This assignment is designed to inform you about coastal upwelling. Like the Ocean Conveyor Belt and turnover due to the loss of the thermocline, upwelling affects the distribution of water and nutrients in the ocean, thereby increasing productivity in specific areas. In fact, those areas tend to be the most biologically productive areas in the ocean.

**YOUR ASSIGNMENT**

Answer the following questions:

1. Upwelling often occurs when winds blow parallel to the coastline. For example, in California, winds often blow from a northerly direction. However, contrary to common sense, the water in those areas does not flow in the same direction as the wind. This is because of the Coriolis effect. Explain what causes the Coriolis effect and how it affects the net movement of water. In California, which direction does the water move?

2. Because of the winds and the Coriolis effect, the warm surface water will be transported from one area to another. Water from somewhere else has to move in to take its place. Where does that water come from?

3. The replacement water that you named in question #2 differs significantly from the original water in its temperature and chemical composition, especially with regard to nutrients and dissolved gases. Briefly describe those differences.

4. So, put all of this information together and explain why upwelling creates some of the most productive areas in the ocean.

This assignment is due by class time on Thursday, March 3rd.