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| Without the “greenhouse effect,” which is water vapor, carbon dioxide, ozone and methane trapping heat, the surface of Earth would be 60**°** F colder. | The increase in carbon dioxide concentration due to the burning of fossil fuels and clearing of forests is the primary factor causing warming over the past 50 years. |
| 80% of human-induced carbon dioxide emissions came from burning fossil fuels, and the other 20% from deforestation. | The carbon dioxide in the atmosphere has increased by roughly 35% since the start of the Industrial Revolution. |
| The Sun’s energy output has had small ups and downs, but no net increase. | The 2 major volcanic eruptions over the past 30 years have had cooling effects that lasted 2-3 years. |
| There are changes in the Earth’s orbit around the Sun and tilt, but they are only important on timescales of thousands to many tens of thousands of years. | About 45% of the carbon dioxide emitted by human activities in the last 50 years is stored in the ocean and vegetation. |
| As the climate warms, carbon will be released from permafrost. | Global emissions of carbon dioxide have accelerated. |
| As the ocean absorbs carbon dioxide, it is becoming more acidic, which affects ocean creatures’ ability to create shells and skeleton. | Temperatures are rising. This is known based on temperature records, the melting of Arctic sea ice, the retreat of mountain glaciers on every continent, reductions in snow cover, earlier blooming of plants in spring, and increased melting of ice sheets. |
| Snow and ice reflect the Sun’s heat. As snow and ice melt, more heat will be absorbed by the surface, causing more melting. | Precipitation patterns are changing. There will be more droughts and more floods. |
| Sea level is rising. After at least 2,000 years of little change, sea level rose by 8 inches over the past century. Sea level is currently rising at a rate roughly double the rate observed over the past century. | There are two ways that warming causes rising sea levels:  (1) ocean water expands as it warms, and takes up more space.  (2) Warming leads to the melting of glaciers and ice sheets, which raises sea level by adding water to the ocean. |
| If the entire Greenland Ice Sheet melted, it would raise sea level by 20 feet. The West Antarctic Ice Sheet would raise sea level by 16-20 feet if it melted, and the East Antarctic Ice Sheet by 200 feet if melted completely. | The global warming of the past 50 years is due primarily to human-induced increases in heat-trapping gases. |
| Scientific evidence for a human influence on climate has accumulated over several decades from many hundreds of studies. No single study is a “smoking gun.” Nor has any single study or combination of studies undermined the large body of evidence supporting human-induced climate change. | Global surface temperatures over the last several decades are clearly unusual, in that they were higher than at any time during at least the past 400 years. For the Northern Hemisphere, the recent temperature rise is clearly unusual in at least the last 1,000 years. |
| Human influences on climate are changing the likelihood of certain types of extreme events, such as droughts. For example, the risk of drought in Europe is four times greater than without human influence. | Using models, scientists have found that without human influence, the surface of the Earth would actually have cooled slightly over the past 50 years. |
| Global temperatures are projected to continue to rise over this century; by how much and for how long depends on many things, including the amount of heat-trapping gas emissions. | Choices made now will influence the amount of future warming. Lower levels of heat-trapping emissions will yield less future warming, whereas higher levels will result in more warming. |
| Research suggests that a further 2 **° F** increase would lead to severe, widespread, and irreversible impacts. | To have a good chance of avoiding temperatures above 2 **° F** increase, atmospheric concentration of carbon dioxide would need to stabilize to around today’s levels. |
| Implementing sizable and sustained reductions in carbon dioxide emissions as soon as possible would significantly reduce the pace and overall amount of climate change. | Reducing carbon dioxide emissions NOW would be more effective than reductions of the same size initiated later. |
| Reducing emissions of some shorter-lived greenhouse gases, such as methane and some types of particles, would begin to reduce the warming influence within weeks to decades. | The IPCC projected that without changes in sea level due to ice sheets, the oceans will rise by 8 inches to 2 feet by the end of the century. |
| According to more recent research, under higher emissions scenarios, sea-levels will rise between 3 and 4 feet by the end of the century. | Climate change could be more abrupt and severe than models predict. |
| Based on ice cores, tree rings, and other natural records, Earth’s climate patterns have undergone rapid shifts from one state to another within as short a period as a decade. | Severe climate changes could be so sudden as to challenge the ability of human and natural systems to adapt. |
| The ocean currents could decrease in strength by 25 to 30 percent this century. | Increased extremes of summer dryness and winter wetness are projected for much of the globe. |
| Global temperatures could rise by 2 to 11.5**°** F by the end of this century. |  |















