COLLAPSE OF THE DEEP-SEA CIRCULATION DURING THE PETM WITH IMPLICATIONS FOR THE EXTINCTION OF BENTHIC FORAMINIFERA

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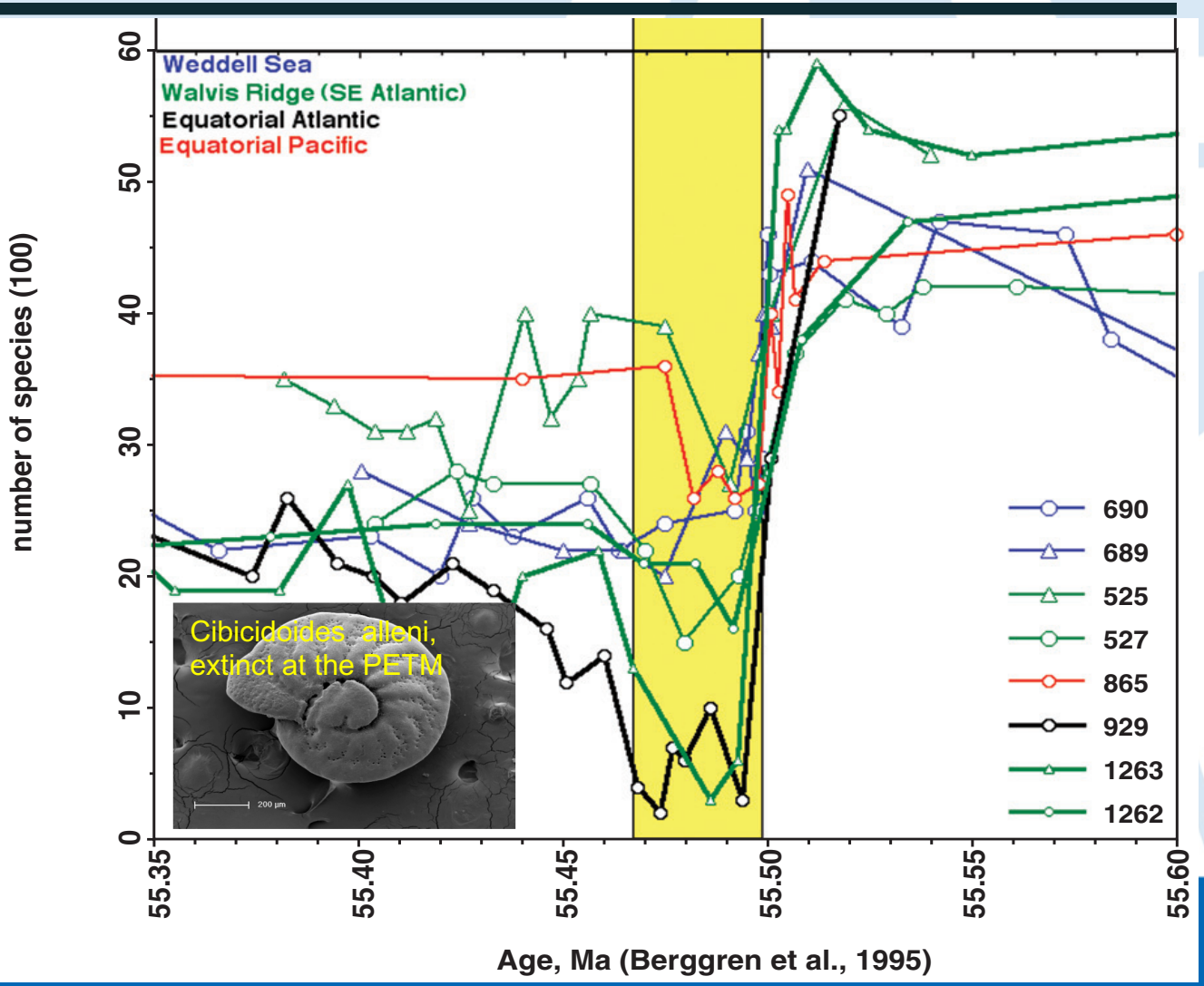
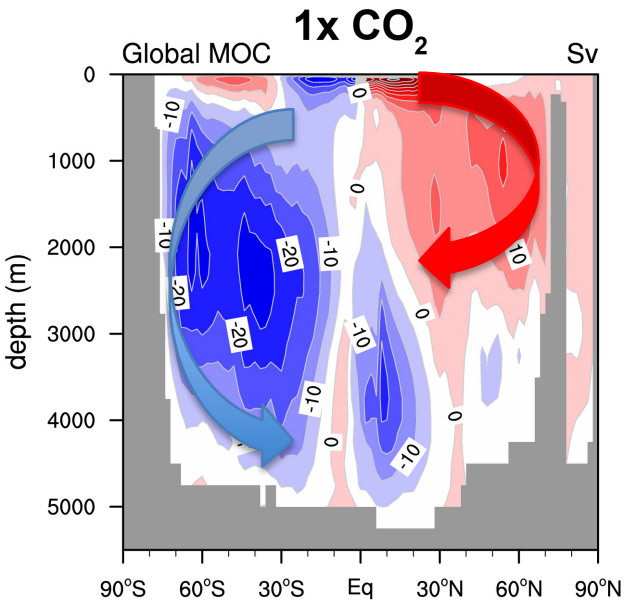
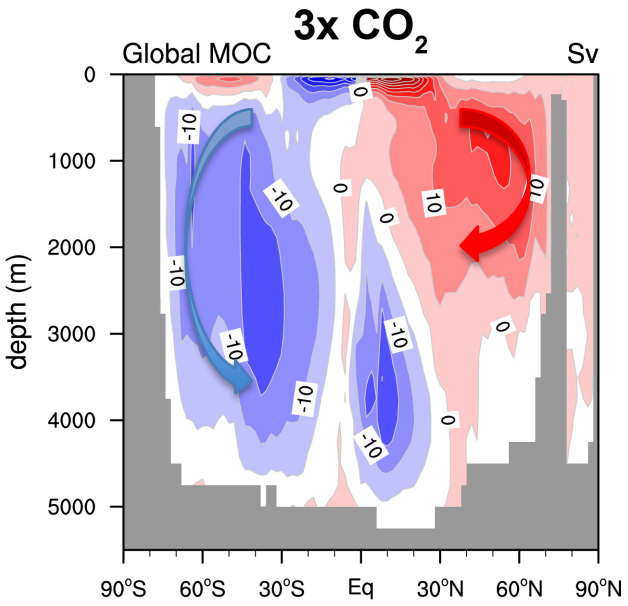
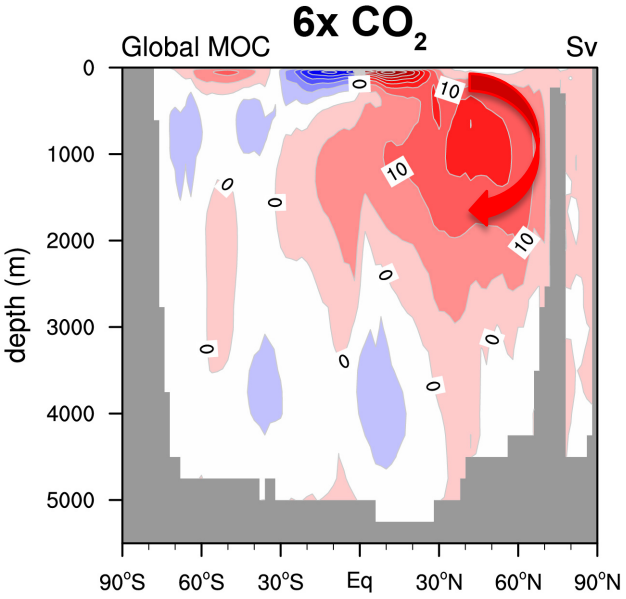
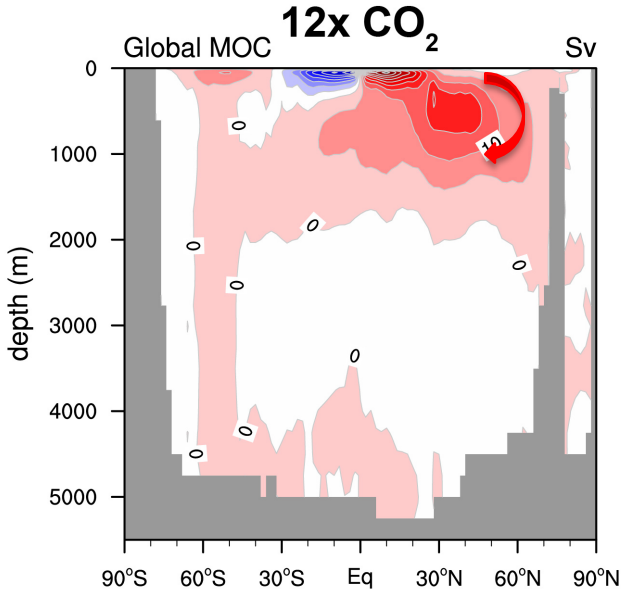


PETM Global Meridional Overturning Circulation

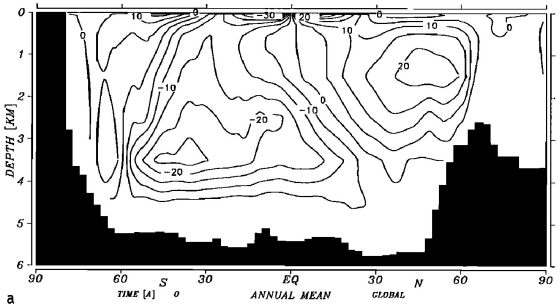




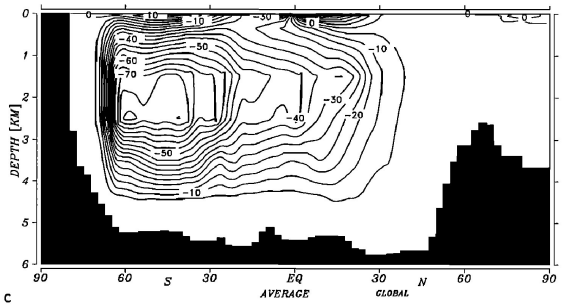




Open Drake Passage & Closed CAS



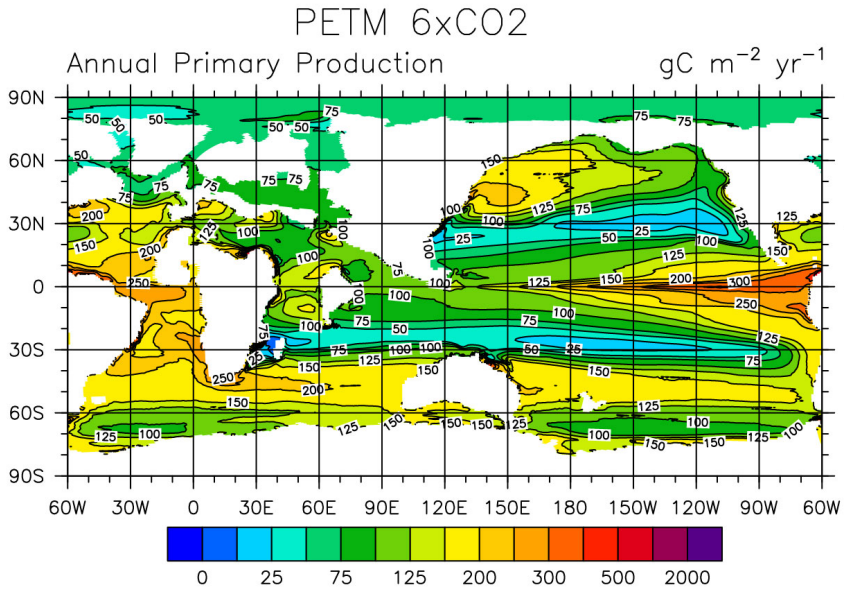
Closed Drake Passage & Open CAS

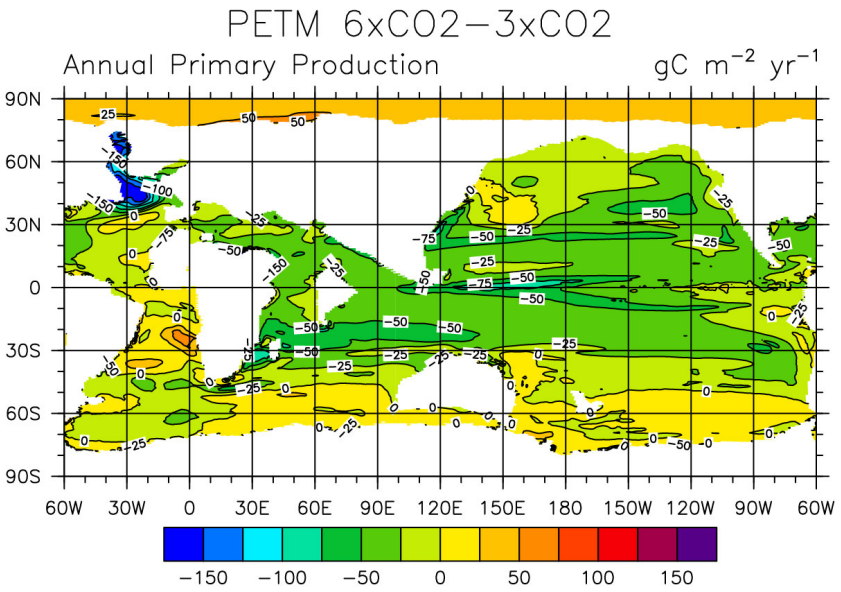


Mikolajewicz and Maier-Reimer, Paleoceanography (1993)

Change in Primary Production

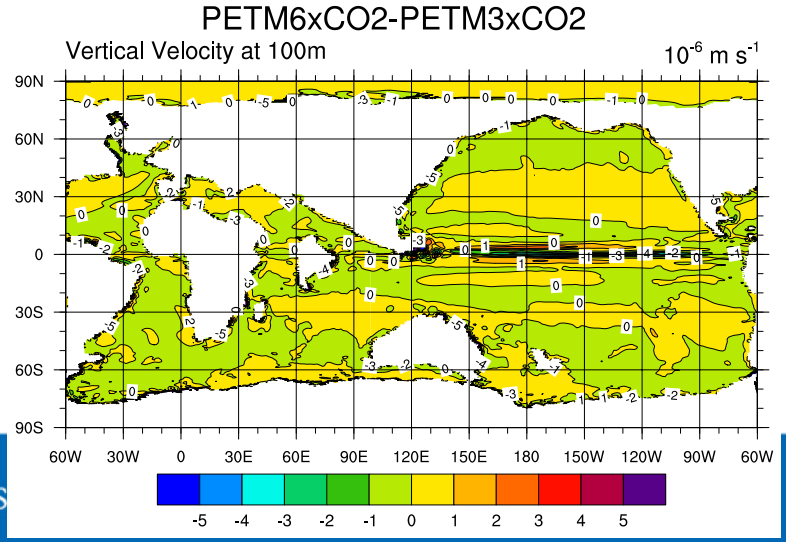
Primary production in the 6xCO_2 Scenario is ~15% lower compared to the 3xCO_2 Scenario





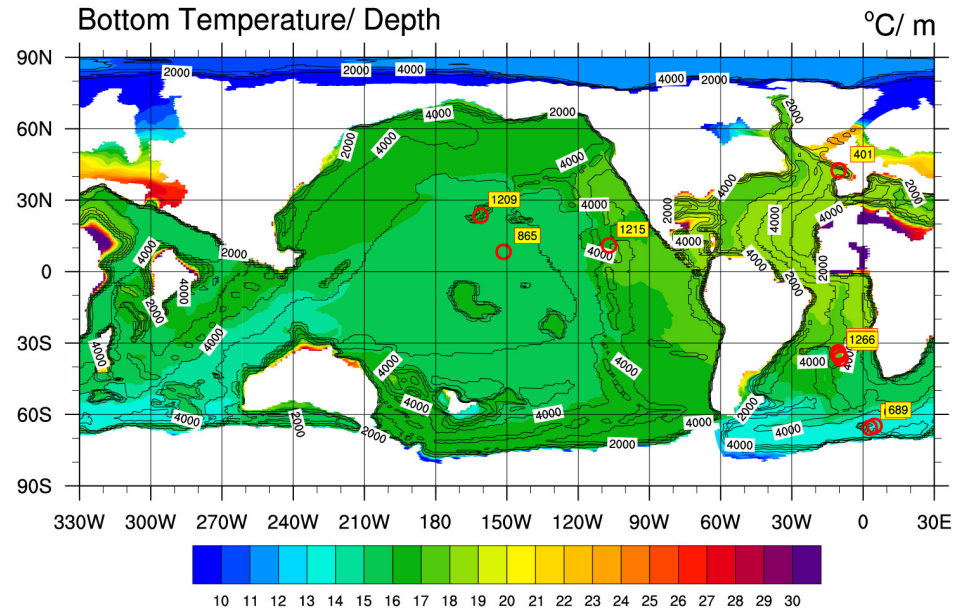
Reduction of PP could have been caused by:

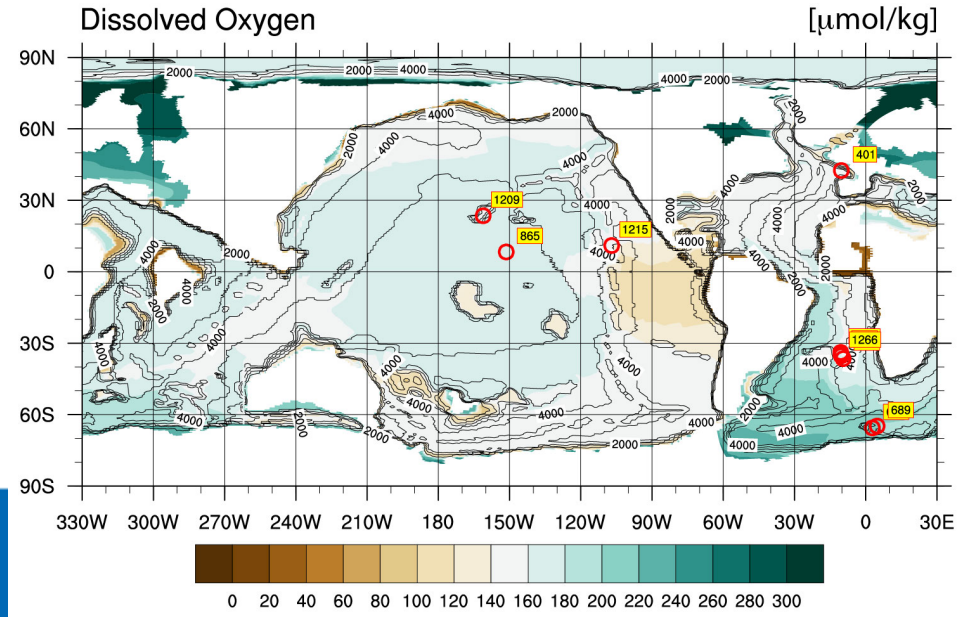
- Reduced upwelling
- Decreased overturning
- Associated decline in nutrient supply
- Ecosystem dynamics



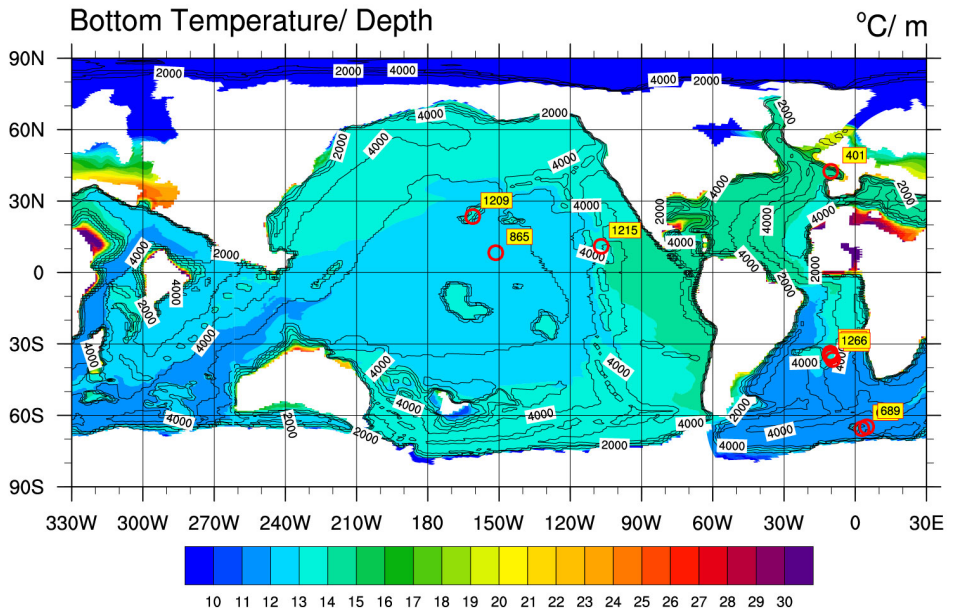
Warming and Deoxygenation

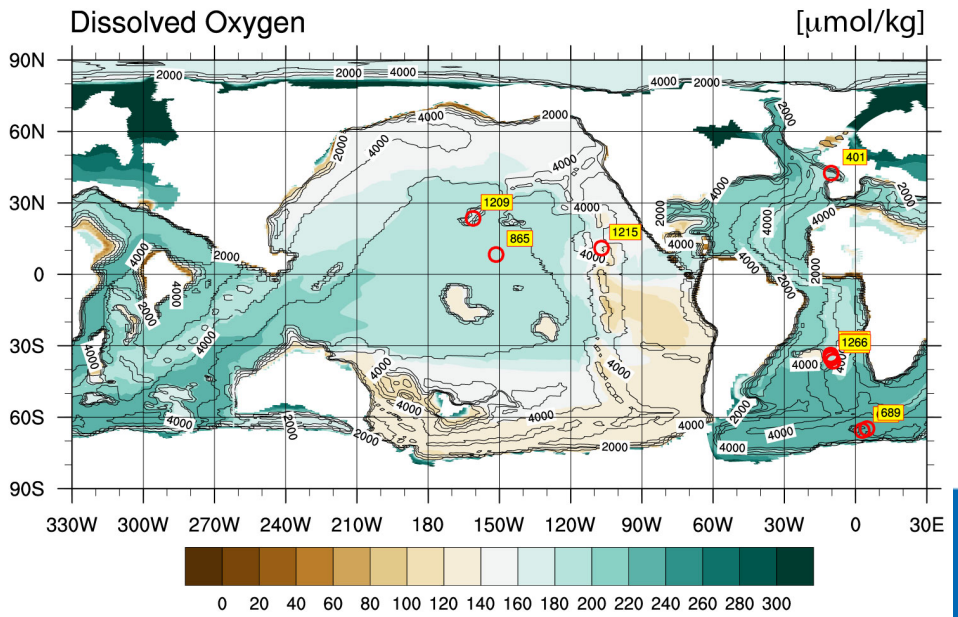
6xCO_2 PETM



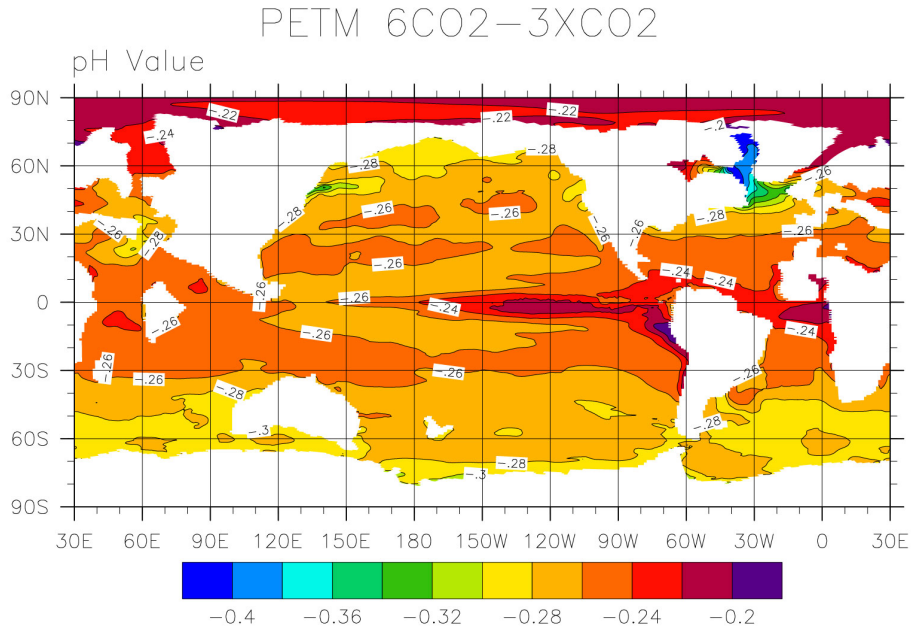


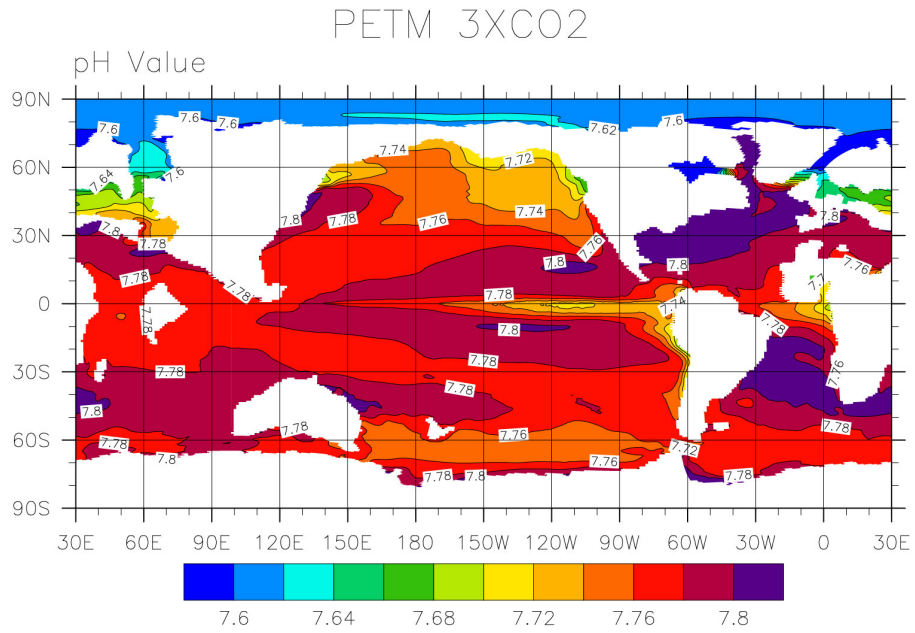
3xCO_2 PETM

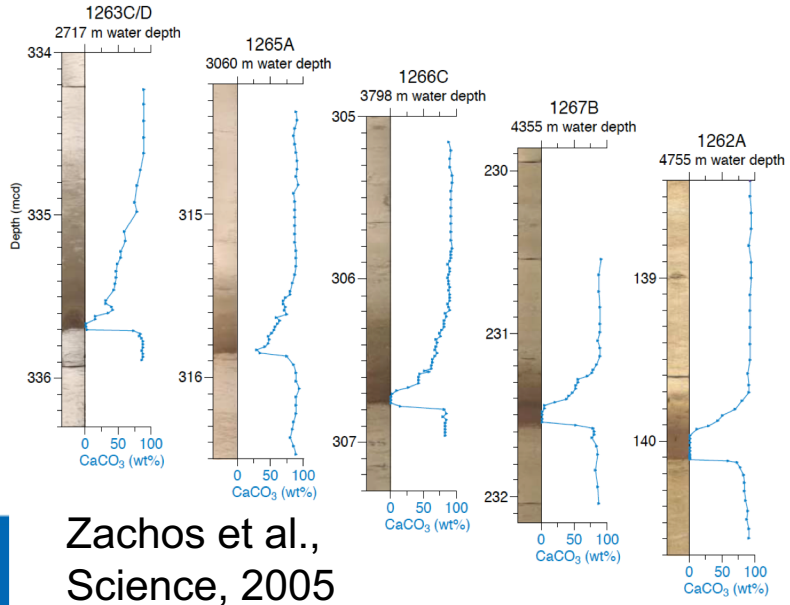




Evidence for Increase in Ocean Acidification







Zachos et al., Science, 2005