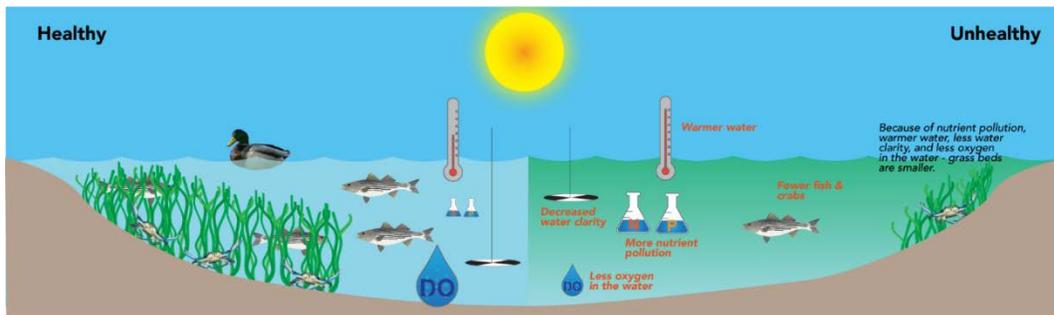


## Climate Change and the Chesapeake Bay

### How is the Bay affected by climate changes, such as increased precipitation?

Annual precipitation in the Chesapeake Bay region has increased over the last century by approximately 6.6 inches in the northern region and 2.1 inches in the southern region. The increase in precipitation creates greater nutrient and sediment run-off from the land into the Bay's streams and rivers. This run-off causes several issues including the overgrowth of algae, low oxygen concentration and decreased water quality/clarity. The influx of fresh water via precipitation results in higher river flows that carry nutrients and pollutants, such as sediment throughout the Bay. Excessive nutrients impact vital aspects of the Bay ecosystem, such as Submerged Aquatic Vegetation (SAV) and oysters.



SAV refers to a wide variety of plants that bind aquatic communities together. SAV need sunlight and thrive best in water with sufficient oxygen supply; however, overgrazing, natural disasters, disease, insufficient light (e.g., from turbid runoff), and climate changes (warmer water) stress SAV and threaten the basic needs of these important grass beds.

### How does this impact the region's economy?



The increase of aquatic disease, overfishing, and habitat loss due to nutrient pollution and changes in climate have impacted the Bay's aquatic resources to harvest. A prime example is the Chesapeake oyster population. A 2011 University of Maryland study stated that today's oyster population is only 0.3% of the population of that observed in the 1800s. Due to the decrease in supply, many oyster farmers are implementing aquaculture practices (i.e., farmed seafood). Farm-raised oysters now make up the majority of the population harvested in the region. They are more resistant to those diseases that affect the wild oyster population, and they provide environmental benefits. Oyster farmers often start with an



inhospitable plot of sediment (e.g., hard, sandy bottom), but when the oyster cages are put in place, plants and aquatic life grow right alongside the oysters. These farm-raised oysters are revitalize the Bay by creating mini ecosystems where it was once barren.

In addition changes in the oyster market, many career watermen are supplementing their catches with other species. The blue catfish, introduced to the Bay in the 1970s, is found in most of the Bay's tributaries. The predatory fish poses a threat to native species of the Chesapeake. As such, it is not bound to annual harvest limits. The increasing commercial demand for the fish benefits the local economy and helps control an invasive species.

### **What is GSFC doing to help? What can you do?**

GSFC is subject to various permits that require the Center to minimize water pollution from the site. The GSFC Stormwater Pollution Prevention Plan (SWPPP) describes best management practices to reduce stormwater pollution from certain activities. In addition, all employees and contractors must report any releases to the environment, such as oil spills, by calling 911 from a GSFC phone or 301-286-9111 from a mobile phone.



At home, apply lawn fertilizer only in the fall (or not at all) and strive to use the minimum amount needed to keep your grass healthy. Use weed barriers instead of spraying weed killer or plant a dense layer of native groundcovers to block out the weeds. Control runoff from your house and yard by creating rain gardens. Make sure your septic system is in working condition and upgrade as necessary reduce nutrient pollution potential.

*Visit the following websites for more information on alternative catches and the Chesapeake Bay Tributaries:*

<http://www.whatsupmag.com/2018/04/01/169507/one-fish-two-fish-catfish-new-fish>

<http://www.chesapeakeedata.com/changingchesapeake/>

*Also, check out the some of our past environmental bulletins on this and similar topics:*

<https://code200-external.gsfc.nasa.gov/250/environmental/environmental-bulletins#general-env>

