**Climate Change: Just the Facts**

([00:00](https://www.rev.com/transcript-editor/Edit?token=kN74SyXhRuIQb_Y9FPvFaZNAflbw5Vrku9wNMwQyKCJAQJP0z3Jz2C26VnbCZ_XrP1kX4G0lp4btmDe7vZx19gtbh14&loadFrom=DocumentDeeplink&ts=0.81)):

Climate change. Just the facts. The climate is changing and increasingly disrupting our daily lives in Maryland. While climate has changed many times throughout earth long history, the current rate of rise in global temperature and changes in precipitation are unprecedented and carries a human fingerprint. Maryland is feeling the impacts now and these impacts are expected to increase in the future affecting our neighborhoods health, economy, food, and natural resources, and our children's future. Learn more and help Maryland respond. In this module, we'll talk about what global climate change is, how scientists know the climate is changing Maryland's climate future, and where you can learn more In Maryland as elsewhere, climate change affects your daily life. You've noticed it, haven't you? Some days the roads are too flooded to drive on, or that July heat wave seems longer and more intense than in years past, or the bay is slowly creating marsh in the dry field where you grow hay. In Maryland, we are seeing and feeling increasing heat waves, intense storms, inland flooding and coastal inundation and flooding from storms and sea level rise. So let's take a moment to understand global climate change and why it's happening. Global climate change refers to changes in the Earth's temperature and climate over the long term. Looking at decades to millennium scientific measurements have shown a rise in global average annual temperatures of one and a half degrees Fahrenheit since 1880. In the 1980s through two thousands, each decade was warmer than the decade prior. These changes in temperature have altered weather patterns and increased the frequency and intensity of extreme weather events experienced in Maryland. So what causes global climate change?

([01:55](https://www.rev.com/transcript-editor/Edit?token=Oic6y7s_c56IE-VzEsKTk3abLWBgWmitAGuCZ4R9AkCrp1UqrqwUBbxrS9PfTH2Sk7fldq9DpPvH1eZ2_1DH_Kbvx5c&loadFrom=DocumentDeeplink&ts=115.2)):

Many factors contribute to global climate patterns. In general, we can think of two categories of climate change factors, those factors that contribute to how much solar radiation reaches the earth's surface, and factors that determine how much heat is trapped in the atmosphere by the greenhouse effect. What is changing the most in recent times is the amount of greenhouse gases in the atmosphere. It is rising at rates not seen by humans before. The greenhouse effect is caused by the release of gases that trap heat in the atmosphere. Hence the name Greenhouse gases. These gases act like a blanket to retain heat close to the earth's surface, raising the temperature of the atmosphere and the ocean. The greenhouse effect is influenced by natural and human made causes. It is increased through the release of airborne particles such as through volcanic eruptions and through direct emissions of greenhouse gases such as carbon dioxide and methane. Through fossil fuel burning, land, cover change, and some agricultural practices.

([03:12](https://www.rev.com/transcript-editor/Edit?token=ZyRGgKfFYOcYPp4Ey0_xDsu_Khe28hfZTgvMvJyX8IWea8N70yN3Ag8bYN_rGXnAZmzDEPdlWHULQUXD2HimfPcXrDQ&loadFrom=DocumentDeeplink&ts=192.04)):

Scientists have compiled by direct measurements and proxies an 800,000 year record of atmospheric carbon dioxide concentrations, and global temperature that show a dramatic increase in the rate of warming since the start of the industrial revolution when fossil fuel burning started on a massive scale. Since then, human activities have forced warming of the climate by increasing the abundance of heat trapping gases in the atmosphere. Other factors that help cool the climate, such as the heat reflective properties of ice sheets have diminished in recent years with the shrinking of continental ice sheets. This effect adds to the warming trends. Most of the observed warming since about 1950 is due to human produced greenhouse gas emissions. Scientists have observed trends across the globe that indicate that the climate is warming. These include measured increases in air temperature, over land, and the ocean humidity, sea surface temperatures, ocean heat content, and global sea level decreases have been measured in the extent of Arctic sea ice snowfall amounts and extent of glaciers as well.

([04:24](https://www.rev.com/transcript-editor/Edit?token=1UU2YIVKRdY6bnvRwDki70ohjwytcVnKW4K92mIXMrtXjwBa_yt1Hu9e2rVR6bvWszI7G3dlwfqmWdwM-mouHpNQD6Q&loadFrom=DocumentDeeplink&ts=264.01)):

So why does this all matter? The rate of change we are experiencing is unprecedented. Earth is on pace to warm this century by the same amount as during the transition from the last glacial period to the current glacial period, which took thousands of years. This means a warming of approximately five to nine degrees Fahrenheit, but at a rate 50 times as fast the underpinnings of our economy. Food production methods, building codes, infrastructure requirements, and public health decisions were developed and rely on relatively stable climate conditions that no longer exist. For example, the concept of a hundred year flood refers to the intensity of flood that would be likely to happen only once every a hundred years with this type of flooding event now happening more frequently in a changing climate, municipal planners now must design buildings, roads, and bridges to withstand more frequent intense flooding than in years past. That means some of our current building codes are out of date, and many older buildings and roads are at risk of flooding and storm damage.

([05:40](https://www.rev.com/transcript-editor/Edit?token=LkYpxeCQfCN7sdTq0_FHQQY6Bp4sepdcpi7YRiBCEKEeAELx5XYYD0vNTbGjzPcUcmPDsMBSQtZYQzjd-rLGsdM4tV4&loadFrom=DocumentDeeplink&ts=340.8399999)):

Over the next century, Maryland, like other mid-Atlantic states, will likely get warmer and wetter, especially during the winter and spring. We're also likely to experience an increase in extreme precipitation events and heat waves, meaning days with a high over 90 degrees Fahrenheit, higher summer temperatures increased evaporation rates and earlier snow melt will exacerbate drought conditions during the growing season, storms, flooding and forest fires are likely to increase inland while erosion, saltwater intrusion and inundation of low-lying areas is likely to increase along the coast. And the Chesapeake Bay sea level is expected to rise at least twice as fast as it did during the 20th century, resulting in potentially one foot rise by 2050 and as much as three feet or more by the year 2100. Those late century projections are heavily dependent upon the levels of global greenhouse gas emissions emitted by humanity over the next 60 years.

([06:43](https://www.rev.com/transcript-editor/Edit?token=S5iB_V00of6YI7HWaKlN5FHu7FAk0jy0c-AeGFgwl9L9CNQa10ZpNkH-lU8TltGWuqKh316EWTo15xYSe2Hd_vqLeig&loadFrom=DocumentDeeplink&ts=403.22)):

And unabated emissions could cause the collapse of ice sheets and glaciers in Greenland, in Antarctica, causing extreme increases in sea level rise as much as six and a half feet by the end of this century and 20 feet by 2200. If on the other hand, the global community can follow the guidelines in the Paris Climate Agreement to limit the increase in global temperature to less than one and a half degrees Celsius over pre-industrial levels. The likely sea level rise range for the year 2100 is one to three feet with only a one in 20 chance that it would exceed three and a half feet.

([07:29](https://www.rev.com/transcript-editor/Edit?token=XFXHqBTk1SWkWUurw-DEzPaGNas-ijmr-9GQ1gm0mcslhYfcil7Tf2dyt7ykFdbPI7p9XMHVvXExo_Mkt_iell9Ag-U&loadFrom=DocumentDeeplink&ts=449.75)):

Climate change puts people, wildlife, land, buildings, and other public investments all at risk. More people are likely to experience health impacts from extreme heat and extreme precipitation, including respiratory impacts and increased incidents of tick-borne disease. There's likely to be increased air and water quality degradation from extreme heat events combined with drought. Coastal communities and natural resources are vulnerable to damage or degradation from storm surge, high winds, and sea level rise inland from the Chesapeake Bay to the Appalachian Mountains. Agriculture, fisheries, and forestry face stresses that will reduce yields, ecosystems will experience accelerated change in degradation. The impacts are likely to be experienced differently across the state, depending on differences in socioeconomic status, geography, and livelihood. While climate change will impact everyone, people in lower income communities will be disproportionately effective. Much is being done to address climate change in Maryland. Visit the Maryland Climate Leadership Academy's website for more information and to learn what actions you can take by yourself and with others in your community or region. The Online Learning Center provided by the Academy will give you access to more micro literacy modules like this one while you can also enroll in more advanced training programs administered by the academy. To learn more about what the state of Maryland is doing, we encourage you to visit the Maryland Climate Change Commissions website.