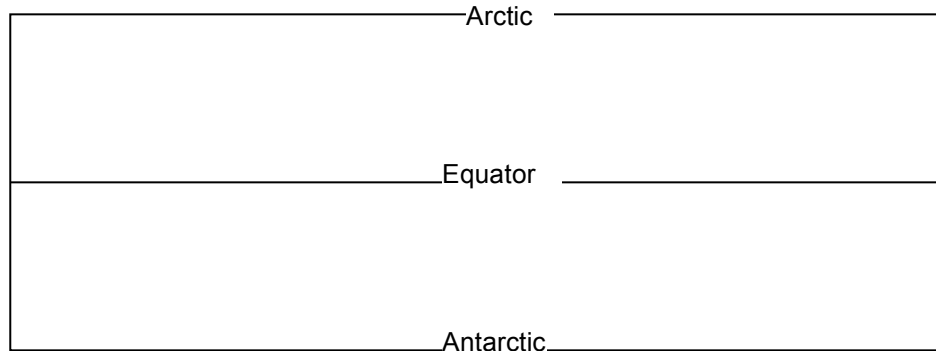


Not attempting to answer questions on expeditions will result in point deductions on course workbook (**two or more blank answers** will result in a deduction of 2-4points; a 5 point deduction will be assessed if **more than five answers** are left blank).

Objective: Determine the processes and patterns of the flow of water in the ocean basins. This flow exerts a fundamental influence on short and long-term climate.

1. Introduction

2. Ocean Temperature - The map on this page shows today's distribution of sea surface temperature around the world. You should be able to see small deflections in the shape of the bands of temperature, especially near the boundaries between the oceans and the continents. These deflections are related to the motion of water on the surface of the ocean, which is the primary focus of this expedition. If there was no motion of the surface waters of the ocean, then how would the sea surface temperature appear -- will it be different from the global sea surface temperature shown in this web page? Draw in the sea surface temperature distribution for an ocean without motion on the map below, using the same color scheme as the sea surface temperature map on the web page (the one which does have a moving ocean).



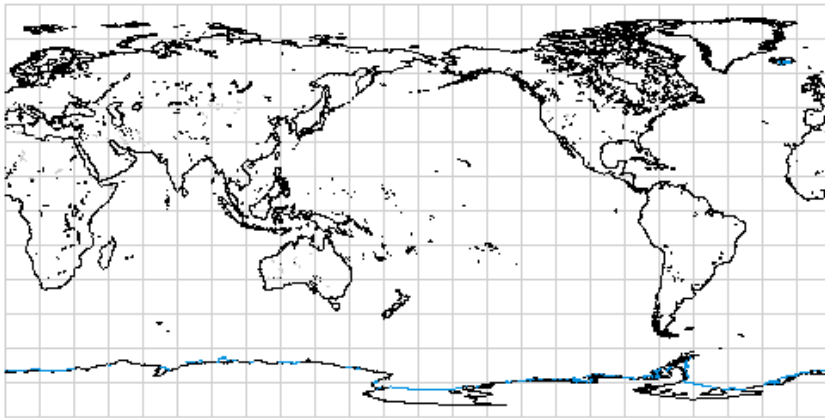
3. Ocean Circulation

The two types of ocean currents are _____ &
_____ .

Surface circulation is driven by _____

whereas thermohaline is driven by _____ ?

4. **Atmospheric Heat** - Make a simple sketch of the global distribution of heat in the atmosphere.



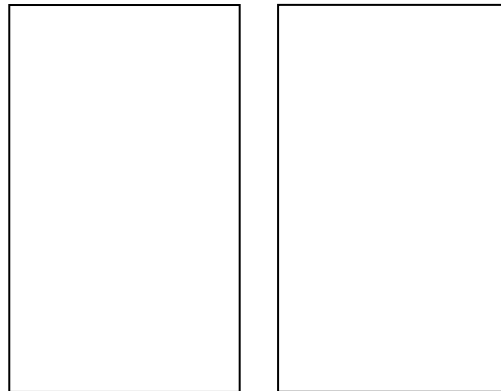
Where is the warm air located in the diagram _____?
Where is the cold air located?

5. **Atmospheric Heat and Pressure**

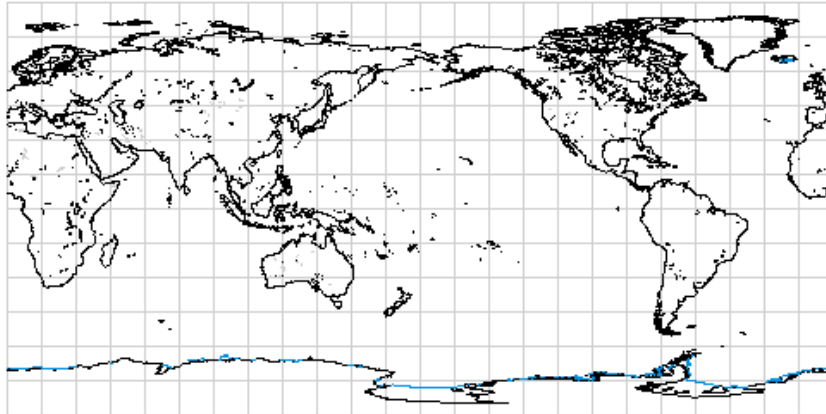
What happens to the air pressure below masses of warm, rising air?

What happens to the air pressure below masses of cold, sinking air?

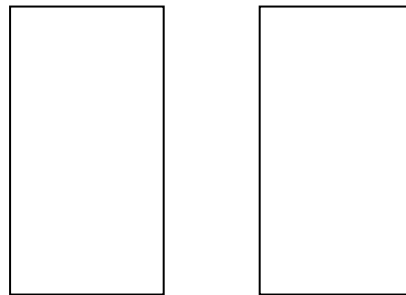
Make diagram of this process with labels



6. **Global Atmospheric Pressure** - Make a sketch of the global distribution of atmospheric pressure. (Put H's in High Pressure regions and L's in low pressure areas.)



7. **Air Pressure and Wind** - Make a simple sketch of the relationship between atmospheric pressure, vertical motion of air masses and the direction of the wind.



What direction does the wind blow, in regards to systems of atmospheric pressure?

The wind blows away from _____
and towards _____

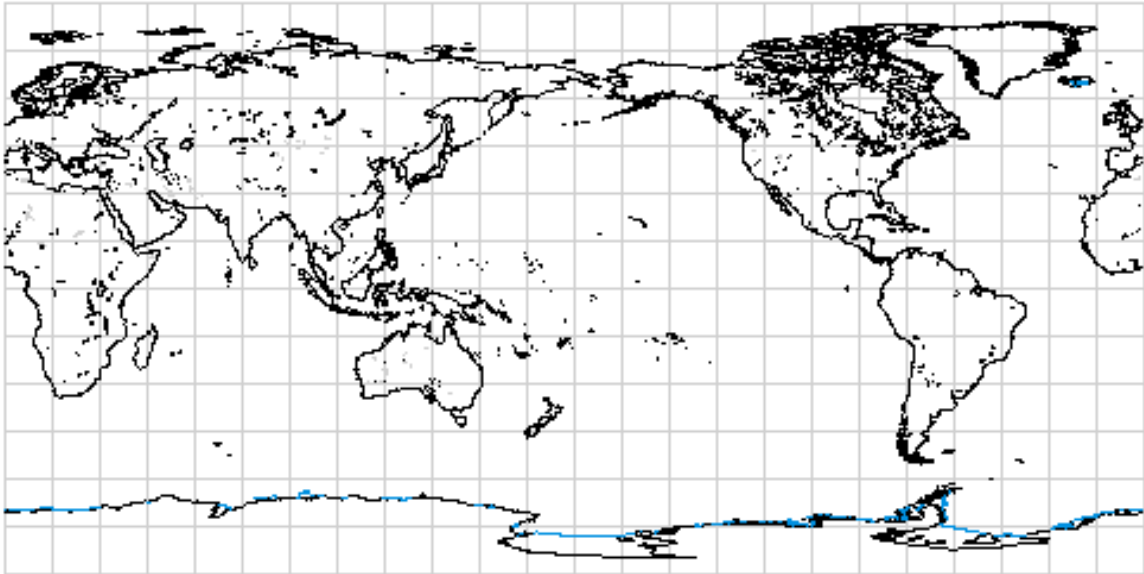
8. **Wind Directions on a Rotating Earth** - Why doesn't the wind flow in a straight direction on our Earth _____?

The deflection of the wind is in which direction in the northern hemisphere (if viewed in the direction of the wind) _____?

The deflection of the wind is in which direction in the southern hemisphere (if viewed in the direction of the wind) _____?

At the equator, will the Coriolis effect deflect objects in motion _____?

9. **Global Wind Patterns** - Sketch a diagram showing the directions of the wind around low and high pressure systems in the northern and southern hemispheres of the Atlantic and Pacific Ocean.



10. **Measuring Surface Circulation** - List four methods that are used to trace the direction of ocean currents in the global oceans?

- 1) _____
- 2) _____
- 3) _____
- 4) _____

1 minute essay - Summarize what you learned in this expedition - Avoid the "I learned a lot about" syndrome - show some insight

I am here to help you learn the material.

Remember that answer keys are not provided after exam #1, please do a self-assessment of your learning in this expedition and post any questions that you may have in the "Exped 16 Circulation - Any Questions?" in the Desire2Learn Discussions.

In order to receive credit for completing this expedition,

Go to Desire2Learn Email and send "Bye Don"

- **"End Expedition 16" in Subject Line. (VERY IMPORTANT)**
- **Include "Bye Don" in body of email,**
- **Include "Completion Word" (see last page of expedition) and write your name in body of e-mail message**