# **Coral Reefs**

## A Changing Climate: Coral Reefs Today and Tomorrow

### Intact Coral Ecosystem

Coral reefs are home to much of earth's biological diversity. A healthy coral reef depends on many factors including ocean acidity and temperature. In optimal conditions coral calcification, the growing process of coral reefs depends on high saturations of carbonate molecules, the building blocks of coral.



### **Increasing Acidity**

The oceans have absorbed 50% of the world's carbon dioxide. Anthropogenic sources of carbon dioxide are changing the chemistry of the ocean creating a more acidic environment. When carbon dioxide dissolves into water, a chemical reaction occurs leaving more positive hydrogen ions raising the PH level of the oceans on a global scale.

#### **Ecosystem Collapse**

The oceans naturally buffer against rising acidity. In this process, a chemical reaction occurs between dissolved carbon dioxide and carbonate, consuming the building blocks of coral in this reaction. Carbonate molecules are thus less available to be used in calcification and coral reefs dissolve faster than they build. When coral dies, the calcium carbonate skeleton is all that remains. Biodiversity loss accompanies coral bleaching.

