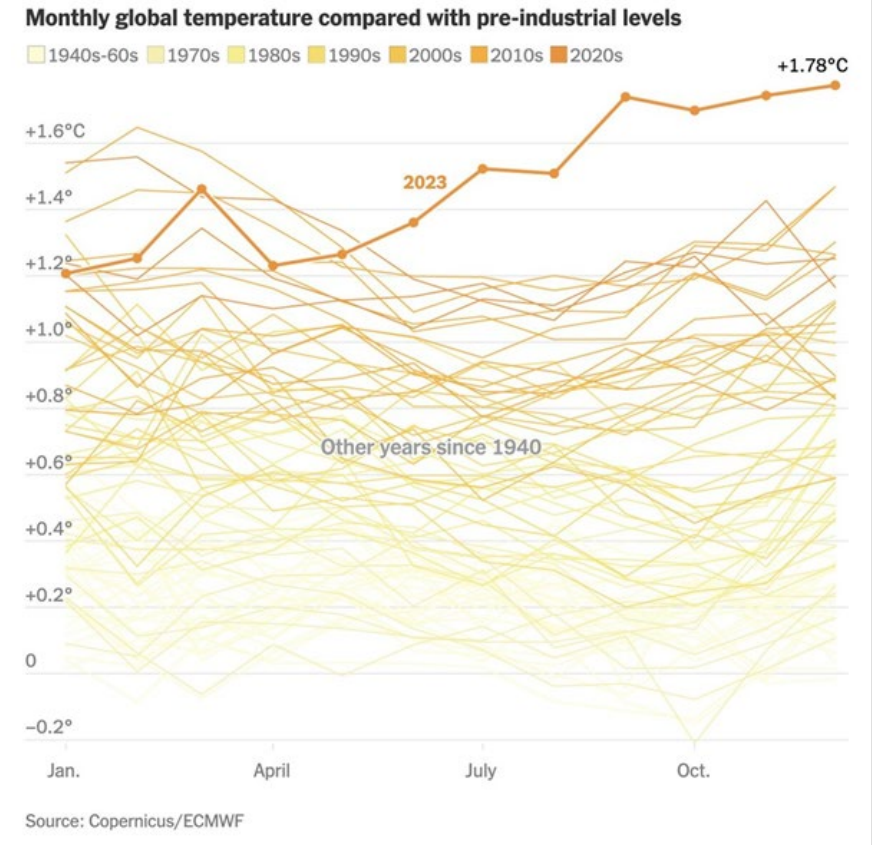
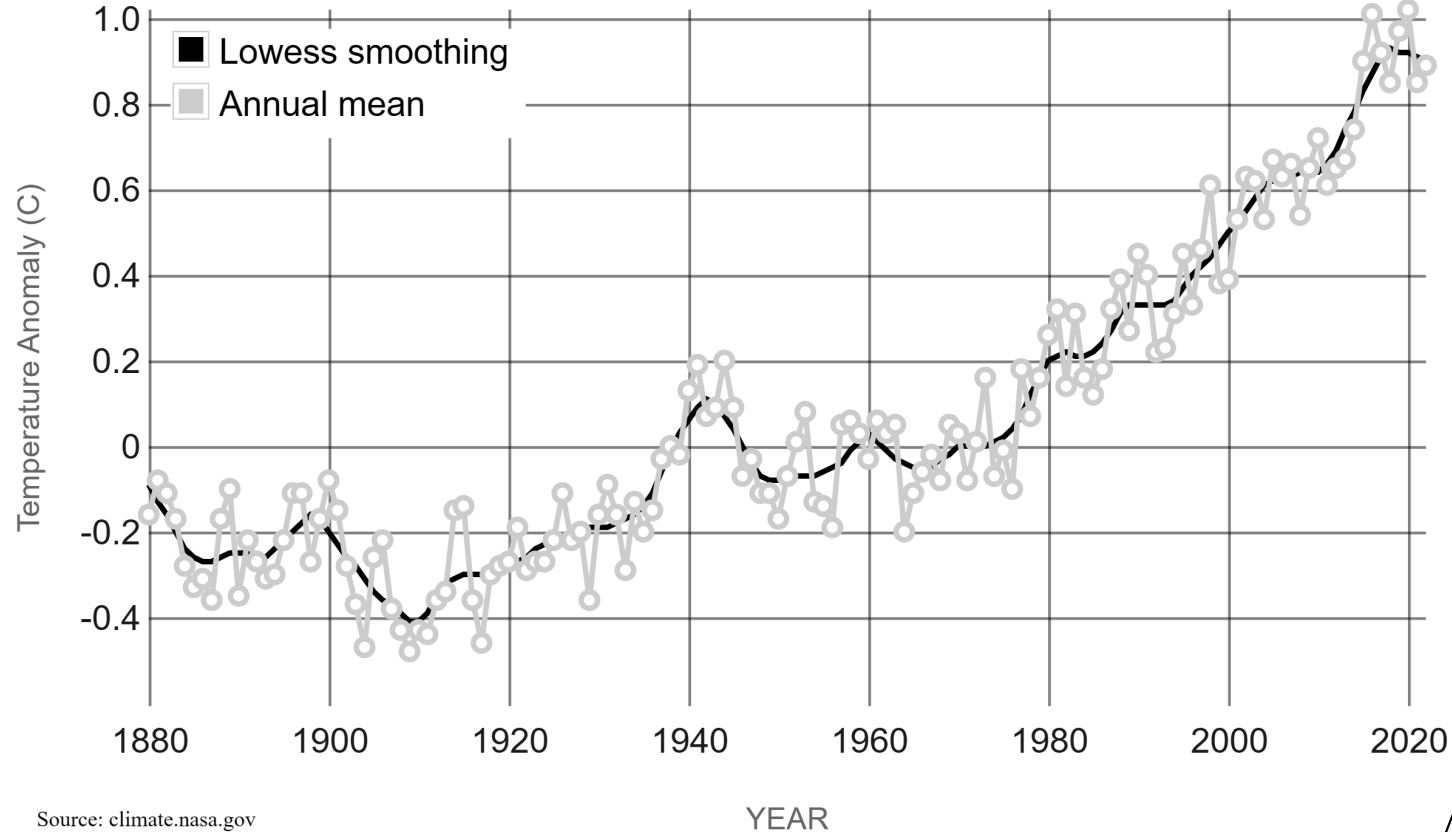


The Earth is Warming

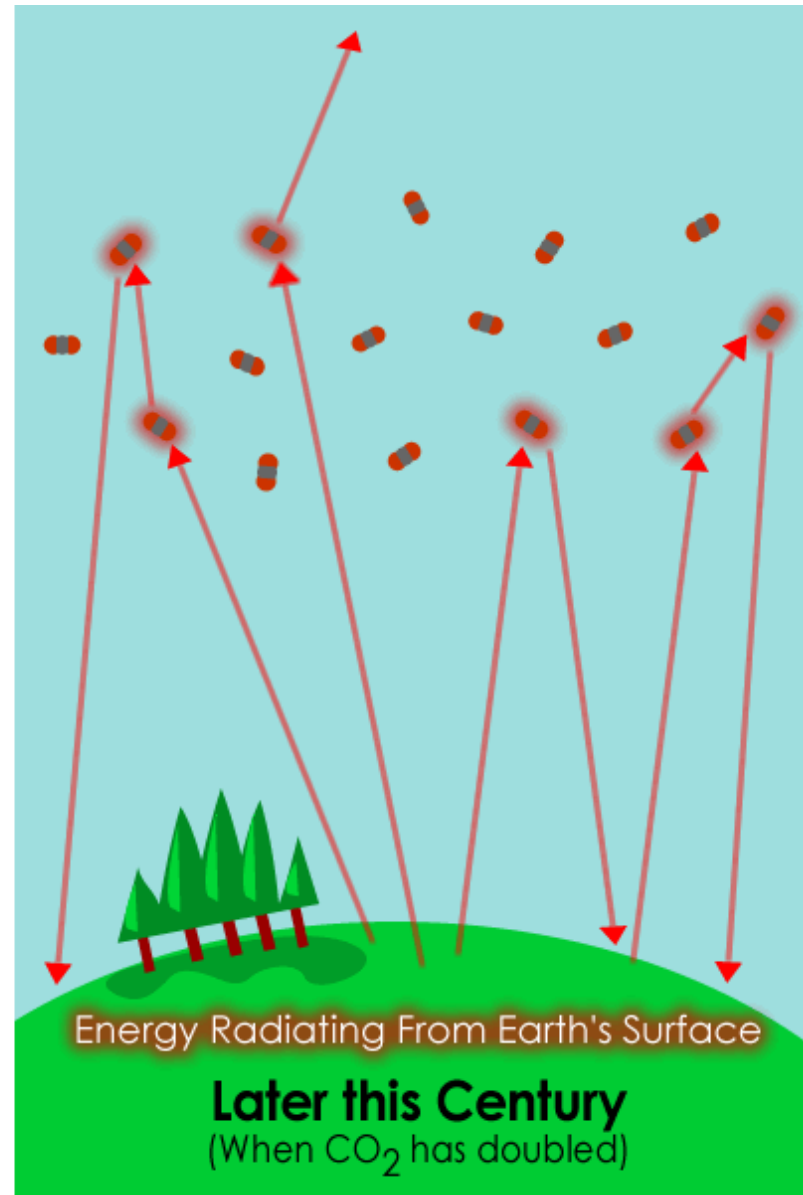
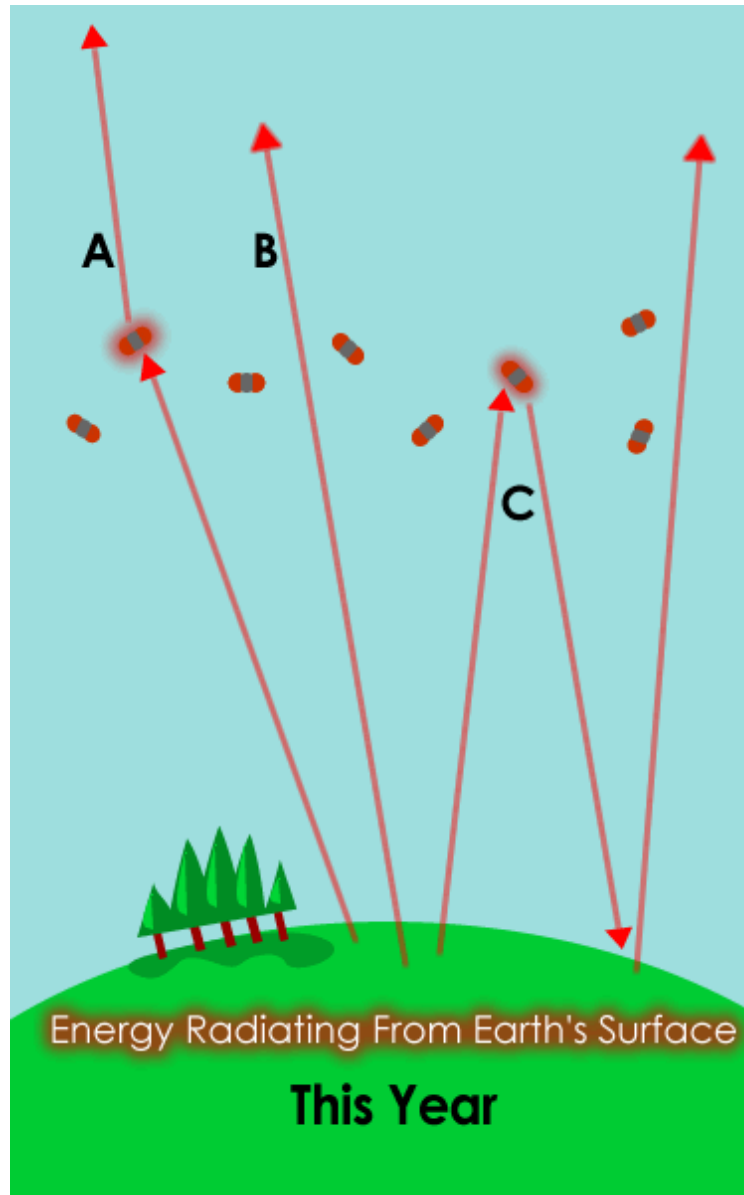


A new era in global heat

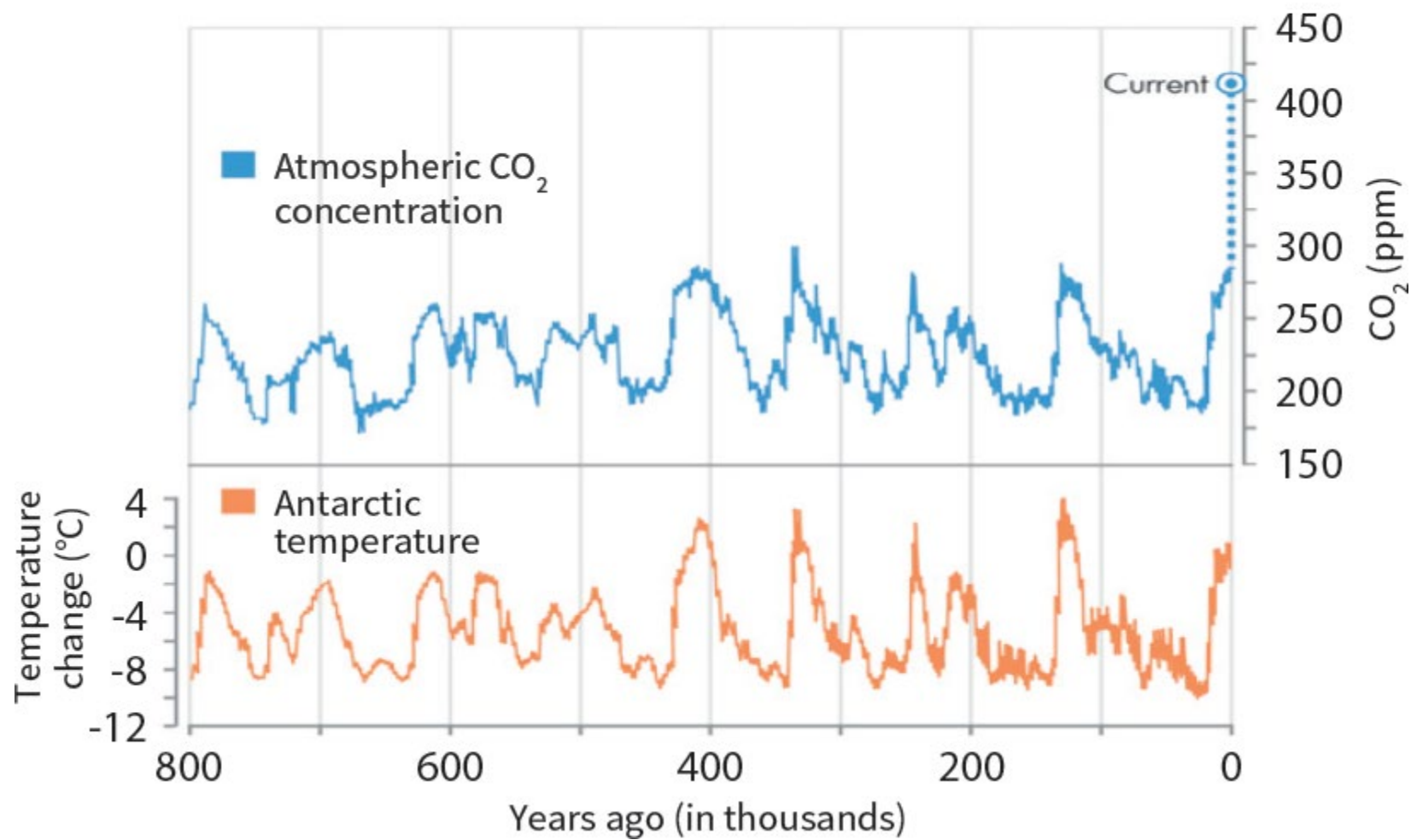


By **Manuela Andreoni**
Senior Newsletter Writer, Climate

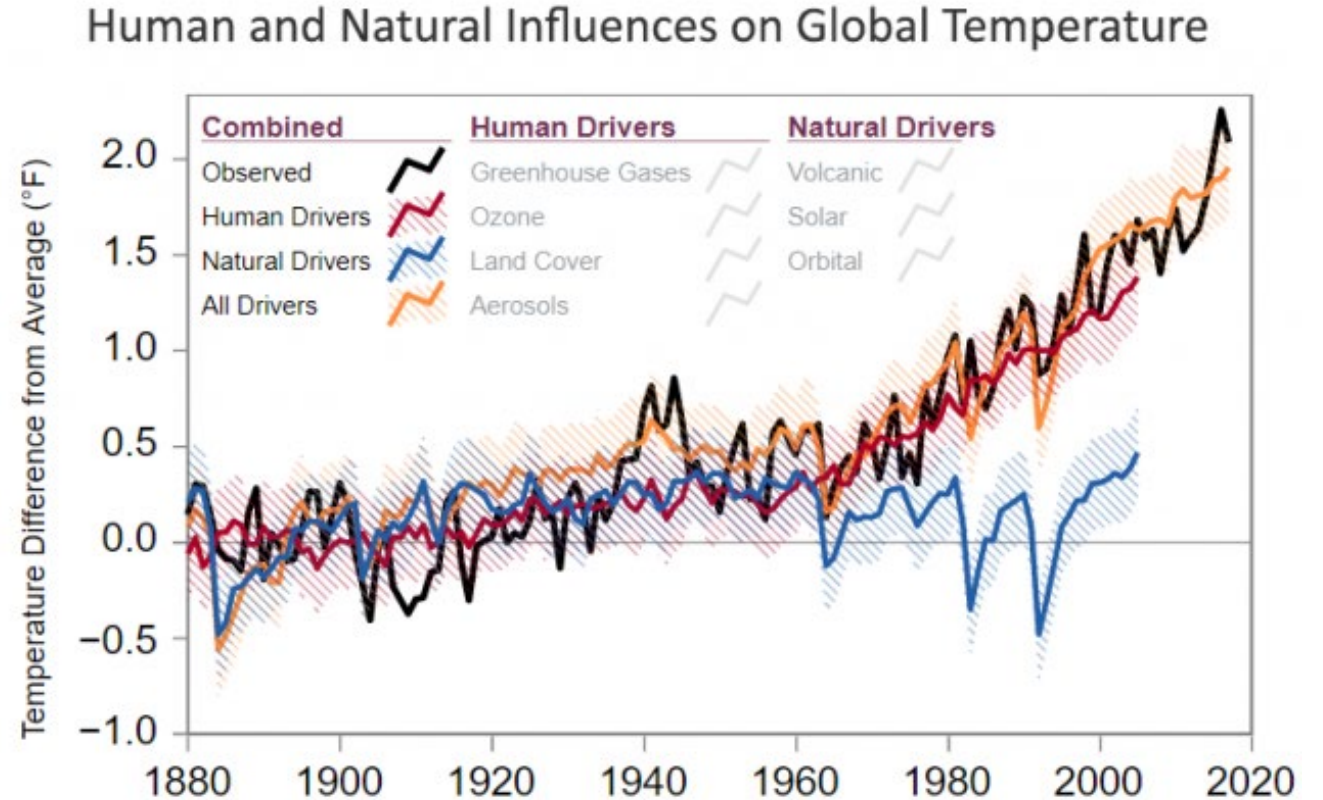
NY Times, Jan.9, 2024



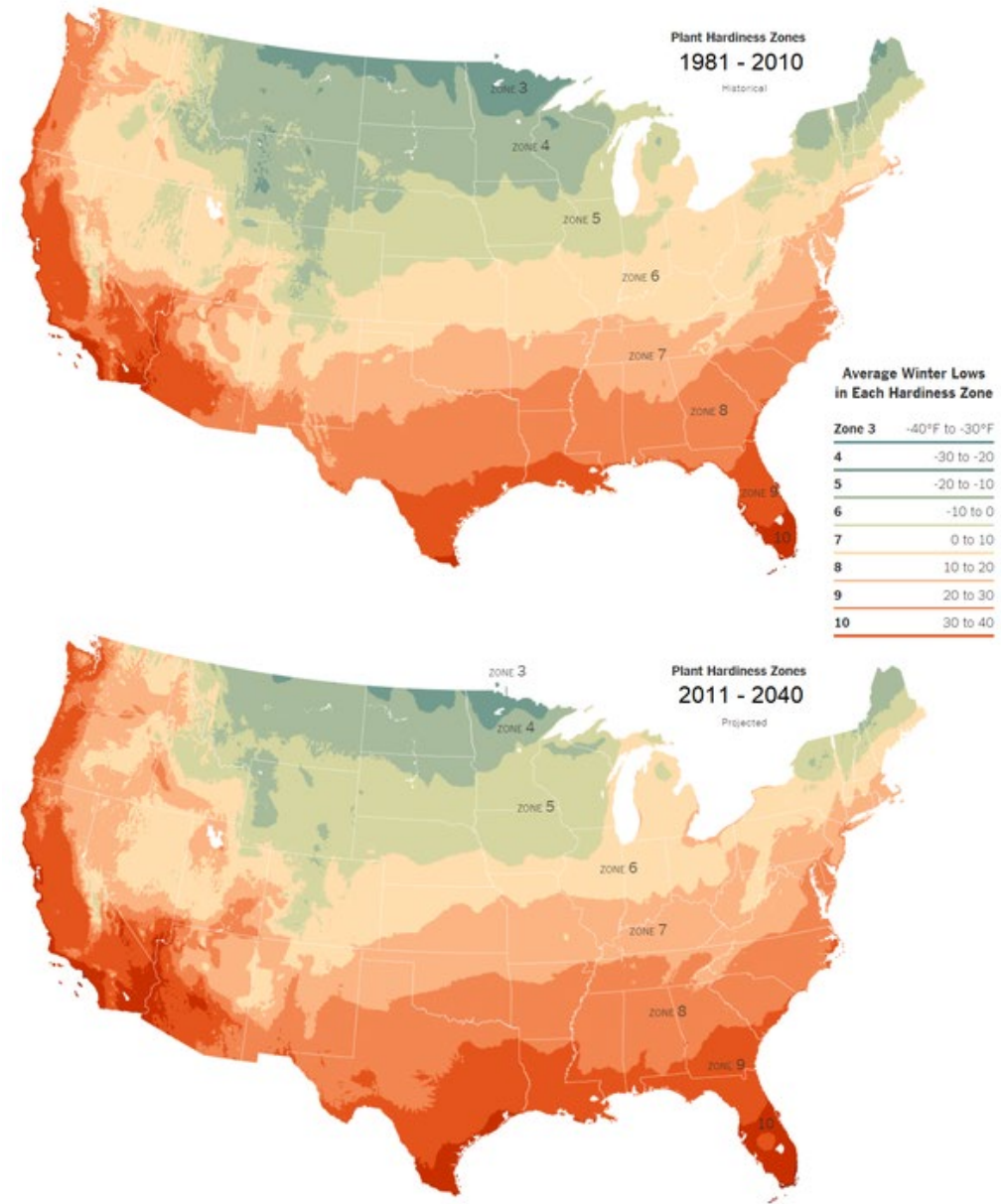
Atmospheric Carbon Dioxide Concentrations and Antarctic Temperatures



Recent Temperature Increases Caused by Humans



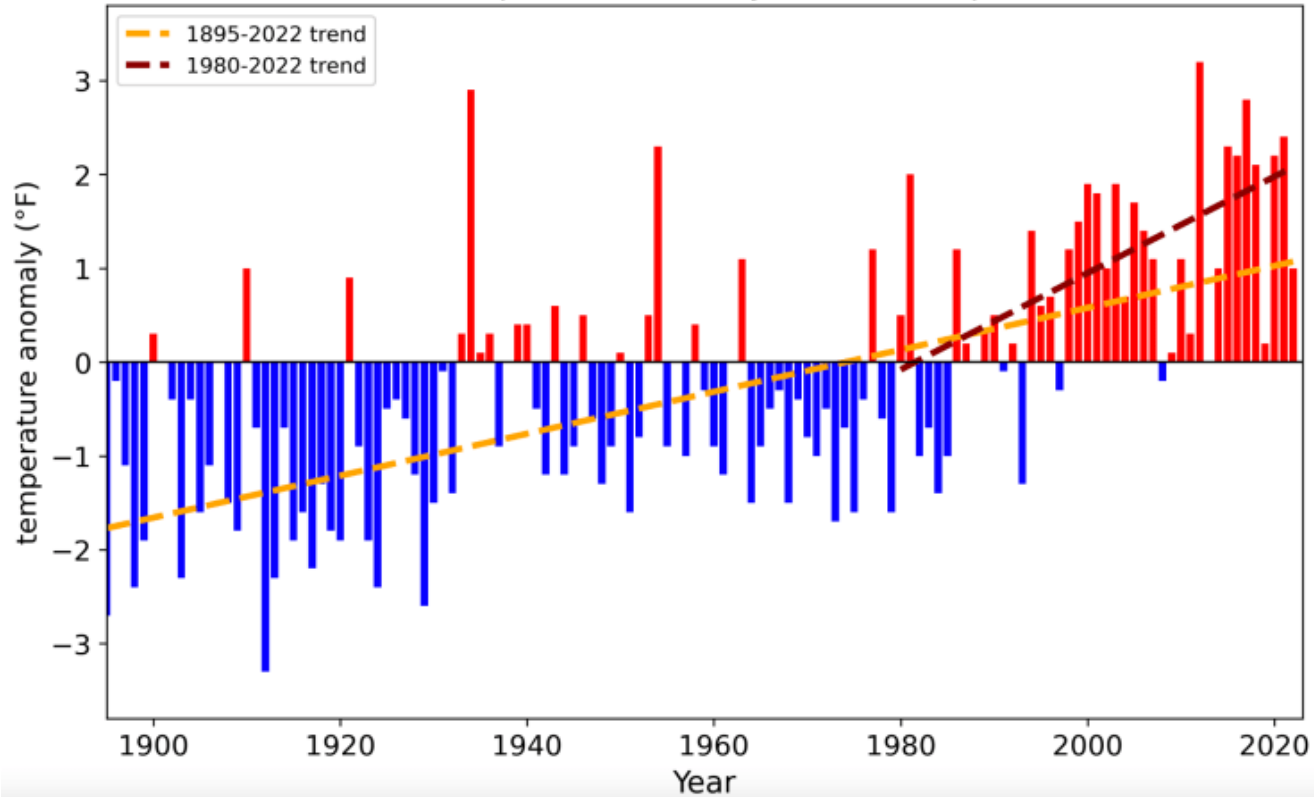
Major Changes in Growing Zones



Source: National Oceanic and Atmospheric Administration, NY Times April 8, 2021

- Emergencies caused by heatwaves, wildfires, floods, tropical storms and hurricanes are increasing in scale, frequency and intensity.
- 250,000 additional deaths/yr, from undernutrition, malaria, diarrhoea and heat stress alone.
- Areas with weak health infrastructure – mostly in developing countries – will be the least able to cope without assistance to prepare and respond.
- Every 1 C° increase in temperature we can expect a 9% decrease in flow in the Colorado River

Colorado statewide annual temperature anomaly (°F), with respect to 1971-2000 average

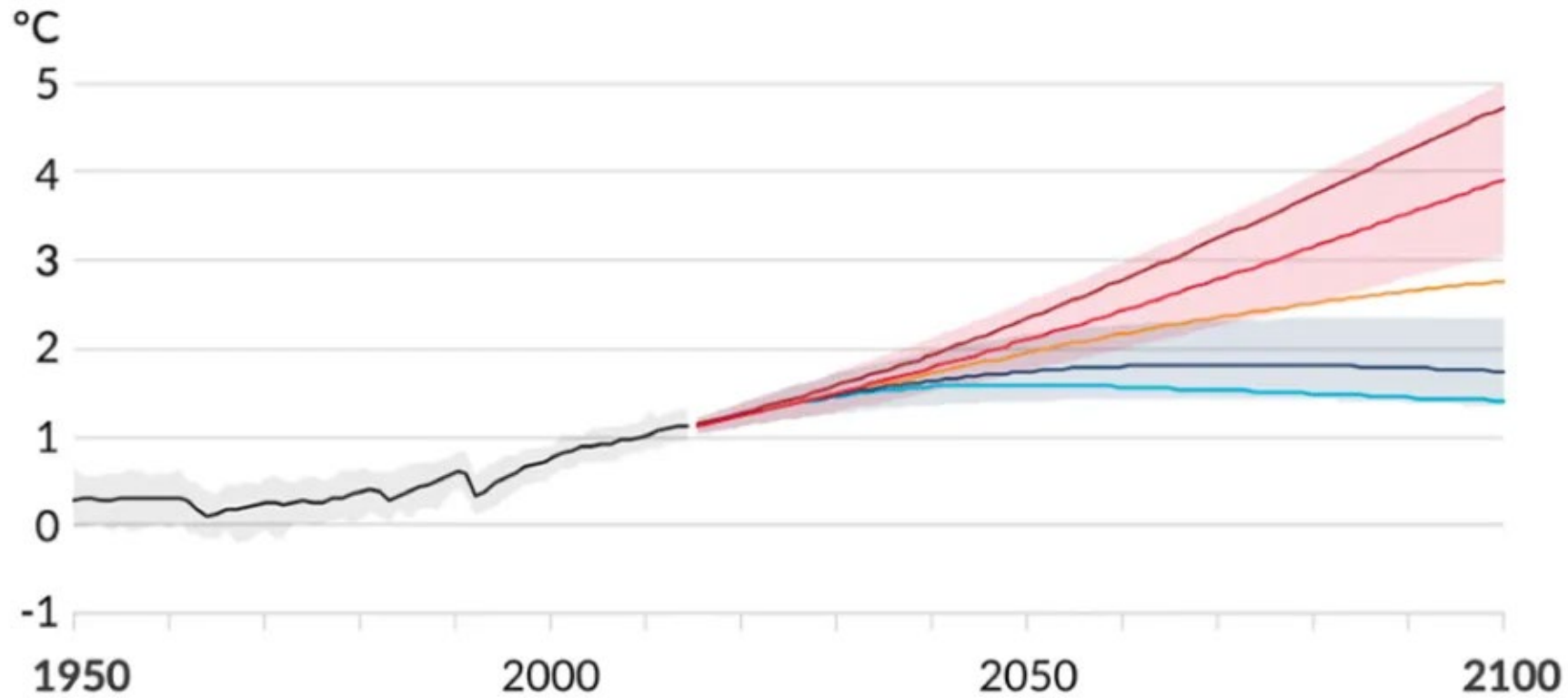


Colorado State University “2024 Climate Change in Colorado, Colorado Sun, Jan. 8, 2024

Colorado rivers may shrink by 30% as climate change continues, report says

2024 update to Colorado State University’s comprehensive climate study projects depleted rivers, shaky snowpack, more wildfire risk and a Front Range baking under ozone pollution

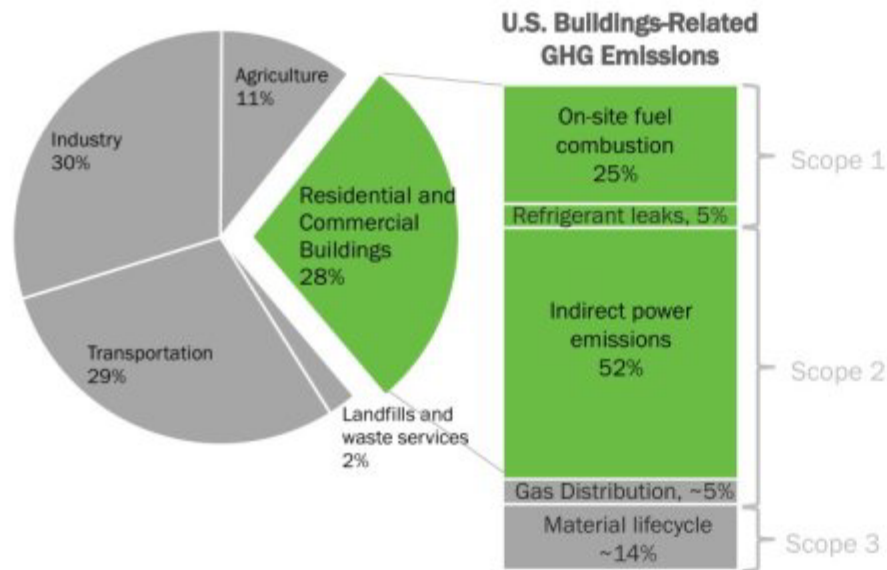
Projected Temperature Increase (°C)



Five Scenarios of Fossil Fuel Burning

- | | |
|--|---|
| Highest CO ₂ amounts | Smaller CO ₂ amounts, then no increase in CO ₂ late in the 21st century |
| Medium to high CO ₂ amounts | No increase in CO ₂ beginning in 2050 |
| Medium CO ₂ amounts | |

Buildings contribute to more than 28% of total U.S. greenhouse gas (GHG) emissions



U.S. buildings waste over 30% of energy use (over \$100 Billion annually)



Most of today's buildings will still be operating in 2050 (~75% of residential and 50% of commercial in U.S.)



Buildings account for 75% of U.S. electricity use, and building heating and cooling drives peak demand



Buildings are where distributed solar, storage, and EV charging intersects with the distribution grid



Reduce **90% of total GHG** and **95% of energy-related GHG emissions¹** from the building sector



Avoid **7 quads of annual energy use²** while converting many building loads to clean electricity



Save consumers more than **\$100 billion in annual energy costs²** through efficiency improvements

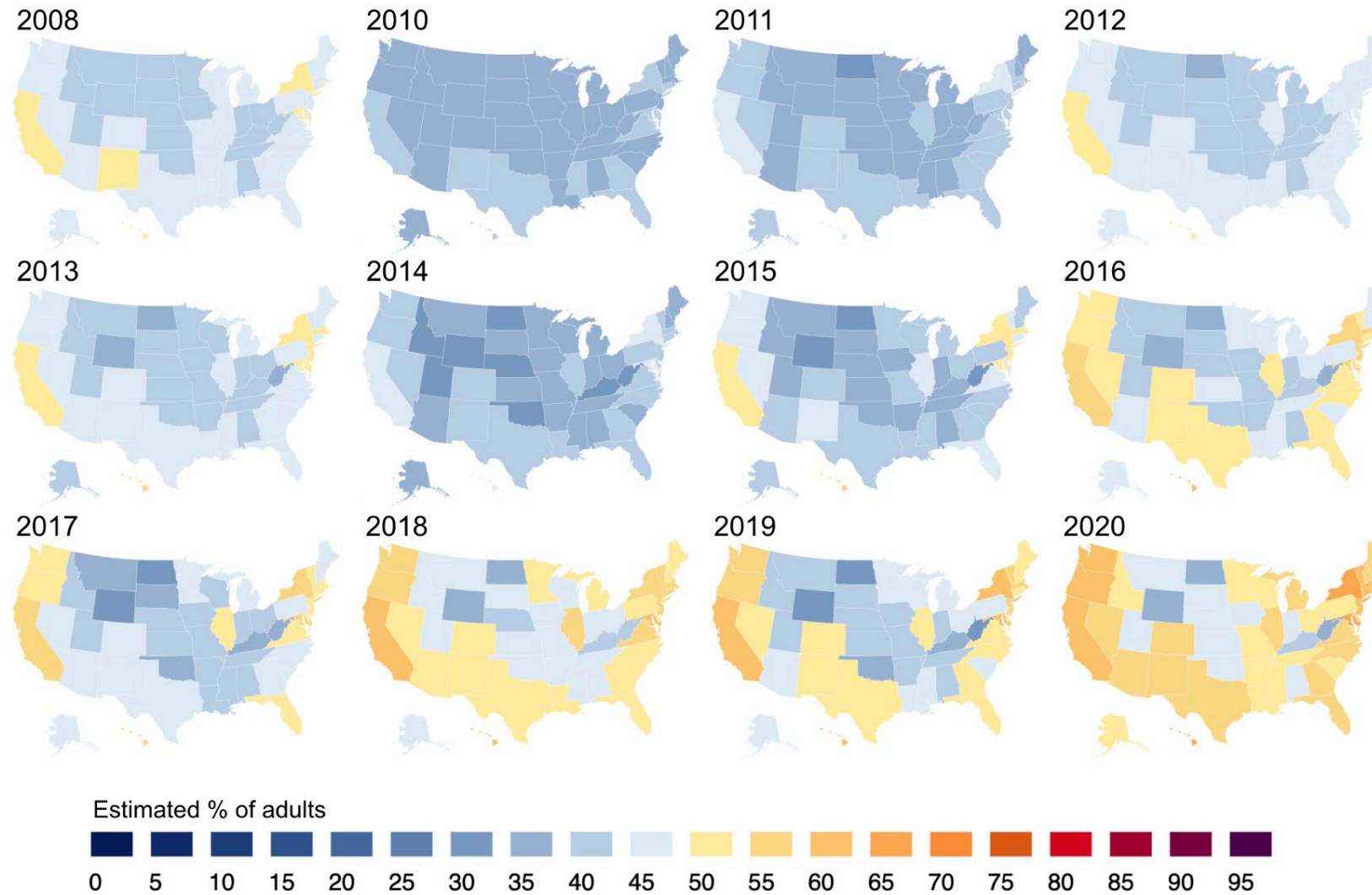


Avoid **\$17 billion in annual health costs³** and add **\$1 trillion of investment in high-quality jobs²**

- [Decarbonizing the U.S. Economy by 2050: A National Blueprint for the Building Sector | Department of Energy](#)

Benefits of Decarbonizing Buildings

Global warming is already harming/will harm the USA



Politics of Climate Change

Marlon, J. R., Wang, X., Bergquist, P., Howe, P. D., Leiserowitz, A., Maibach, E., Mildenberger, M., & Rosenthal, S. (2022). Change in US state-level public opinion about climate change: 2008–2020. *Environmental Research Letters*, 17(12). DOI:10.1088/1748-9326/aca702

The Arguments to Electrify in Crested Butte

- **Health**

e.g., Meta-analysis of the effects of indoor nitrogen dioxide and gas cooking on asthma and wheeze in children *International Journal of Epidemiology*, Volume 42, Issue 6, December 2013, Pages 1724–1737, <https://doi.org/10.1093/ije/dyt150>

- **Efficiency** (3-6x)

[Heat Pumps: A Practical Solution for Cold Climates – RMI](#)

- **Natural Gas=Coal** in terms of carbon footprints with methane losses

[Reality Check: Natural Gas's True Climate Risk – RMI](#)

- **Cost** Unless you get rid of electricity, with natural gas you are paying for two power infrastructures (individual buildings as well as grids)

- **No Redundancy** Modern code requires electricity for natural gas heating to work, so natural gas heating does not create heating redundancy during electrical outages

- **Decarbonization of electricity** Tri-State aggressively decarbonizing electricity, including closing coal power plants

- **Natural gas industry not credible** retraction in Colorado Sun, weak arguments at council meetings

- **Some Members of Building Community Supported Electrification**