

(a) VERTICAL O₂ PROFILES IN THE ATLANTIC OCEAN

(b) O₂-ADVECTION PATTERN IN THE ATLANTIC OCEAN

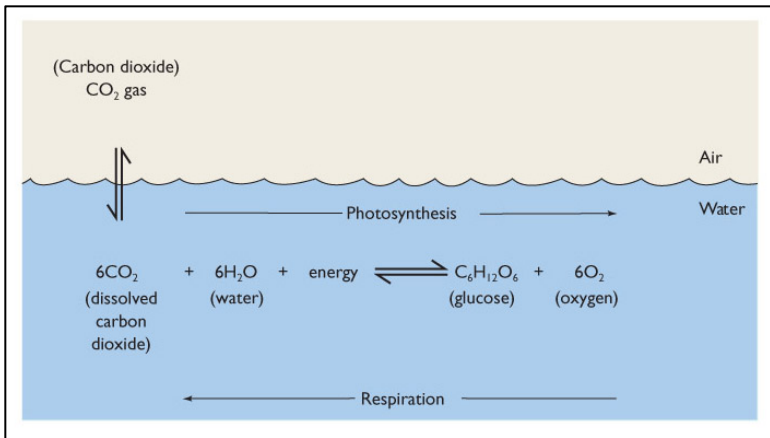
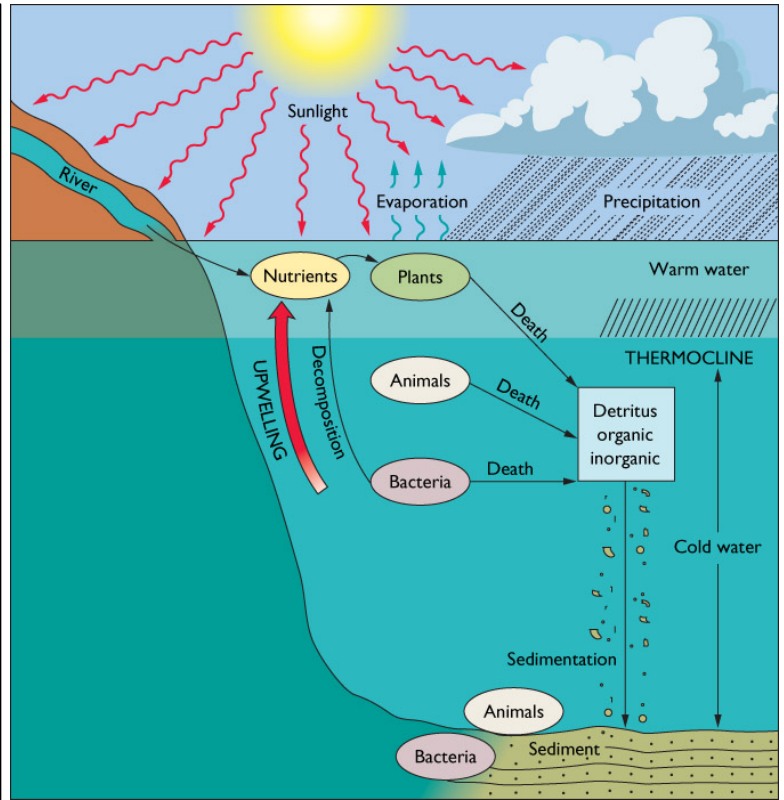


TABLE 5-9

Summary of factors that regulate the concentration of gases in water

Factors	Effects
Wave and current turbulence	Increases the exchange of seawater gases with the atmosphere.
Difference in gas concentration	Gases diffuse across the air-sea interface from high to low areas of concentration until chemical equilibrium is attained.
Temperature	A drop in water temperature increases the solubility of gases.
Salinity	A rise in salinity decreases the solubility of gases.
Pressure	A rise in pressure increases the solubility of gases.
Photosynthesis	Increases concentration of O ₂ ; decreases concentration of CO ₂ .
Respiration	Increases concentration of CO ₂ ; decreases concentration of O ₂ .
Decomposition	Increases concentration of CO ₂ ; decreases concentration of O ₂ .
pH	Controls the relative concentrations of the various species of CO ₂ in water (H ₂ CO ₃ , HCO ₃ ⁻ , CO ₃ ²⁻).

Source: Adapted from H. S. Parker, *Exploring the Oceans* (Englewood Cliffs, N.J.: Prentice-Hall, 1985).



(carbon dioxide)
CO₂ gas

