Interior America and a Changing Climate

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Hi, I'm Julie. I'm coming to you from North Central Texas, about 45 minutes south of Oklahoma and over five hours to the nearest coastline.

I'm a disaster researcher, former emergency manager, and a bit of a weather nerd.

I was born and raised in Texas, and I love this great state. Particularly, I love where I'm from: The American Heartland, Interior America. With rodeos, rolling plains, and big skies. But, lately I've noticed some things are changing; maybe you've noticed too.

Maybe the summers seem hotter than usual. Maybe your winters have felt more unpredictable. Maybe the wind and humidity feel different.

What's happening with our weather and climate here in Interior America? Is the climate changing? Should you be concerned? Let's chat about what's happening.

Climate change. Global warming. Sea level rise. Carbon footprint. Melting ice caps. Green energy. Renewables. Resilience. Mitigation. Ocean acidification. Wildfires. Hurricanes. Scarcity.

If you consume any media, you've likely heard these and many other terms related to climate change. It's a lot and enough to make your head spin. What does it all mean?

Let's review the basics. What is the climate?

Maybe your first thought is that climate is weather. But, that's not quite right. Frequently, people conflate the climate with weather. While weather and climate are very much interconnected, they are *not* the same.

According to the National Centers for Environmental Information, "weather is the mix of events that happen each day in our atmosphere", while the climate is "what the weather is like over a long period of time in a specific area" (National Centers for Environmental Information, 2018).

The weather can vary day-to-day and season-to-season. Climate, however, is more constant. You can think of climate as a summation of weather trends in a particular place.

You've likely encountered the phrase "climate *change"*. Or, maybe you've heard the expression "global warming" thrown around. What's the difference? And, are these just a fad? Why has there been so much talk relating to climate science and should I care about it?

Let's first consider whether or not climate science is a fad.

Believe it or not, scientists have been studying the climate and how it may be changing for centuries.

In the early 1800s, Joseph Fourier – a French mathematician and physicist – noted that something must be keeping heat within the earth's atmosphere, otherwise the earth would be much colder (Fournier, 1827). Later in the 1800s, Eunice Newton Foote – an American inventor, scientist, and women's rights activist – noted that moist air or air containing certain gases trapped heat better than dry air or air without additional gases (Foote, 1856). John Tyndall, an Irish scientist who also lived in the 1800s, further noted that different gases retain heat differently (Tyndall, 1861). Fourier, Foote, and Tyndall laid the foundation for modern climate science, which we will cover in greater depth shortly.

It was a Swedish chemist, Svante Arrhenius, just before the turn of the 20th century who argued humans may have an influence on their climate through the emission of gases (Arrhenius, 1896). These are but a few of the most influential scientists in early climate science. For hundreds of years, scientists have believed that our climate is changing.

This brings us to "global warming" vs. "climate change". Ultimately, these phrases mean the same thing. Scientists have discovered that world's climate is, overall, warming. This does not necessarily mean all weather patterns will be warmer than normal; in fact, it means there will likely be more variable and more extreme weather events, including extreme winter events such as Winter Storm Uri that impacted the entire State of Texas in 2021. Because the phrase "global warming" may evoke the idea that things will be hotter all the time, scientists have begun encouraging the use of the phrase "climate change" instead. Just know that they mean, essentially, the same thing and – in general – the climate is warming.

Let's chat a little bit about how the fundamentals of how our climate works (United States Global Change Research Program, 2009).

On earth, our primary source of energy is the sun. The sun radiates energy in the form of light. Some of that light is reflected back into space by the Earth's atmosphere, clouds, or ice. Much of that light, however, reaches the surface and warms the planet.

Earth's atmosphere holds onto that energy, keeping the earth warm. This is called the greenhouse effect. We need the greenhouse effect in order for the earth to sustain life. One of the problems, however, is that several human activities release extra greenhouse gases – primarily carbon dioxide (or CO2) – into the atmosphere. Greenhouse gases trap extra radiative energy, causing energy to be reemitted to the surface, triggering the globe to warm up.

In the United States, the greatest amount of CO2 emissions come from transportation – that is, cars, planes, and other vehicles that burn fossil fuels. Electric power generation is second. Before we discuss what we need to do to address climate change, it's important we consider the hard truth: The main source of CO2 in the atmosphere comes from the burning of fossil fuel, such as coal, petroleum, and natural gas. In 2024, on average, we put over 100 million tons of carbon dioxide into our atmosphere every day (Global Carbon Budget, 2024). That's equivalent to the weight of over 300 Empire State Buildings every day.

A warming climate has several major implications for life on earth: everywhere. Scientists around the world agree rising CO2 levels and temperatures present a major threat to the globe (Ripple et al., 2017).

With approximately 10% of the world's population located within 5 kilometers of the coast (Cosby et al., 2024), one of the most discussed impacts of global warming is sea level rise. Coastal communities in particular have started *seeing* many direct impacts from this warming.

Away from the water – without hurricanes and storm surge – the impacts may not be as obvious. But, don't be fooled; there are major impacts underway in inland areas (Werning et al., 2024). You might not feel like climate change is a problem where you live, but a changing climate has impacts on everyone, no matter where you live. What will be the impacts for those who are not directly influenced by rising sea levels?

One of the most notable impacts – and one we've already started to see in the interior of the United States – will be from increasingly extreme weather events.

Severe weather events – such as hurricanes or cyclones, flooding events, droughts, extreme temperatures – are becoming more intense and frequent (Coumou & Rahmstorf, 2012). We may also expect to see more compounding events (Ebi et al., 2021), that is when multiple hazards occur simultaneously, stressing an already impaired community.

In recent years, the costs of weather and climate disasters has increased. In 2024, there were 27 disaster events that created costs exceeding a billion-dollars, ultimately costing $184.8 trillion dollars and 568 deaths in the United States (NOAA National Centers for Environmental Information (NCEI), n.d.). A significant number of these events occurred within Interior America.

So what does all this mean to us here in Interior America? Let's break it down a bit.

Severe weather events may impact transit systems and infrastructure. More frequent and intense hail may destroy crops. Extreme heat or extreme cold may also influence seasons, influencing many aspects of daily life. In particular, already-arid areas are expected to become even hotter and drier (United States Global Change Research Program, 2009). On the other hand, when it rains, it will rain harder. Hard, dry ground may not be able to absorb water fast enough from heavy precipitation events, leading to flooding from excessive runoff. Less and less precipitation will reach the ground as snow, which means there will be less snow melt in the spring impacting agriculture and freshwater access.

Some indicators of warming may seem inconsequential, such as warmer days and nights and increased humidity. But, these changes have huge implications for the economy, agriculture, and health. Changes in the season will impact crops. Fires will increase; insects, pests, certain pathogens, and invasive species of plants that normally die off in cold seasons will live longer than normal (or not be killed off by the weather at all). Warmer days and nights – combined with higher humidity – will increase the risk of heat-related illnesses and deaths.

The growing frequency and intensity of weather events has the potential to cause health issues and put strain on current healthcare systems (Ebi et al., 2021). Some of the possible health impacts of climate change may be heat-related illnesses or heat-induced deaths, respiratory illnesses caused by smoke or particulate inhalation, waterborne pathogens, drowning or injury from flood or other hazard events, and mental health concerns, among other issues (Ebi et al., 2021).

Studies show that extreme heat is more dangerous – and deadly – than any other weather-related hazard (Adams-Fuller, 2023), and this is expected to only get worse as our climate continues to warm (US EPA, 2016).

Given the interconnectedness of so many systems on our globe – and some uncertainty in how the future will play out – it is important to remember that this may not be a comprehensive list of climate change impacts. Nonetheless, it should be clear that Interior America is not immune from the influences of a changing climate.

One of the ways governments can address the impacts of climate change and mitigate future harm is to implement policy.

Policy is complicated and messy, but policy action is necessary in order to address the threats posed by a changing climate. Unlike some other social issues, climate change impacts everyone. With that in mind, we need to think about climate change and its impacts not simply as an “environmental problem”, but as a “whole of society” problem (Ebi et al., 2021).

Considering the impacts of climate change in Interior America – and the country as a whole – federal policymakers should explore policy measures to limit CO2 emissions. In the publication series *Federal Climate Policy Toolkit,* the organization Resources for the Future proposes several policy actions policymakers should explore and adopt in order to limit emissions. These are carbon pricing, performance standards, and technology subsidies (Newell, 2021).

Some other actions policymakers should implement is public funding for innovation and rejoining international agreements, such as the Paris Agreement.

Governments should consider how land use planning can be utilized to reduce reliance on vehicles and other fossil fuel emitting transit.

All of these actions – if implemented swiftly – may limit warming and reduce potential impacts of climate change.

This is not an all-inclusive list of policy measures that can be taken to address climate change, but it is intended to get you thinking. We need creative solutions for the future. What can your elected officials and bureaucratic systems do to address climate change in your jurisdiction?

The truth is, even if we took radical climate action today, we’d still see warming for decades to come. This is called “climate inertia” (Tebaldi & Friedlingstein, 2013). Just like it takes time for your car to come to a stop after you hit the brakes, the warming in our climate works the same way.

While working to slow climate change impacts, we need to realize that some change is inevitable and adapt to a changing climate.

Policymakers should support mitigation efforts, strengthening structures that are at risk of impact from extreme weather events. Efforts – such as property buyout programs – should be made to move individuals away from areas that are susceptible to repeat flooding events.

Policymakers should implement water and drought policies to protect sources of clean water, especially as our supply of clean water in Interior America is becoming increasingly more limited (Ripple et al., 2017). This may include adopting water use restrictions to limit the amount of water individuals and corporations may use.

Local governments should craft plans and build collaborative relationships with community organizations to offer cooling and warming centers. Governments need to consider the potential negative impacts of climate-induced events and build in contingencies to protect constituents.

Though not as obvious as the changes happening along the coastline, Interior America's climate is mutating, and these transformations are only expected to exponentially increase if we do not act now to address warming.

So, what now? What can you do?

First, consider your own lifestyle. What can you change about your day-to-day? Take measures to reduce your own carbon footprint. Reduce your use of electricity. Rideshare or use public transit when available. Research how climate change will impact where you live. Consider how you may need to adapt as your environment changes. Use the links provided at the end of this video to do some research into what you can do.

Talk with your family and friends about climate change and why it's a big deal. Share how they can adjust their lifestyle. Unfortunately, many people out there do not believe that climate change exists, particularly in Interior America (Marlon et al., 2022). Take the information you learn in this video and share it with those around you. Big change can come from small conversations.

But, these actions – albeit important – may not be enough to make the waves we need to see real policy movement.

Climate change is a big problem that impacts everyone, but sometimes it isn't treated like a big problem. You can make a difference by advocating for climate change awareness and action. Petition your local, state, and federal lawmakers to take action. This is more than just an environmental problem; climate change is an all-of-society issue.

This video only scratches the surface of the fundamentals of climate change and how it is going to impact Interior America. There's so much more we could say here, but I'll leave you with this: Don't dismiss a changing climate and its impacts. Even if you haven't noticed big changes yet, the signs are becoming clearer every year. No matter

where you stand politically, we all want to protect our families, land, and way of life; we may have to adapt, but – together – we can create a better future for future generations.

Whether you are skeptical or not, I hope this video has spurred your curiosity. Access the resources mentioned in this video and more by visiting https://linktr.ee/interioramerica or by scanning the QR code on your screen. Thanks for watching.

Disclaimer

ChatGPT, an AI language model developed by OpenAI, provided editorial feedback on tone, pacing, and clarity. Minor edits were made to the script, but no changes were made to the substantive portions of the script.

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