


 splash!

quick facts on...

Climate Change and Water Management

OCTOBER 2010

The South Florida Water Management District

is a regional, governmental agency that oversees the water resources in the southern half of the state. It is the oldest and largest of the state's five water management districts.

Our Mission is to manage and protect water resources of the region by balancing and improving water quality, flood control, natural systems, and water supply.

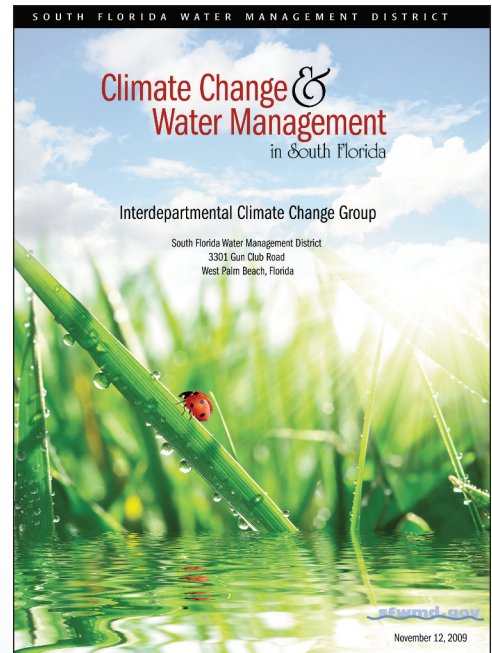
Although many aspects of climate change are still uncertain, the South Florida Water Management District must consider the possible impacts on the South Florida region. The combination of changes to sea levels, temperature, rainfall patterns and tropical storms has the potential of significantly altering how the SFWMD operates to achieve its legislatively mandated mission of managing and protecting water quality, flood control, natural systems and water supply.

Climate: What is it and how is it changing?

Climate change continues to be a major topic for scientists, governments and the news media. Whether someone is talking about greenhouse gases, carbon emissions or global warming, it all relates to climate change. The South Florida Water Management District is focused on how the climate is changing and how to prepare for its effects.

To better understand climate change, it is important to first understand what climate is and how it differs from weather. Climate can be thought of as the average weather conditions (temperature, humidity, wind, rain and other factors) in a certain place over years, decades and even centuries. In contrast, weather describes the conditions at a specific time, typically an hour, day or week. By analyzing the weather over a long period, scientists can describe an area's climate.

Climate change is not new. The Earth has gone through ice ages and warm periods throughout its history. Right now, much of the scientific evidence indicates the Earth is getting warmer – average temperatures increased more than 1° Fahrenheit over the last 100 years and are expected to be 2° Fahrenheit warmer by 2060.



A more detailed paper is available online.

Rising seas

Sea levels have been rising around Florida for the past 150 years and will likely continue that trend. By 2060, the water around Florida's coast is projected to be between 5 to 20 inches higher than it is today.

Some water management structures are already experiencing impacts from sea level rise. Canal water levels are generally kept higher than the ocean levels so they can quickly drain the surrounding areas in response to heavy rains. As the oceans rise, water cannot flow as readily through the canals toward the coast, which creates increased potential for flooding and the need for flood control modifications.

Higher sea levels mean more coastal areas will be directly threatened by flooding due to high surf from storms. More coastal flooding

can increase damage to property, erosion of beaches and destruction of natural habitats.

Rising seas can also have an impact on South Florida drinking water supplies. Salt water is already intruding into some of the underground wells that provide water for parts of the region. Rising sea levels will push salt water farther inland and make the water from those wells unusable. Municipalities with wellfields close to the coast are particularly vulnerable.

Rising temperatures

Average temperatures are expected to increase by 2° Fahrenheit by 2060. The increase is expected to continue so that parts of Florida may face winter lows that are 3 to 10° Fahrenheit warmer and summer highs that are 3 to 7° Fahrenheit warmer by the end of the century.

Higher temperatures will mean more than just a higher air conditioning bill. Water will evaporate faster from surface water sources so more will be needed to maintain crops, lawns and delicate Everglades ecosystems. The higher demands will occur when less water may be available due to increased evaporation from lakes, reservoirs and other surface water supplies. Similarly, more evaporation may harm the region's ecosystems and limit the phosphorus-removal performance of stormwater treatment areas designed to improve water quality for the Everglades.

Changing rain patterns

Some climate models predict that South Florida will get wetter, while others predict a drier region. A change in either direction will have consequences. More rainfall could lead to more flooding and more discharges of fresh water to sensitive estuarine ecosystems. Less rainfall would increase demands on groundwater supplies and raise the risk of saltwater intrusion into the drinking water supply.

Even if the amount of rain stays the same, changes in the intensity of rainfall may overwhelm the region's water management system. More intense rains may be beyond the water storage capabilities in the area and lead to more flooding and draining of water to the ocean. By not being able to capture and store the rain when it falls, there may not be enough water available during the periods of drought.

Changing tropical storms and hurricanes

According to the National Center of Atmospheric Research, Florida tops all states with the costliest damage due to extreme weather events through 2007 – including tropical storms and hurricanes.



While the number of tropical storms may decrease, the strength of storms may increase.

Therefore, residents are especially concerned with anything that may increase the frequency or severity of such weather. These storms are also important because they bring needed rainwater to the area that helps refill lakes and replenish groundwater sources.

Scientists are just beginning to understand how increasing temperatures will affect tropical storms and how to separate climate change impacts from natural variability. Some of the research indicates that the number of storms is likely to decrease, but those that occur could be stronger. Fewer storms may lead to more frequent droughts, while stronger systems obviously have the potential to leave much destruction and long-standing flooding in its wake.

Coordination & Planning

It is prudent that the South Florida Water Management District recognizes, plans and prepares for climate change over the next 50 years...and beyond. Actions include conducting additional research and computer modeling to better predict and reduce uncertainties, analyzing vulnerabilities in the current water management system and developing effective adaptation strategies for the future. Coordination with other resource management entities and governments is vital to ensuring a common approach and shared information in moving forward.

For more information, visit www.sfwmd.gov and enter "climate change" in the search field.



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sfwmd.gov

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