Concentrations of $O_2$ in near-surface water are large because of exchange with the $O_2$-rich atmosphere at the sea surface, and because of downward mixing by waves and eddies. Concentrations of $O_2$ just below the thermocline are low because oxidation of sinking organic particles consumes $O_2$. This causes the oxygen-minimum zone, in which $O_2$ concentrations may reach zero. The oxygen-minimum zone typically reaches its least $O_2$ concentrations at depths of 300 to 800 meters (Stramma et al., 2008, Science 320: 655-658).

Concentrations of $O_2$ in abyssal waters are less than those in surface waters because oxidation of sinking organic particles consumes $O_2$.

Concentrations of $O_2$ 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 $O_2$ to oxidation of organic matter.