

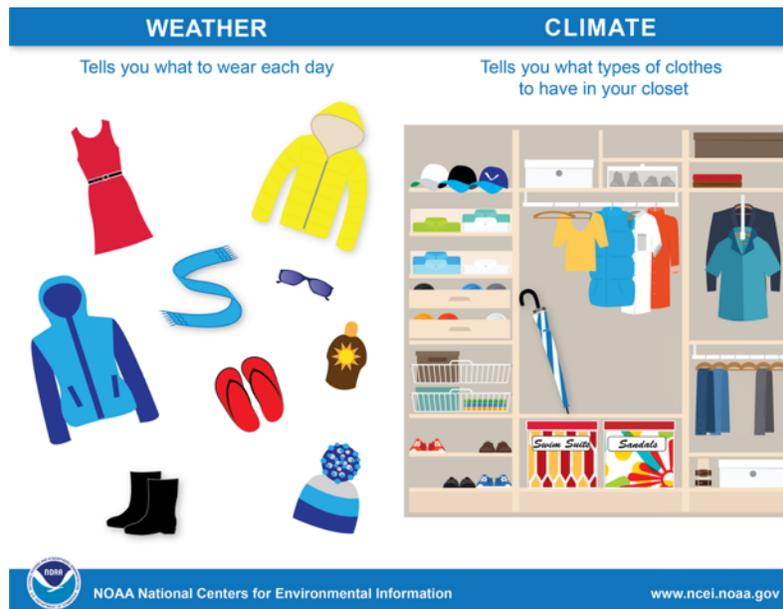
CLIMATE 101: WEATHER VS. CLIMATE



THE BASICS

Climate and weather are not the same! **Weather** is what happens in the short term—day-to-day (or even moment-to-moment) changes in temperature, humidity, precipitation, etc. **Climate** is the average of weather events over a longer period of time—typically 30 years or more. The difference is all about timing.

Here's one useful way to think about it from Dr. Marshall Shepherd: Weather is your *mood*; climate is your *personality*.



NOAA National Centers for Environmental Information

www.ncei.noaa.gov

Another handy way of visualizing weather versus climate from [NOAA](https://www.noaa.gov).

And while weather can be incredibly variable, the trend line for our climate is heading in one clear direction: toward a warmer, more dangerous world. That's why we need to take action today.

HOW IS THE CLIMATE CRISIS IMPACTING OUR WEATHER?

We've established that climate is the long-term average of our day-to-day weather. And big changes in our climate systems caused by our burning of fossil fuels and other activities are impacting our daily weather patterns today. *It's a nasty feedback loop.*

As the climate becomes warmer, we're starting to see weather that is more extreme—and we're seeing it more often. Why? Climate change affects weather, in large part, by [intensifying the water cycle](#). In short, water evaporates into the atmosphere from both land and sea and returns to Earth's surface in the form of rain and snow. As the world warms, the rate of evaporation from our land and oceans is increasing, powering stronger and stronger storms in many places and drought in others.

WHY DOES THE DIFFERENCE BETWEEN WEATHER AND CLIMATE MATTER?

Well, as the saying goes, we don't want to miss the forest for the trees. It's important to focus on the weather for our everyday lives—but it's *imperative* that we understand the bigger picture of how our global climate is changing over time. [Because climate change affects everything](#) from food and water security to our health and economy.

When the weather starts to get really cold, you might hear someone say, "It's freezing outside. So much for global warming, huh?" [Comedian Stephen Colbert offered up a pretty on-the-nose quip in response to this failure of logic](#): "Global warming isn't real because I was cold today. Also great news, world hunger is over because I just ate."

Conflating weather and climate is a favorite climate denier talking point. While the weather might be cold or snowy on any given day, the science is clear: On average, our world is getting warmer and warmer over time—and our climate is changing.

That's why it's important to arm ourselves with the facts and be able to refute these popular (but dead wrong!) arguments.

Dirty fossil fuels mean dirty weather—and a changing climate.

Shifting to clean, renewable energy will help us solve this crisis. We can still act and avert the worst of a changing climate. But it starts with leaving fossil fuels behind.

QUICK FACTS

- When humans burn fossil fuels, we release greenhouse gases (like carbon dioxide and methane) into the atmosphere. These gases trap heat, warm our planet, and throw our natural systems out of balance.
- But it's not just our atmosphere getting warmer—global sea surface temperatures are rising as well. [And when our oceans get warmer, hurricanes and other storms get stronger and more dangerous.](#)
- [According to Pew Research](#), a majority of Americans see that climate change affects their local area—and many of those people "pointed to changes in the weather, including increasing frequency of severe storms, droughts, floods, and wildfires."