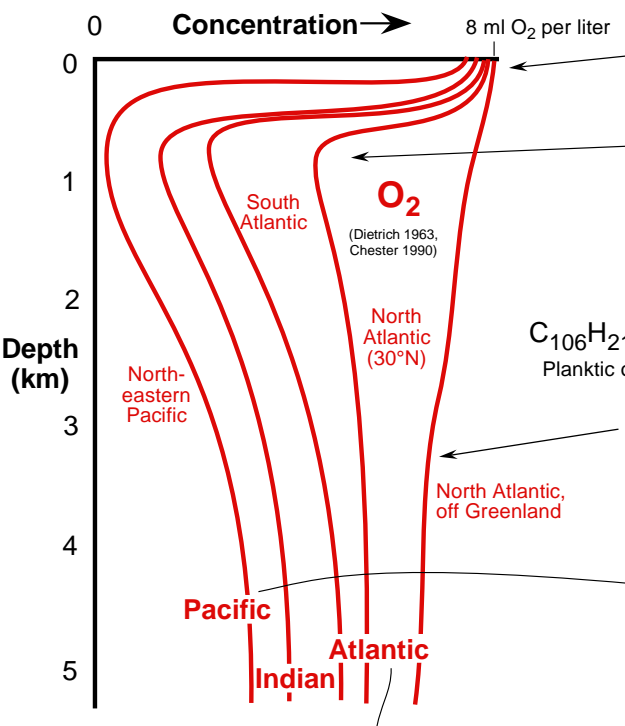
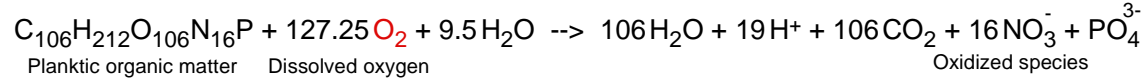


## Variation in concentration of solutes in the oceans II: Dissolved oxygen (O<sub>2</sub>)



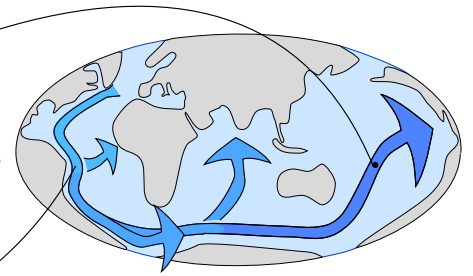
Concentrations of O<sub>2</sub> in near-surface water are large because of exchange with the O<sub>2</sub>-rich atmosphere at the sea surface, and because of downward mixing by waves and eddies.

Concentrations of O<sub>2</sub> just below the thermocline are low because oxidation of sinking organic particles consumes O<sub>2</sub>. This causes the **oxygen-minimum zone**, in which O<sub>2</sub> concentrations may reach zero. The oxygen-minimum zone typically reaches its least O<sub>2</sub> concentrations at depths of 300 to 800 meters (Stramma et al., 2008, *Science* 320: 655-658).



Concentrations of O<sub>2</sub> in abyssal waters are less than those in surface waters because oxidation of sinking organic particles consumes O<sub>2</sub>.

Concentrations of O<sub>2</sub> in deep waters of the Pacific are typically less than in Atlantic because Pacific deep water has had more time to lose O<sub>2</sub> to oxidation of organic matter.



Concentrations of O<sub>2</sub> in deep waters of the Atlantic are typically greater than in the Pacific because Atlantic deep waters have more recently left the surface and so had less time to lose O<sub>2</sub> to oxidation of organic matter.

