

Climate change will have several potential impacts to south Florida

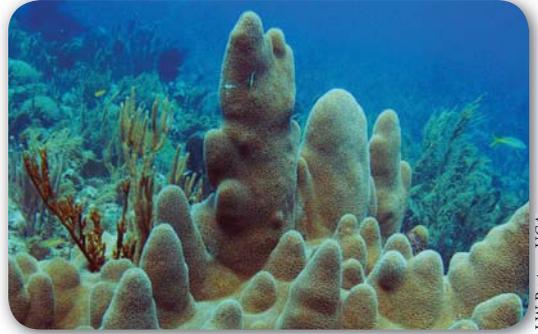
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NOAA

Temperature extremes

At continental, regional, and ocean basin scales, numerous long-term changes in weather and climate have been observed. These include increases in arctic temperatures and accelerating ice loss; widespread changes in precipitation amounts, ocean temperature, and salinity; wind patterns; and increased extreme weather, including droughts, heavy precipitation, and heat waves. Observations since 1961 show that the average temperature of the global ocean has increased from the surface to depths of at least 3000 meters (9800 feet). Excessively hot or cold water temperatures can result in death of organisms that are unable to move, such as corals, seagrasses, and other benthic organisms.



J.W. Porter - UGA

Ocean water chemistry

Carbon dioxide (CO_2) in the atmosphere dissolves in ocean waters, creating carbonic acid. Rising levels of CO_2 are making ocean water more acidic. Increased acidity makes it harder for coral polyps and other calcareous organisms to build their shells, may cause bleaching, and affects survival of coral larvae after settlement. There has been a steady drop in calcification rates by marine organisms over the past 20 years. Currently, atmospheric CO_2 levels are 387 parts per million (ppm), rising from 305 ppm in 1960. When CO_2 levels in the atmosphere reach about 500 ppm, calcification by sea life may diminish dramatically.



W.L. Kruczynski - EPA

Sea-level rise and coastal erosion

Global warming is resulting in rising sea levels due to thermal expansion of the oceans and melting of ice sheets. Deepening water will flood mangrove swamps and other coastal wetlands, and their ability to keep pace with rising waters is uncertain. Low-lying developed areas will be flooded, and property damage and loss will be immense. Coastal bays will become increasingly marine. Coasts will become more and more eroded and dissected by storms. Increased turbidity and nutrients from coastal erosion will further stress coral reefs and other benthic communities.



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Weather and climate patterns

There is observational evidence of an increase in intense tropical cyclone (hurricane) activity in the North Atlantic since about 1970. A list of the 11 worst hurricanes to hit Florida in the past century includes five in the past 17 years. An increase in the severity of hurricanes will result in damage to developed areas and natural communities, particularly as sea level rises and contributes to increased flooding. Mangrove forests severely damaged by hurricanes are very slow to recover. Coral reefs already weakened by bleaching, disease, or pollution will be vulnerable.