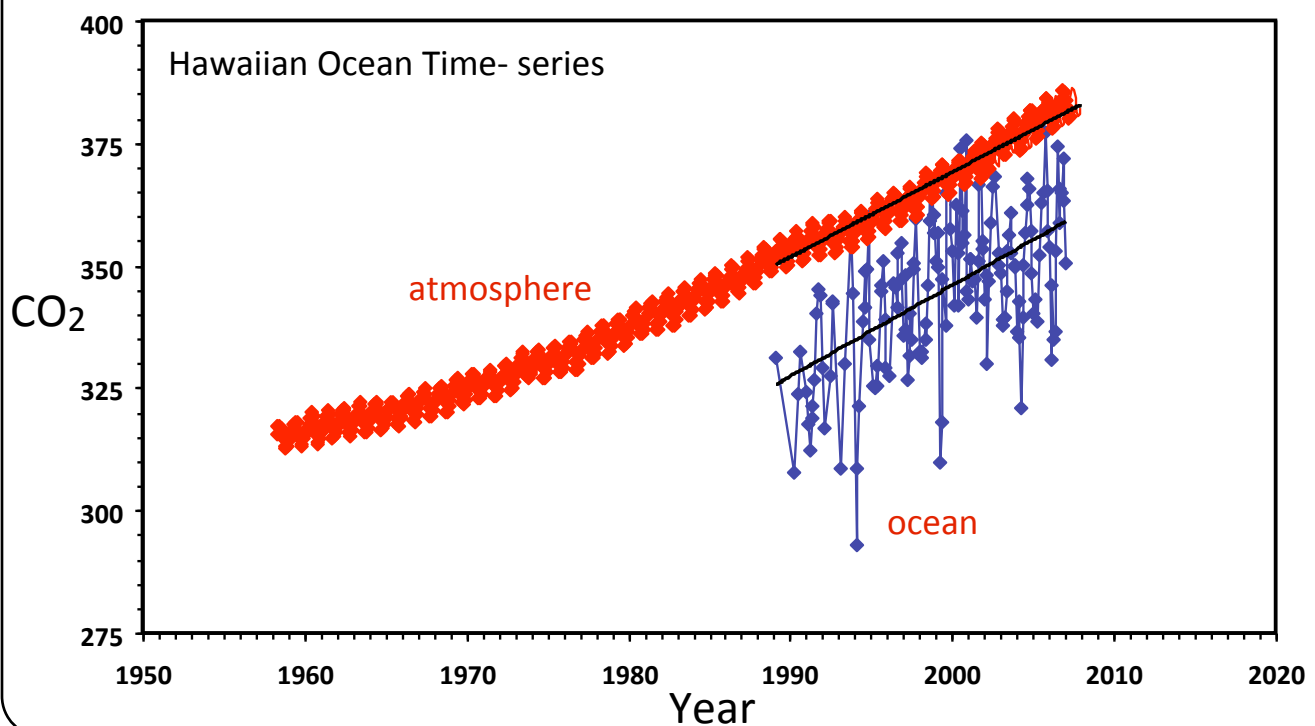


## The following is certain:

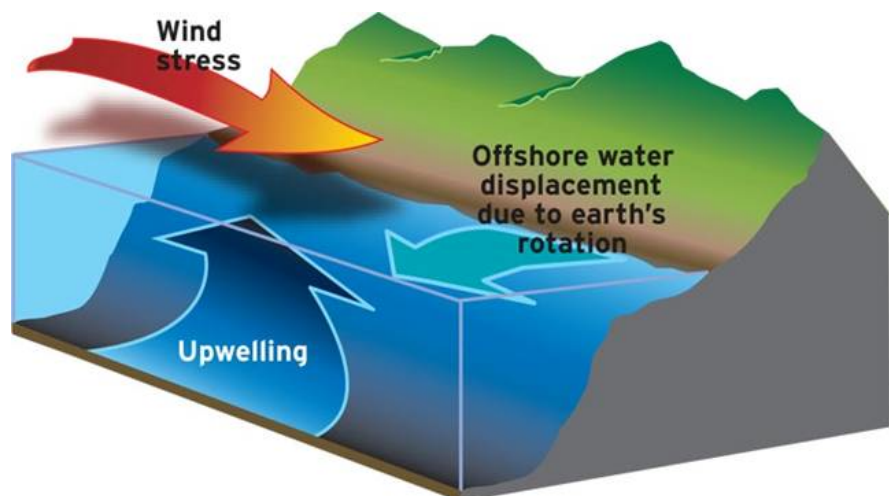
1. Atmospheric CO<sub>2</sub> is higher now than at any point in the last million years
2. Elevated CO<sub>2</sub> in the atmosphere leads to elevated CO<sub>2</sub> in the ocean
3. Nearly 150 billion tons of fossil-fuel CO<sub>2</sub> carbon have been added to the ocean
4. CO<sub>2</sub> reacts with water to form carbonic acid which consumes carbonate
5. Organisms that make carbonate shells don't like it when carbonate is lowered
6. Effects will be significant in the open ocean in the future

## Elevated CO<sub>2</sub> in the atmosphere leads to increased CO<sub>2</sub> in the ocean

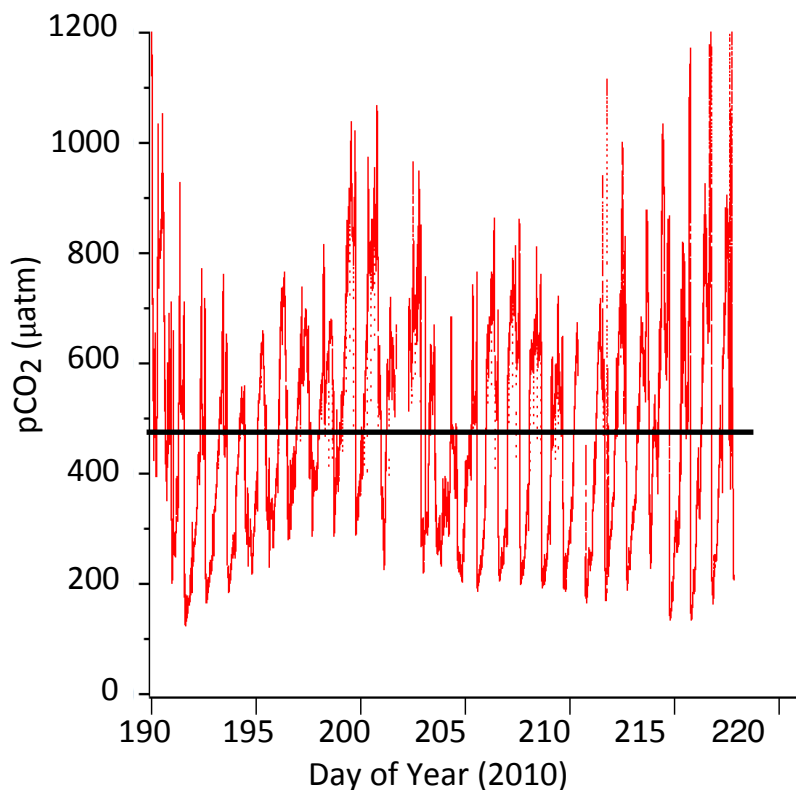
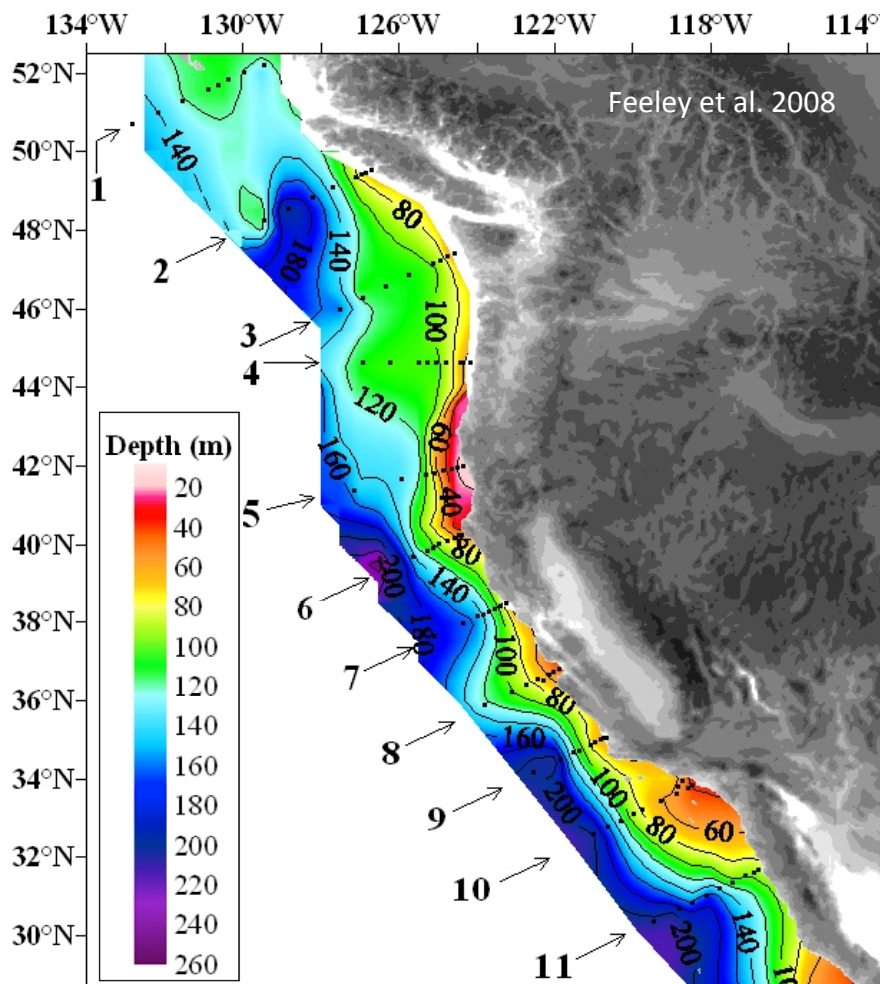


## Upwelling:

Upwelled waters are (decades!) old, naturally high in CO<sub>2</sub>, low in oxygen (O<sub>2</sub>) and high in nutrients. Upwelling brings these waters to the surface very near shore, where they impact coastal bays, including Netarts Bay.



Upwelling already brings corrosive waters to the Oregon coast



In 2010, favorable spawning and growing conditions occurred only about 50% of the time.

In the future favorable conditions will be even less common.