

# Ocean Acidification Process

1

Carbon Dioxide ( $\text{CO}_2$ ) from the atmosphere is absorbed by the ocean.



Dissolved Carbon Dioxide



Water

2

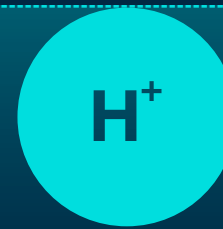
Carbon dioxide reacts with seawater ( $\text{H}_2\text{O}$ ) to form carbonic acid ( $\text{H}_2\text{CO}_3$ ); seawater pH is lowered.



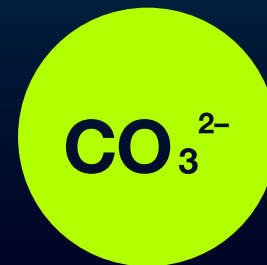
Carbonic Acid

3

Hydrogen ions [ $\text{H}^+$ ] released by carbonic acid bind to carbonate ( $\text{CO}_3^{2-}$ ) to form bicarbonate ( $\text{HCO}_3^-$ ). Carbonate concentrations are decreased, making it difficult for shell forming species to form calcium carbonate ( $\text{CaCO}_3$ ).



Hydrogen Ions



Carbonate Ions



Bicarbonate Ions