

# Basics of Climate Science



Here is a very brief summary of the way climate change works. You can use this as a starting point for understanding climate science and discussing it with people in your household and community. See the “Further Resources” section for more in-depth information.

- 1) The sun warms the earth every day.
- 2) Most of that heat is reflected back into space.
- 3) Greenhouse gases (like carbon dioxide and methane) in our atmosphere now block some of the reflection. The result is that more heat stays here on earth.
- 4) As greenhouse gases increase (due in significant part to our use of fossil fuels like coal, oil and natural gas for power), so too does the heat of the planet overall.
- 5) The added heat in our atmosphere is causing areas of ice on our planet to melt more often and sooner, sometimes making them disappear entirely. This means we reflect less heat back into space (dark surface instead of a brighter surface). As the ice decreases, we absorb more heat. When the ice that melts is on land (glaciers,

Antarctica), the increased amount of liquid water also leads to sea level rise.

6) This warmth also melts parts of the soil or the ocean floor that have been frozen, releasing even more greenhouse gases trapped there for thousands of years. These gases enter the atmosphere and trap more heat.

7) The warming of the planet leads to more moisture evaporating into the air, which in turn means stronger rain events than in the past in some places, and more drought in others.

8) Even if we stop all fossil fuel use tomorrow, the planet will continue to warm up because of the greenhouse gases that are already holding in heat. Stopping fossil fuel use in the next 15 years—the goal of this manual—may help us avoid temperature and weather extremes that will make human survival difficult or impossible.