

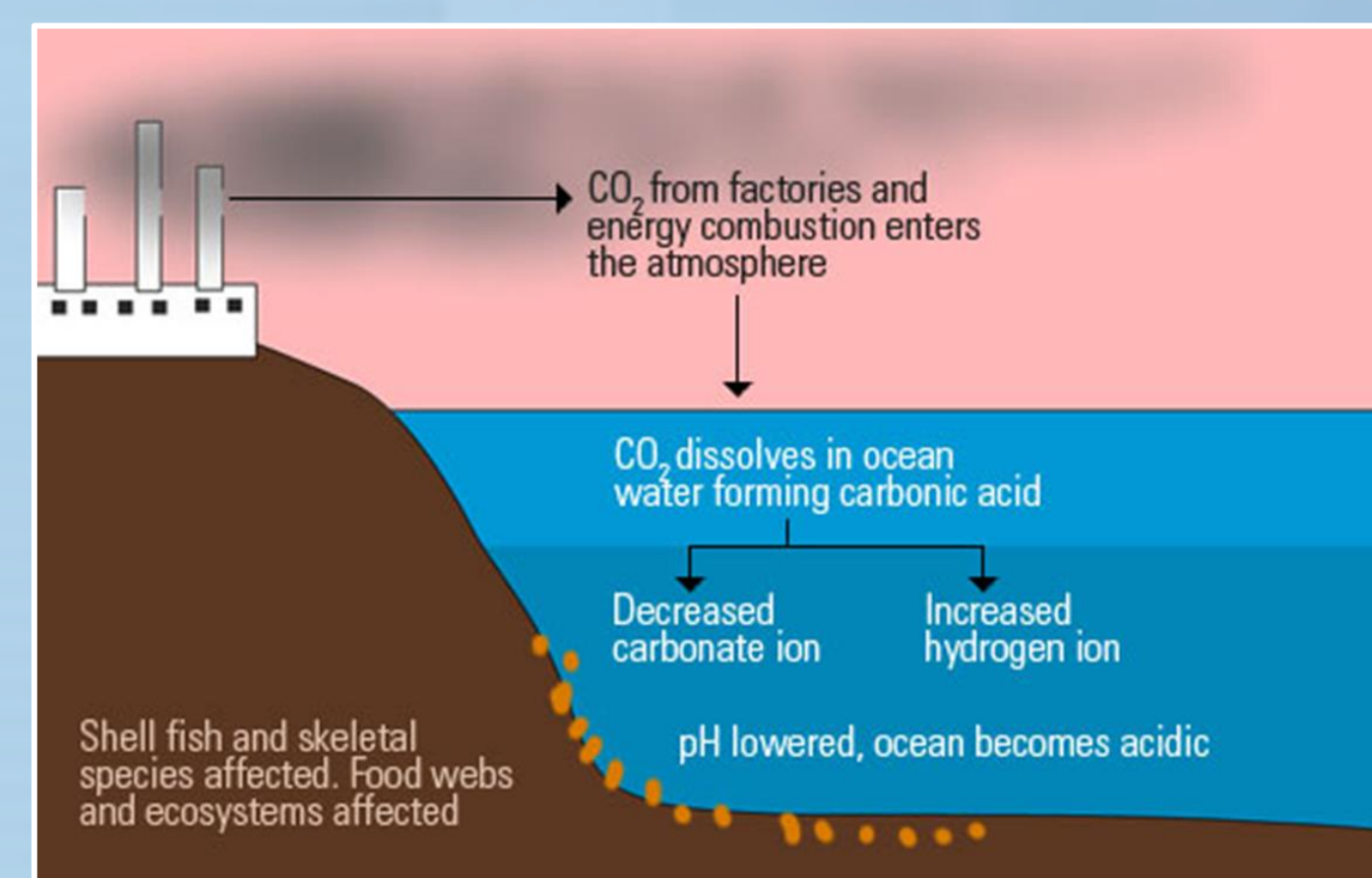
Ocean Acidification and its Affect on Biodiversity

GES 101 GROUP 5

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What is Ocean Acidification?

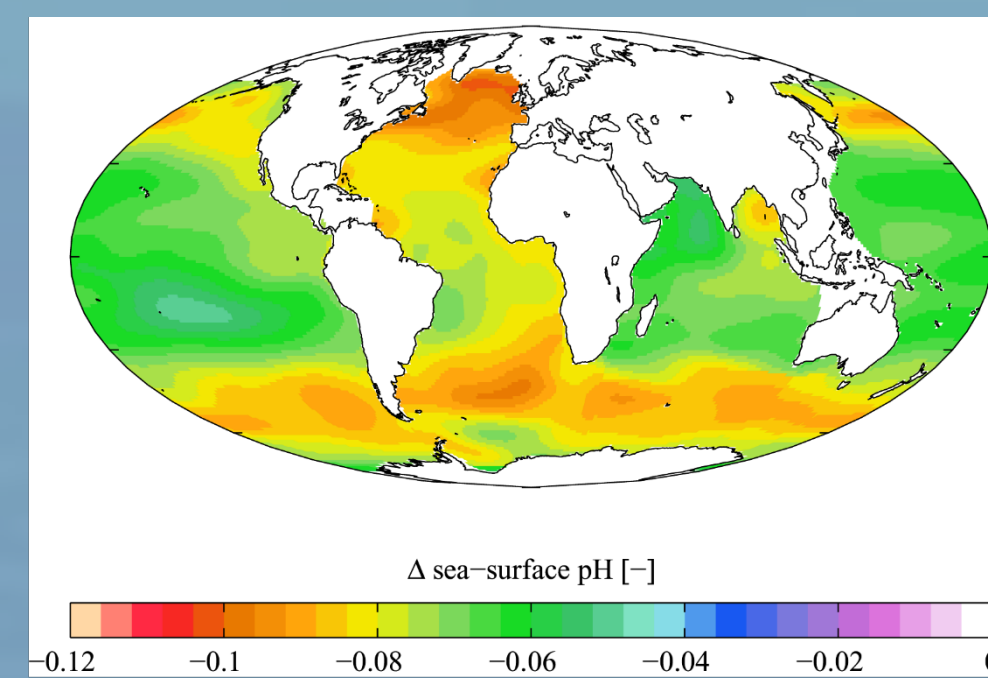
Definition: the decrease of the ocean's pH levels (increased acidity of seawater) due to the increased CO₂ uptake by the oceans.



CO₂ is dissolved into the ocean surface from the atmosphere and then moved to the deep ocean through physical processes and biological processes

Where is it happening?

Ocean acidification occurs in all oceans around the world and the coral reefs in them.

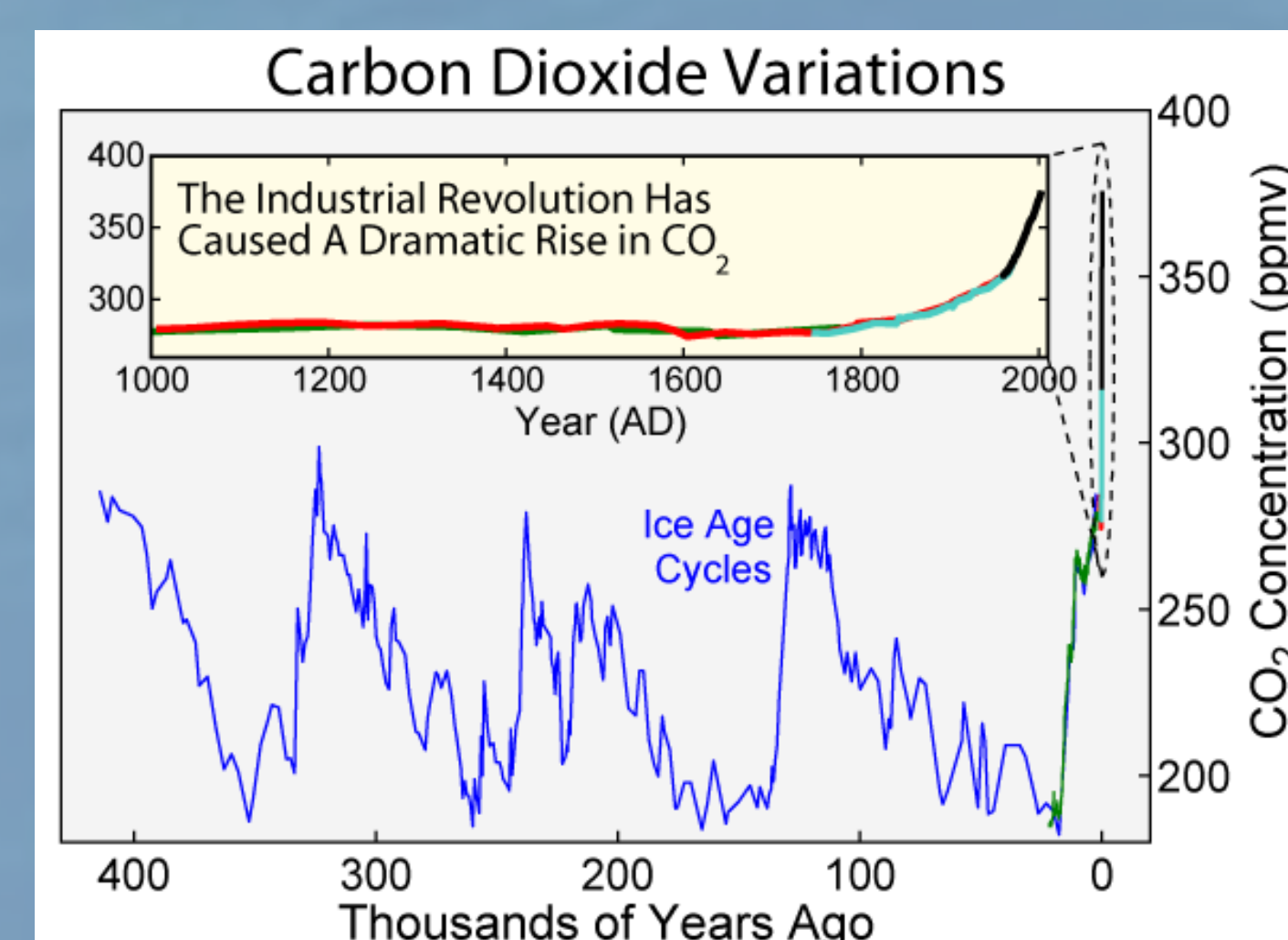


What is causing it?

There is a human-caused increase in temperatures and atmospheric CO₂ levels. Approximately 1/3 of all human related CO₂ emission has been absorbed by oceans since the 1700s.

Evidence

There has been an evidential increase in the pH levels after the Industrial Revolution.



Who is effected?

- Gastropods
- Mollusks
- Bivalves
- Echinoderms
- Zooplankton
- Corals
- The fish we eat



Evidence

Physiological response	Major group	Species studied	Response to increasing CO ₂			
			a	b	c	d
Calcification	Coccolithophores	4	2	1	1	1
	Planktonic Foraminifera	2	2	-	-	-
	Molluscs	4	4	-	-	-
	Echinoderms	3	2	1	-	-
	Tropical corals	11	11	-	-	-
Coraline red algae	1	1	-	-	-	
Photosynthesis	Coccolithophores	2	-	2	2	-
	Phykaryotes	2	-	-	1	-
	Seagrasses	5	-	-	-	-
Nitrogen Fixation	Cyanobacteria	1	-	1	-	-
Reproduction	Molluscs	4	4	-	-	-
	Echinoderms	1	1	-	-	-

1: Increased calcification had substantial physiological cost; 2: Strong interactive effects with nutrient and trace metal availability, light, and temperature; 3: Under nutrient replete conditions.

Doney SC, et al. 2009. *Ann. Rev. Mar. Sci.* 1:169-92

Negative implications on:

- Global fish economy
- Human health
- Aquatic ecosystems
- Atmosphere
- ecotourism

Why do we care?

- We are dependent on aquatic ecosystems for the food we eat and the air we breathe.
- Oceans are a shared resource that offer us recreational activities and many necessities involving medicine and food, so we have a personal responsibility to protect our oceans.
- Oceans provide the #1 source of protein for over 1 billion people.
- 1 in 6 U.S. jobs are marine-related

What can we do about it?

We can reduce our carbon footprint by:

- Choosing low emission vehicles
- Use public transportation
- Waste less food
- Eat "blue"
- Reduce plastic consumption
- informed seafood choices
- Dispose of chemicals properly
- Buy local and organic



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