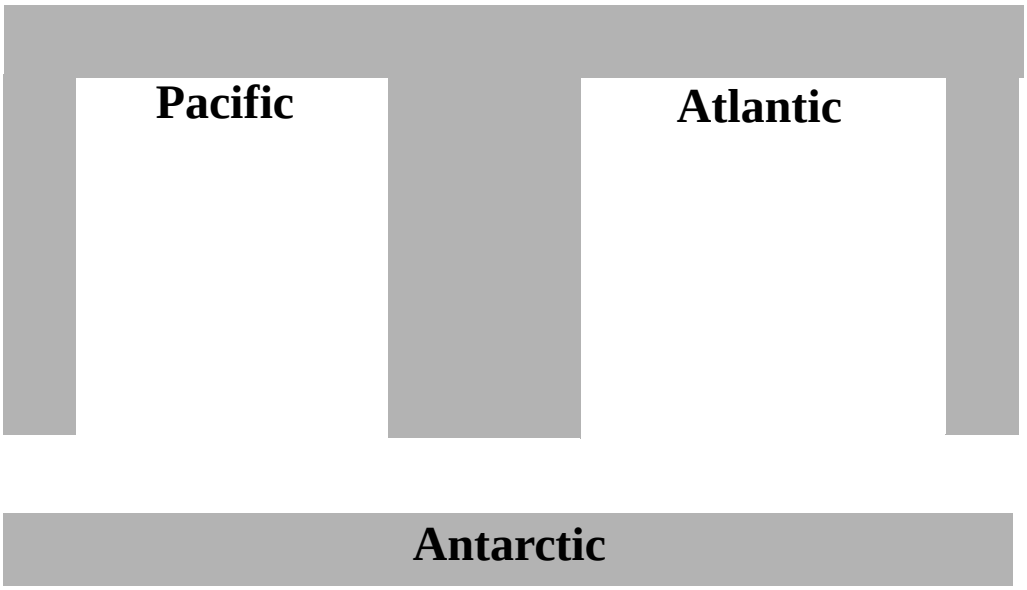
ESS11: CLIMATE CHANGE AND POLICY

Homework # 5

(due Tuesday - 2 March)

1. Draw the thermohaline circulation in the following map. Indicate where the ocean waters sink and rise.



2. North Atlantic and the Antarctic Ocean are the two major regions of deep water formation. Explain why (e.g., air temperature, sea ice formation, ...) surface ocean waters sink to the ocean floor in these two regions.

3. If the formation of the Antarctic Bottom Water is suddenly stopped,
   (a) how long would it take before the effects could be noticed in the deep-ocean waters of the North Pacific basin?
   (b) explain why you would, or would not, expect these changes to affect the surface-ocean temperature in the North Pacific right away.

4. (a) Describe the four major components of a subtropical gyre.
   (b) What are the relationships between the subtropical gyre and surface winds patterns.
   (c) How do the subtropical gyres affect the heat transport in the ocean?