

Climate Change and Global Warming. An American Perspective through the Lenses of Old and New Modes of Communication

Abstract: Starting from the premise that climate change is a divisive issue in the United States, and that the phrases ‘climate change’ and ‘global warming’ have partisan significance, we compare the rhetoric U.S. presidents have used in their statements about the climate crisis in debates, interviews, and other contexts vis-à-vis what they have said/written in social media. We find more polarization in social media; ‘global warming’ seems to be more commonly associated with tweets that use a hoax frame, and is used more often by Republicans than Democrats. Thus, we find Donald Trump tweeting, “I don’t think science knows. This climate crisis is not only fake news but also fake science, bullshit, and an expensive hoax”, and Joe Biden arguing that “climate change is an existential threat, it’s already here, and we have to hurry, we have to act before it’s too late, because time is running out”.

Keywords: *climate change, global warming, spoken corpus, social media, American presidents*

1. Introduction

The climate crisis has been a contentious and divisive issue in international scientific and political debates of the last thirty years. Rather than being a problem to be solved, for some people climate change is an ideology of sorts, revealing different individual and collective beliefs, values, and attitudes about ways of living in the world.¹ The ideological core of the climate crisis is evident in the fact that concern about climate change varies widely across countries. Europeans are more worried about its immediacy compared to Americans, and countries that are high emitters of carbon dioxide tend to exhibit less concern about its impact.² An especially stark political divide in climate change opinion is found in the U.S., where citizens are split between worry and skepticism.³

The existing literature about how climate change and global warming are framed and discussed in public discourse has been abundant over the last twenty years.⁴ Some key studies consider the effectiveness of using human health as a substantive frame for discussion of the climate crisis.⁵ Other works compare

¹ Mike Hulme, *Why We Disagree about Climate Change* (Cambridge, UK: Cambridge U.P., 2009); Raul P. Lejano and Jennifer Dodge, “The Narrative Properties of Ideology: The Adversarial Turn and Climate Skepticism in the USA”, *Policy Sciences*, 50.2 (2017), 195-215.

² Richard Wike, “What the World Thinks about Climate Change in 7 Charts”, Pew Research Center (April 18, 2016), available at <https://www.pewresearch.org/short-reads/2016/04/18/what-the-world-thinks-about-climate-change-in-7-charts/>, accessed May 8, 2023.

³ Lorraine Whitmarsh, “Scepticism and Uncertainty about Climate Change: Dimensions, Determinants and Change over Time”, *Global Environmental Change*, 21.2 (2011), 690-700.

⁴ Micheal Boykoff, *Who Speaks for the Climate? Making Sense of Media Reporting on Climate Change* (Cambridge: Cambridge U.P., 2011); Barbara Dancygier et al.; “Multimodal Media: Framing Climate Change”, *Frame Analysis: Special Issue Discourse Studies*, 25.2, (2023), doi/10.1177/14614456231154724.

⁵ Verena Rossa-Roccor, “Framing Climate Change as a Human Health Issue: Enough to Tip the Scale in Climate Policy?”, *Lancet Planet Health* 5, 553-559; Cinzia Bevitori and Katherine E. Russo, “Environment, Climate and Health at the Crossroads: A Critical Analysis of Public Policy and Political Communication Discourse in the EU”, in *Handbook of Political Discourse*, ed. Piotr Cap (Cheltenham: Edward Elgar Publishing, 2023), 328-344.

the various venues in which elites present information and views about the climate.⁶ Bevitori,⁷ among many others, has taken a thorough diachronic look at how political elites talk about the environment and climate across venues both in the UK and in the US. In particular, in 2015, she focused on formal speeches delivered by ten presidents of the United States, from President Kennedy to President Obama, thus covering 50 years of presidential discourse with the purpose of seeing how the environment was construed in American presidential speech over more than half a century. There is also a developing literature on how climate change and global warming are represented in social media.⁸

The present paper investigates whether and how U.S. presidents from both of that country's two major political parties use divergent language when addressing the climate crisis (a) in traditional forms of communication and (b) on social media. We find extensive evidence of polarization, especially on social media, as exemplified by these divergent statements from the last two occupants of the White House. Donald Trump tweeted: "I don't think science knows. This climate crisis is not only fake news but also fake science, bullshit, and an expensive hoax", while Joe Biden argued that "climate change is an existential threat, it's already here, and we have to hurry, we have to act before it's too late, because time is running out".

We begin by describing the corpora used in the analysis and proceed to a historical overview of American presidents' approaches to climate change and global warming over the last twenty years (2001 to 2023), from George W. Bush to Joe Biden, to see how they have addressed the climate crisis in their speeches, remarks, interviews, and statements. In short, we document that Republican presidents have turned away from the climate crisis while Democratic presidents appear to take it to heart. We continue by exploring differences between key terms that have different origins and meanings yet are conflated in the discourse about the climate crisis: 'weather' versus 'climate' and 'climate change' versus 'global warming'. Next, we analyze the language these U.S. presidents use in discussing the climate crisis in traditional modes of communication and then we proceed to examine how they make use of social media platforms, in particular Facebook and Twitter, to articulate their climate change rhetoric. Doing so permits an assessment of whether and to what extent traditional media and social media have a degree of mutual influence.⁹

Our dataset is a diachronic corpus that comprises public statements and social media posts of the last four U.S. presidents. George W. Bush did not make any use of social media, as Facebook and Twitter were both created in 2006. Thus, his corpus relies only on his speeches and remarks delivered in his 8-year presidency, retrieved from the White House website,¹⁰ and totals approximately nine million words. Barack Obama's 8-year corpus consists of almost ten million words. Donald Trump's 4-year corpus totals three million words, and the first two years of Joe Biden's presidency yields slightly more than two million words. Only speeches and remarks were included in the corpus, as the language in Press Releases, Presidential Actions, Statements and Releases can indeed be regarded as a different political communication genre.

⁶ Katherine E. Russo, *The Evaluation of Risk in Institutional and Newspaper Discourse: The case of Climate Change and Migration* (Napoli: Editoriale Scientifica, 2018).

⁷ Cinzia Bevitori, "Representations of Climate Change: News and Opinions in UK and US Quality Press: A Corpus-Assisted Discourse Study (Bologna: Bononia University Press, 2010); Cinzia Bevitori, "How Green is "Green"? A Corpus-assisted Analysis of Environmental Discourse across Forms of Journalism", in *Occasional Papers dei Quaderni del Centro Studi Linguistico-Culturale* (Bologna: CeSLiC e AlmaDL, 2012), 1-30; Cinzia Bevitori, "Values, Assumptions and Beliefs in British Newspaper Editorial Coverage of Climate Change", in *Contemporary Critical Discourse Studies*, ed. Christopher Hart and Piotr Cap (London: Bloomsbury, 2014), 603-625; Cinzia Bevitori, "Discursive Constructions of the Environment in American Presidential Speeches 1960–2013: A Diachronic Corpus-Assisted Study", *Corpora and Discourse Studies. Palgrave Advances in Language and Linguistics*, ed. Paul Baker and Tony McEnery, (London: Palgrave Macmillan, 2015), 110-133.

⁸ See, for example, Jennifer R. Fownes et al., "Twitter and Climate Change", *Sociology Compass*, 12.6 (2018).

⁹ Massimiliano Demata, "'I Think That Maybe I Wouldn't Be Here if It Wasn't for Twitter': Donald Trump's Populist Style on Twitter", *Textus XXXI*, 1.1 (2018), 67-90.

¹⁰ www.whitehouse.gov.

Obama is regarded as the first social media President, due to his innovative use of online platforms, and his successors, especially Trump, have followed suit. Social media corpora for Obama, Trump and Biden are smaller in size and word counts. Respectively, they number 198,256, 102,450 and 263,431 running words. Social media data are derived from the University of California at Santa Barbara’s American Presidency Project.¹¹

	speeches and remarks	social media	time span
George Bush	9,039,144 words	0	8 years
Barack Obama	9,987,296 words	198,256 words	8 years
Donald Trump	3,164,231 words	102,450 words	4 years
Joe Biden	2,235,843 words	263,431 words	2 years

Table 1. datasets of the four Presidents used in the analysis

The software we have relied on to access the data and interrogate our corpus is *WordSmith Tools 7.0*.¹² A corpus-assisted critical discourse analysis approach is adopted.

2. A Partisan Issue?

The four 21st-century presidents of the United States have taken divergent rhetorical and policy paths in their handling of the climate crisis. Shortly after George W. Bush was sworn in as the 43rd U.S. President in 2001, he announced that the United States would not implement the 1997 Kyoto Protocol on emissions, denouncing it as “an unfair and ineffective means of addressing global climate change”. Bush perceived the Kyoto standards as a threat to U.S. economic interests, fearing “serious harm to the United States economy, including job loss, trade disadvantage, and increased energy and consumer costs”.

This decision created a political stalemate, as it was seen by much of the international community as a major obstacle to confronting climate change.¹³ The absence of the U.S. from the Kyoto Protocol became the Achille’s heel of global climate negotiations, especially because the U.S. is the world’s wealthiest nation and the second largest emitter of greenhouse gases. Sixteen years later, it was as if history was repeating: as soon as Donald Trump was sworn in as the 45th President in 2017, he declared his intention to remove the U.S. from the Paris Agreement on climate change, adopted in December 2015 by nearly 200 developed and developing countries. The aim of that landmark international accord was to keep climate change in check and limit future greenhouse emissions from human activities to the same levels that trees, soil, and oceans can absorb naturally (known as net zero), to arrive in 2050 at carbon neutrality and climate resilience. The target that the signatory members pledged to reach would ensure that greenhouse gas emissions and removals balanced each other out, so that the overall effect is zero.

In a speech delivered on June 2, 2017, Trump announced that the U.S. would in fact quit the Paris Climate Accord, as the deal “hamstrings the United States and puts us at a permanent disadvantage to the other countries of the world”:

Not only does this deal subject our citizens to harsh economic restrictions, it fails to live up to our environmental ideals. As someone who cares deeply about the environment, which I do, I cannot in good

¹¹ See www.presidency.ucsb.edu/ and www.kaggle.com/datasets/harshitagpt/us-presidents.

¹² Mike Scott, *WordSmith Tools 7.0*, Lexical Analysis Software Limited (2017).

¹³ Peter H. Koehn, “Underneath Kyoto: Emerging Subnational Government Initiatives and Incipient Issue-bundling Opportunities in China and the United States”, *Global Environmental Politics*, 8.1 (2008), 53-77.

conscience support a deal that punishes the United States – which is what it does – the world’s leader in environmental protection, while imposing no meaningful obligations on the world’s leading polluters. Therefore, in order to fulfill my solemn duty to protect America and its citizens, the United States will withdraw from the Paris climate accord – ... So, we’re getting out. But we will start to negotiate, and we will see if we can make a deal that’s fair. And if we can, that’s great. And if we can’t, that’s fine.... As president, I can put no other consideration before the wellbeing of American citizens.

Yet, it took three years after Trump announced the U.S.’s withdrawal for the country to leave the Paris Agreement. Ironically, the green light to quit the international accord was given at a bitter moment: Election Day, November 4, 2020. The exit occurred regardless of the outcome of the vote, as in November Donald Trump was still President; the winner of the presidential election would decide whether to stay out or rejoin.

In leaving these international agreements, both George W. Bush and Donald Trump were adamant that developing countries take advantage of U.S. emission reductions by sitting on their hands while the costs of emission control make U.S. industry uncompetitive. These presidents’ desire to avoid confronting climate change was thus tightly connected with their stated fear that any serious effort to reduce greenhouse gas emissions would undermine economic growth.

In the meantime, between these two Republican presidencies, the first Black President, Democrat Barack Obama, was elected in January 2009. In the same year, the Copenhagen Accord replaced the Kyoto Protocol, and President Obama attempted to bring a new face to U.S. climate diplomacy. Nevertheless, the COP15 summit in Denmark failed to result in the comprehensive treaty many had desired, even with a more cooperative U.S. and even though China and India had played active roles at the negotiating table. Many analysts contend that Obama played his cards well on climate change, both by finding common ground with China and by advocating for a system of reciprocal but non-binding national commitments.¹⁴ Even critics would agree that Obama worked hard to nurture the U.S.’s position as a leader concerning the climate crisis rather than an obstacle to change. In his appearance at the COP26 summit in Glasgow, in November 2021, after criticising Donald Trump’s “active hostility toward climate science”, Obama called on young people to “stay angry” and to “stay frustrated” in the fight against climate change. Adamant that young people must be the voice to awaken the rest of the world, Obama delivered a rousing call to action for young generations, urging them to keep pushing forward and demanding more action on climate change.

After serving as Vice President in the Obama administration, Joe Biden became the 46th U.S. President in January 2021. Just hours after being sworn in as president, his administration announced that the country would re-enter the Paris Agreement and would redouble its efforts to tackle the climate crisis. At COP27 in Egypt, Biden apologized for the U.S. pulling out of the Paris Agreement and said that his administration was “putting our money where our mouth is”.

The broad picture that emerges from these four presidents’ approaches to the climate crisis is one of Republicans looking away and Democrats seeming to take the matter to heart, indicating that the climate crisis is a partisan issue. As Barack Obama acknowledged in 2009, the climate crisis became a partisan issue after decades of being noncontroversial. It was a Republican, President Richard Nixon, who opened the Environment Protection Agency (EPA) in 1970. Another Republican, George H.W. Bush, was the first American president to declare that human activities are changing the atmosphere in unexpected and unprecedented ways. And finally, a longtime U.S. Senator, John McCain (R-Arizona), introduced and fought hard for a bipartisan market-based cap-and-trade bill to slow carbon pollution.¹⁵

¹⁴ Christopher J. Bailey, “Assessing President Obama’s Climate Change Record”, *Environmental Politics*, 28.5 (2019), 847-865.

¹⁵ Marianne Lavelle, “John McCain’s Climate Change Legacy”, *Inside Climate News* (August 26, 2018), available at <https://insideclimatenews.org/news/26082018/john-mccain-climate-change-leadership-senate-cap-trade-bipartisan-lieberman-republican-campaign/>, accessed May 8, 2023.

2.1 Words and phrases used interchangeably?

Not only is the climate crisis a partisan issue in the United States, so too are the very phrases used to represent it: ‘climate change’ versus ‘global warming’. Furthermore, Donald Trump was known for conflating the terms ‘weather’ and ‘climate’, especially on cold days or during winter storms. With his “where the hell is global warming?” tweets, he continually cast doubt on the consensus of every major scientific organization that studies our planet by denying climate change simply because of cold weather. The difference between weather and climate is a measure of time. According to NASA, weather is temporary; it is the state of the atmosphere at a particular place and at a particular time with regard to temperature, precipitation, humidity, wind, and cloud cover. It refers to short-term variations in meteorological conditions, measured from minutes to hours or days. Mark Twain’s aphorism is apt: “If you don’t like the weather in New England, just wait a few minutes”. The climate, on the other hand, is how the atmosphere behaves over relatively long periods of time. It refers to the long-term (usually at least 30, or even 50 years) average regional and even global temperature, humidity, and precipitation patterns over seasons, years, and decades.¹⁶

Studies document confusion between ‘climate change’ and ‘global warming’ in the media.¹⁷ The two phrases are often conflated¹⁸ to describe the climatic phenomenon caused by changes in atmospheric concentrations of greenhouse gases.¹⁹ Many scholars argue that it is necessary to distinguish between the two phrases.²⁰ ‘Climate change’, originally called ‘climatic change’, was first coined in 1956 by Gilbert Plass, who discovered the strong relationship between carbon dioxide emissions and the Earth’s historical climate. The phrase ‘global warming’ came into use later, when in 1975 Wallace Broecker developed a model to predict rising temperatures as an effect of increases in carbon dioxide in the atmosphere.²¹ Thus, the two terms have different origins and ought not to be used as synonyms. In scientific reports, like the Intergovernmental Panel on Climate Change (IPCC), and in some academic research, the phrases are distinguished from one another.

Hence, terminologically speaking, climate change was coined before global warming. This fact runs contrary to Donald Trump’s assertions that climate change was deftly invented later by hoaxsters, because “global warming wasn’t working anymore”. Trump first used the two phrases interchangeably, in statements such as “climate change, aka global warming”, or “climate change or global warming”. He later declared that “global warming was formerly known as climate change”, thus implying that the phrase ‘climate change’ was coined later as a cover when the weather is cold. Contrary to what Trump argues in reference to freezing weather, Schuldt et al.²² argue that climate change is conceptualized as all forms of climatic and weather variability, involving hotter summers, but also colder winters, as well as more rainfall, increased drought, rising sea levels, shrinking glaciers, accelerating ice melt in

¹⁶ Dimitrinka Atanasova, “How Constructive News Outlets Reported the Synergistic Effects of Climate Change and Covid-19 through Metaphors”, *Journalism Practice*, 16.2-3 (2011), 384-403.

¹⁷ Ming Liu and Jingyi Huang, “‘Climate Change’ vs. ‘Global Warming’: A Corpus-assisted Discourse Analysis of Two Popular Terms in the *New York Times*”, *Journal of World Languages*, 8.1 (2022), 34-55.

¹⁸ Maurice Lineman et al. “Talking about Climate Change and Global Warming”, *PLoS ONE*, 10 (2015), article e0138996.

¹⁹ Irene Lorenzoni and Nick F. Pidgeon, “Public Views on Climate Change: European and USA Perspectives”, *Climatic Change*, 77.1 (2006), 73-95.

²⁰ Wen Shi et al., “#Climatechange vs. #Globalwarming: Characterizing Two Competing Climate Discourses on Twitter with Semantic Network and Temporal Analyses”, *International Journal of Environmental Research and Public Health*, 17.3 (2020), 1-22.

²¹ Liu and Huang, Climate change.

²² Schuldt et al., “‘Global Warming’ or ‘Climate Change’? Whether the Planet is Warming Depends on Question Wording”, *Public Opinion Quarterly*, 75.1 (2011), 115-124.

Greenland, Antarctica, and the Arctic, and shifts in flower/plant blooming times.²³ These phenomena are all consequences of global warming, which is caused primarily by humans burning fossil fuels which puts heat-trapping carbon dioxide, methane, and other gases into the air. Thus, climate change encompasses global warming,²⁴ or rather, global warming is a by-product of climate change.²⁵ Previous studies have shown that Americans choose which of the two phrases to use based on political affiliations, gender identity, knowledge and experience, and beliefs. As Wodak and Reisigl²⁶ put it, ‘climate change’ typically means ‘global warming’ in ordinary language use. However, climate change can also denote global cooling towards a new ice age, sometimes relating to natural climatic variation which may lead not only to warming but also to cooling.²⁷ In scientific use, instead, climate change refers to alterations in median annual temperatures, but also to precipitation change, sea-level rise, ozone depletion, and extreme weather and related events such as tropical storms, hurricanes, tornadoes, droughts, floods, and wildfires.

2.2 *Republicans vs. Democrats?*

Stark political divisions in climate change attitudes persist in the U.S. both among politicians and, consequently, at the mass level. Divisions separate climate deniers from climate believers to such a degree that people who believe in the seriousness and urgency of the climate crisis are unable to communicate with people who think that it is being exaggerated.

In their investigation of beliefs about the impact of the climate crisis on weather in the U.S., Leiserowitz et al.²⁸ find that Republicans and Independents are more likely to believe that ‘global warming’, compared to ‘climate change’ will impact weather in the United States “a lot”; among Democrats there is no similar effect of the different wording. Another study shows that the two phrases have different implications of timing and seriousness across party lines: Republicans rate climate change as more serious, while Democrats rank global warming as more serious.²⁹

Those who deny the climate crisis prefer the term ‘global warming’, while those who believe it is real opt for ‘climate change’. We find this polarized terminology to be most prevalent of all on Twitter, where global warming is commonly associated with tweets using a hoax frame, i.e., global warming is a hoax/fraud, and is used more often by Republicans than Democrats. This result is confirmed in the corpus under study here. Joe Biden never speaks of ‘global warming’, Donald Trump’s preferred way of addressing the matter, as Figure 1 shows:

²³ Lorraine Whitmarsh, “Scepticism and Uncertainty about Climate Change: Dimensions, Determinants and Change over Time”, *Global Environmental Change*, 21, (2011), 690-700.

²⁴ Lorenzoni and Pidgeon, “Public Views”.

²⁵ Sara K. Yeo et al., “The Influence of Temperature on #ClimateChange and #Globalwarming Discourses on Twitter”, *Journal of Science Communication*, 16.5, (2017).

²⁶ Ruth Wodak and Martin Reisigl, “The Discourse Historical Approach (DHA): Approaching the Analysis of ‘Discourses about Climate Change’”, *The Routledge Handbook of Critical Discourse Studies*, ed. John Flowerdew and John E. Richardson (2017), 87-121.

²⁷ *Ibid.*, 97.

²⁸ Anthony Leiserowitz et al., “What’s in a Name? Global Warming vs Climate Change”, *Climate Change Communication* (2014).

²⁹ Villar and Krosnick, “Global Warming”.

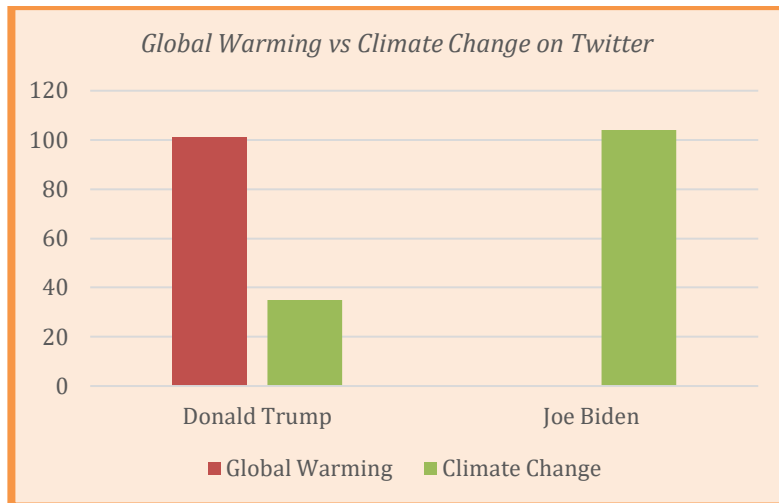


Figure 1: Global warming and climate change as used by Donald Trump and Joe Biden on Twitter

Whereas posts about global warming are correlated with anomalous temperature, in particular heat waves and weather extremes, tweets about climate change are linked with the political aspects of the issue.³⁰

These are important hints for understanding how individuals use social media to form opinions about contentious matters,³¹ especially considering that a large majority of U.S. adults who use Twitter do so to obtain news.³² Indeed, social media are one of the primary means through which Americans say they obtain scientific information.

Historically, Americans have placed high levels of trust in science and scientists; in recent years, however, this trust has been in decline, especially among Republicans and highly religious people.³³ The relative lack of trust the conservative sector of the U.S. public appears to place in science and scientists is troubling evidence of the power the media have in shaping public opinion. For example, the media paid a disproportionate amount of attention to the 2009 ‘Climategate’ scandal in the United Kingdom. Although the scientific community was quick to point out the irrefutable evidence of anthropogenic climate change in the wake of this controversy, coverage of it may have been responsible for a sharp spike in global warming skepticism the following year.³⁴

Despite hard scientific evidence and broad acknowledgment by scientists of the reality of the climate crisis, Americans remain profoundly divided on the matter.³⁵ Despite overwhelming scientific

³⁰ Yeo et al., “The Influence”.

³¹ John H. Parmelee and Shannon L. Bichard, *Politics and the Twitter Revolution: How Tweets Influence the Relationship between Political Leaders and the Public* (Lanham, Maryland: Lexington Books, 2011); Jennifer Hoewe and Cynthia Peacock, “The Power of Media in Shaping Political Attitudes,” *Current Opinion in Behavioral Sciences* 34.1 (2020), 19-24.

³² Mason Walker and Katerina Eva Matsa, “News Consumption across Social Media in 2021”, Pew Research Center, available at <https://www.pewresearch.org/journalism/2021/09/20/news-consumption-across-social-media-in-2021/>, accessed May 8, 2023.

³³ Nicole M. Krause, Dominique Brossard, Dietram A. Scheufele, Michael A. Xenos, and Keith Franke, “Trends: Americans’ Trust in Science and Scientists”, *Public Opinion Quarterly* 88.4 (2019): 817-836.

³⁴ William R. L. Anderegg and Gregory R. Goldsmith, “Public Interest in Climate Change over the Past Decade and the Effects of the ‘Climategate’ Media Event”, *Environmental Research Letters* 9 (2014), article 054005.

³⁵ Riley E. Dunlap, Aaron M. McCright, and Jerrod H. Yarosh, “The Political Divide on Climate Change: Partisan Polarization Widens in the U.S.,” *Environment: Science and Policy for Sustainable Development*, 58.5 (2016), 4-22; Alec Tyson, Cary Funk, and Brian Kennedy, “What the Data Says about American’s Views of Climate Change,” Pew Research Center (April 18, 2023), available at <https://www.pewresearch.org/short-reads/2023/04/18/for-earth-day-key-facts-about-americans-views-of-climate-change-and-renewable-energy/>, accessed May 8, 2023.

consensus, millions of Americans fail to view climate change as a pressing threat,³⁶ and others remain indifferent, confused, or downright opposed to the idea of anthropogenic climate change. Yet, in December 2015, 195 countries³⁷ signed the Paris Agreement and, for the first time, nearly every nation on earth was pledging to address the undeniable fact that climate change is real, and is caused, in no small part, by human activity.

3. The Traditional Communication Context

3.1. *Climate change and global warming in the public statements of George W. Bush and Donald Trump*

We now turn to our analysis of the 20 years' worth of language used by U.S. presidents in their public communications about the climate crisis, beginning with the word 'climate' in isolation, and then we move on to 'climate' as embedded in various clusters.

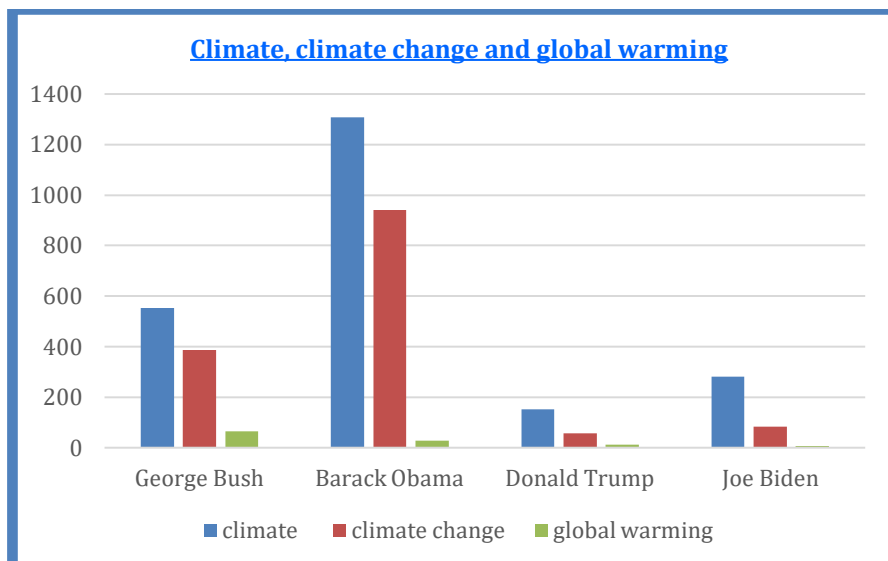


Figure 2: Climate, climate change and global warming in U.S. presidential speeches, 2001 to 2023

Starting from the assumption that frequency is a measure of importance, and bearing in mind that the graph in Figure 2 reports raw numbers of occurrences, not relative frequency (George Bush and Barack Obama's corpora include eight years' worth of speeches, Donald Trump's four years, and Joe Biden's two years), it appears that Barack Obama is the President who was most concerned about the climate crisis.

The term 'climate', even when it appears on its own, carries within itself the same connotation that it carries when embedded in clusters. If we look at Bush's mentions of 'climate', for example, we see that 'climate' is framed as a problem, an issue, and a huge international challenge. When the term 'climate' co-occurs with its 'best friend', i.e., 'change', 'climate change' shares exactly the same collocates: threat, specter, question, problem, issue, challenge, and disease, as shown in Figure 3a.

³⁶ Stephen Flusberg, "Metaphors for the War (or Race) against Climate Change", *Environmental Communication* (2017), 769-773.

³⁷ Iran, Libya, Yemen, and Eritrea have not ratified the agreement. The deal has been formally endorsed by 193 of 197 nations.



Figure 3a: Concordance lines of ‘climate change’ in George W. Bush’s public statements

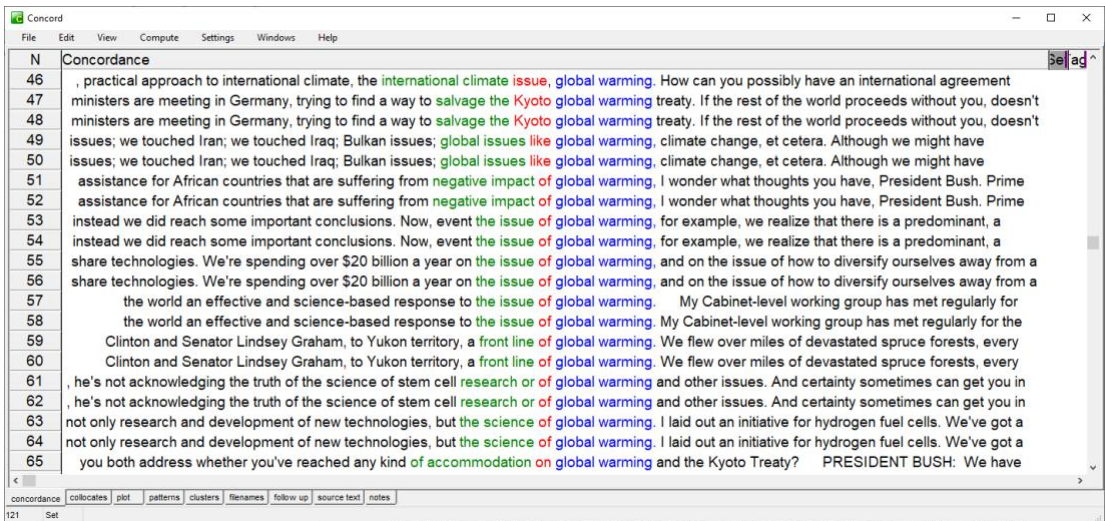


Figure 3b: Concordance lines of ‘global warming’ in George W. Bush’s public statements

Interestingly, despite being both framed as contentious issues,³⁸ Bush seems to have constructed climate change as a more serious matter than global warming. Moreover, unlike climate change, which shows a strong collocation with many items, global warming seems to be attracted to ‘issue’ only. In lines 199-200 (Figure 3a), we notice a neutral semantic prosody of the phrase, i.e., ‘the subject of climate change’, which was, by the way, uttered by the interviewer and not by the President. More surprisingly, as Figure 3 illustrates, we find ‘the science of climate change’ and ‘the science of global

³⁸ Liu and Huang, “Climate”, 44.

warming’ respectively in lines 203-204 and lines 63-64; this collocation was somewhat unexpected in a climate-skeptical politician like George W. Bush.

The word ‘science’ never appears in the company of ‘climate’ in Donald Trump’s corpus. He did use the word ‘science’ in the vicinity of ‘climate’ on a few occasions, but only to deride scientists and experts, claiming that scientists do not know what they are talking about. For example, during a roundtable meeting in McLellan Park, California, about wildfires that engulfed huge swaths of the state, Wade Crowfoot, California Secretary for Natural Resources, expressing his fears and concerns for the raging west coast wildfires, said:

Crowfoot: We want to work with you to really recognize the change in climate and what it means for our forests. And actually, work together with that science. That science is going to be key because if we ignore that science and sort of put our head in the sand and think it’s all about vegetation management, we’re not going to succeed together protecting Californians.

Trump: It’ll get cooler. You just watch.

Crowfoot: I wish science agreed with you.

Trump: I don’t think science knows, actually.

Trump’s replies, “I don’t think science knows, actually” and “It’ll get cooler”, went viral, as they clearly show his denialism and dismissal of the crisis. Right-wing populist parties, and Trump’s administration in particular, tend to endorse the “arrogance of ignorance”,³⁹ constructing themselves as Robin Hood, the savior of people, projecting hope, offering solutions, promising change, and claiming that we could do without experts and without knowledge. In the management of the Covid-19 pandemic, Donald Trump seemed to be quite proud not to need experts, knowledge, or science, appealing instead to common sense, simple solutions, intuition, and anti-intellectualism.⁴⁰ Indeed, on several occasions he had shown disdain for the scientific community, calling, for example, Dr. Anthony Fauci, the head of the National Institute of Allergy and Infectious Diseases, ‘an idiot’, ‘a disaster’, and other medical experts ‘a bunch of thugs’. From the outset of Trump’s term in office, expertise was given the back seat and the attack on environmental experts was blatant, thus explaining why Donald Trump took nineteen months to name a White House science advisor. His first EPA administrator, Scott Pruitt, was, unsurprisingly, a climate denier of the first order who made cutting environmental regulations for industry his top priority.⁴¹ It is worth remembering, in this respect, that in March 2020 Donald Trump declared that the United States would be terminating its relationship with the World Health Organization; this decision was regarded by many around the world as highly immoral, encapsulating his utter contempt for science and experts.⁴²

Analysis of Donald Trump’s speeches (Figure 3c) reveals that the word ‘climate’ collocates mainly with ‘Paris’. Sorting the node to the left, the results show that Trump described the Paris Agreement (which he termed ‘the Paris Climate disaster’) as one-sided, ridiculous, impossible, horrible, very expensive, disastrous, and energy-destroying. Sorting the node to the right, we find Trump saying the Paris Agreement ‘is so unfair’, ‘was a total disaster for our country’, ‘will destroy us’, ‘was very bad, very expensive’, ‘killed American jobs and shielded foreign polluters’, and resulted in having to ‘pay billions and billions of dollars’.

³⁹ Ruth Wodak, *The Politics of Fear. The Shameless Normalization of Far-right Discourses*, 2nd edition (London: SAGE, 2021).

⁴⁰ Paul E. Rutledge, “Trump, COVID-19, and the War on Expertise,” *American Review of Public Administration* 50.6-7 (2020), 505-511.

⁴¹ Lindsey Dillon et al., “The Environmental Protection Agency in the Early Trump Administration: Prelude to Regulatory Capture”, *American Journal of Public Health* 108.52 (2018), S89-S94.

⁴² Denise Milizia, “Framing the Pandemic in the UK and in the US: The war, the Science and the Herd”, *Textus*, 1 (2023); see also Jeff Tollefson, “How Trump Damaged Science – and Why It Could Take Decades to Recover”, *Nature* (October 5, 2020), available at <https://www.nature.com/articles/d41586-020-02800-9>, accessed May 8, 2023.

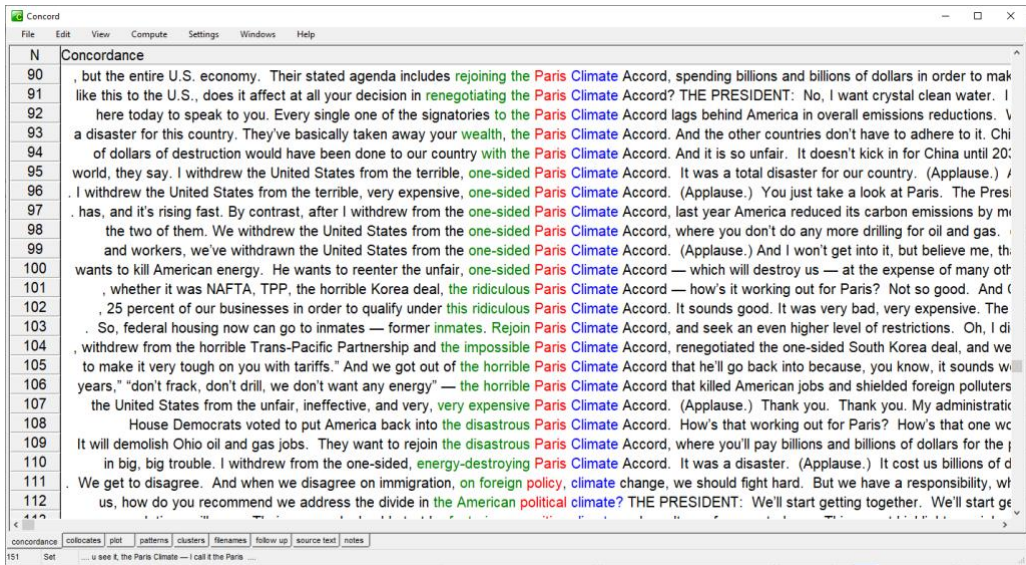


Figure 3c: Concordance lines of ‘climate’ in Donald Trump’s public statements

Despite his dogged resolve in dropping out of the Paris Agreement, Trump has always defined himself an environmentalist, going as far as saying, “I know more on climate change than scientists do”, denying altogether that he thinks global warming is a hoax, insisting on the refrain that he wants clean air and clear water, ‘the cleanest ever’:

Q: Since the environment is something that is on the table here today, what is your position on global warming? Do you think it’s a hoax? Do you think that something needs to be done?
 THE PRESIDENT: No, no, not at all. Nothing is a hoax. Nothing is a hoax about that. It’s a very serious subject. I want clean air. I want clear water. I want the cleanest air with the cleanest water.
 The environment is very important to me. Somebody wrote a book that I’m an environmentalist — it is actually called “The Environmentalist” — actually, before I did this. But they wrote a book; I’d like to get it. I have it in the other office.

Here the word ‘hoax’ co-occurs with climate change. When the President is asked whether climate change is a hoax, despite his customary “No, not at all”, he does not really answer the question, shying away from the climate change hoax issue, yet boasting about American air and water:

Q: Do you still think climate change is hoax?
 THE PRESIDENT: No, not at all. I think what is – I think aspects of it are. I think that some people are – they put it at a level that is, you know, unrealistic, to a point you can’t live your lives.
 We want to have the cleanest water on Earth. We want to have the cleanest air on Earth. Our numbers, as you saw – we had record numbers come out very recently. Our numbers are very, very good – our environmental numbers. Our water numbers, our – our numbers on air are tremendous.

It cannot be denied that his language is highly distinctive in its casual, conversational tone and reliance on non-standard but common informal usages and unguarded talk. While odd for a political leader, such language is familiar to his target audience. For example, when asked about the wildfires in California and whether the issue is a complex one, he replied, “You’ll have to ask the governor that question; I

don't want to step on his toes". However, when Donald Trump decided to withdraw from the Paris Agreement, less than a third of Americans polled approved of the decision, with more than half opposing it. His decision to tear up the Paris Accord met with widespread derision, leading many observers to lament the U.S.'s failure to lead on climate as a moral catastrophe. Yet, Donald Trump kept repeating that the Paris Agreement was a constraint on the American people. In line with the populist binomial "us versus them" trope and his typical refusal to accept any blame, he continually reiterated that other countries should be blamed, not the U.S.:

If you look at China, with all of the plants they have — you take — just take a look at China, and look at what's coming out of China. Take a look at our oceans and see who is dumping in our oceans. It's not us. It's not us. And I think that's something people should be addressing.

This mechanism of scapegoating⁴³ is a core feature of right-wing populist parties' strategic discourse. Far-right populist parties have, more recently, arrived in the mainstream, and their rhetoric is now regarded as 'normal', i.e. 'the new normal', rather than extreme or marginal.⁴⁴ Trump's penchant for blaming others, his refusal to share the global stage with other actors, his indulgence of blind self-interest, and his utter contempt of science will become even more apparent upon examination of his social media posts.

3.2. *Climate change and global warming in the public statements of Barack Obama and Joe Biden*

As illustrated in Figure 2 above, Barack Obama stands out for the frequency of his mentions of the climate crisis. Figure 4 illustrates his view that climate change is 'real,' 'no longer a distant threat', 'one of the most severe threats', 'no longer some far-off problem in the future', 'one of the central challenges of the 21st century' and, more than anything else, that 'climate change is not a hoax'.

⁴³ Ruth Wodak, "The "Establishment", the "Élite", and the "People". Who's Who?", *Journal of Language and Politics*, 16.4 (2017), 1-15; Ramona Kreis, "The "Tweet Politics" of President Trump. Right-Wing Populism in Europe & USA. Contesting Politics & Discourse beyond 'Orbanism' and 'Trumpism', *Journal of Language and Politics*, 16.4 (2017), 607-618.

⁴⁴ Wodak, *The Politics*.

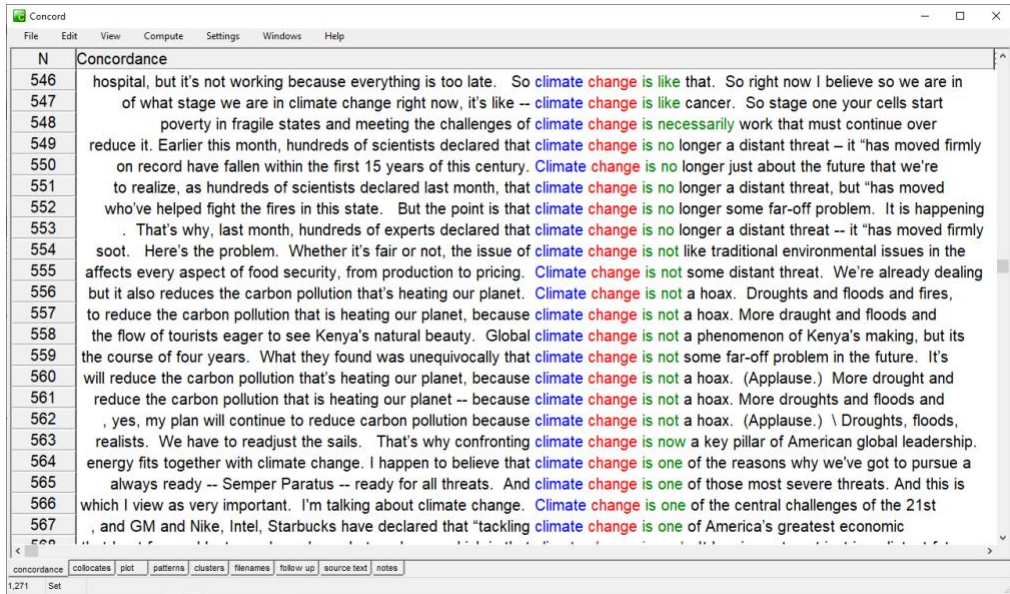


Figure 4: Concordance lines of ‘climate change’ in Barack Obama’s public statements

As shown in the second line of Figure 4, Obama endorsed something Aisa Mijeno asserted at a business summit in the Philippines in November 2015: climate change is like cancer. The purpose of this framing is to catch people’s attention to communicate a sense of urgency and emergency, heighten alarm, and build instant awareness.

I just wanted to emphasize that climate change is real. It’s a fact. It’s not some myth that scientists created in order to get funding or grants. (Laughter.) It’s real, and it’s happening now. Just to give you like a simple analogy of what stage we are in climate change right now, it’s like -- climate change is like cancer. Stage one your cells start mutating. And then at stage two you start feeling the symptoms. If you’re self-aware, you go to the doctor and get treatment. If you’re not aware, you go into stage three. You start feeling the severe effects of the symptoms, until finally stage four, you’re noticing that your health starts declining. You get the best oncologists, pay the best hospital, but it’s not working because everything is too late. So, climate change is like that. So right now, we are in stage two. You don’t want to get to stage four. We don’t want to get cancer.

Research shows that issue framing has a substantial effect on public opinion.⁴⁵ Attitudes can be changed via clever metaphor.⁴⁶ However, few studies have focused on the utility of metaphor in discourse about climate change, especially how it may help explain complex ideas to the general public.⁴⁷ The myth of the boiling frog is often relied on in the climate change narrative, to urge people to act, and act now (because, as we will see in Joe Biden’s corpus, ‘time is running out’, and ‘we are running out of time’).

⁴⁵ Paul M. Sniderman and Sean M. Theriault, “The Structure of Political Argument and the Logic of Issue Framing”, *Studies in Public Opinion: Attitudes, Nonattitudes, Measurement Error, and Change*, ed. Willem E. Saris and Paul M. Sniderman (Princeton, New Jersey: Princeton U.P., 2004), 133-165.

⁴⁶ Jeffery Scott Mio, “Metaphor and Politics”, *Metaphor and Symbol*, 12.2 (1997), 113-133.

⁴⁷ But see Stephen J. Flusberg et al., “Metaphors for the War (or Race) against Climate Change”, *Environmental Communication* 11.6 (2017), 769-783; Sandra van der Hel et al., “Tipping Points and Climate Change: Metaphor between Science and the Media”, *Environmental Communication* 12.5 (2018), 605-620.

As anticipated earlier, Barack Obama rarely used the phrase ‘global warming’, especially compared to the frequency with which he mentioned ‘climate change’ (1,271 occasions).

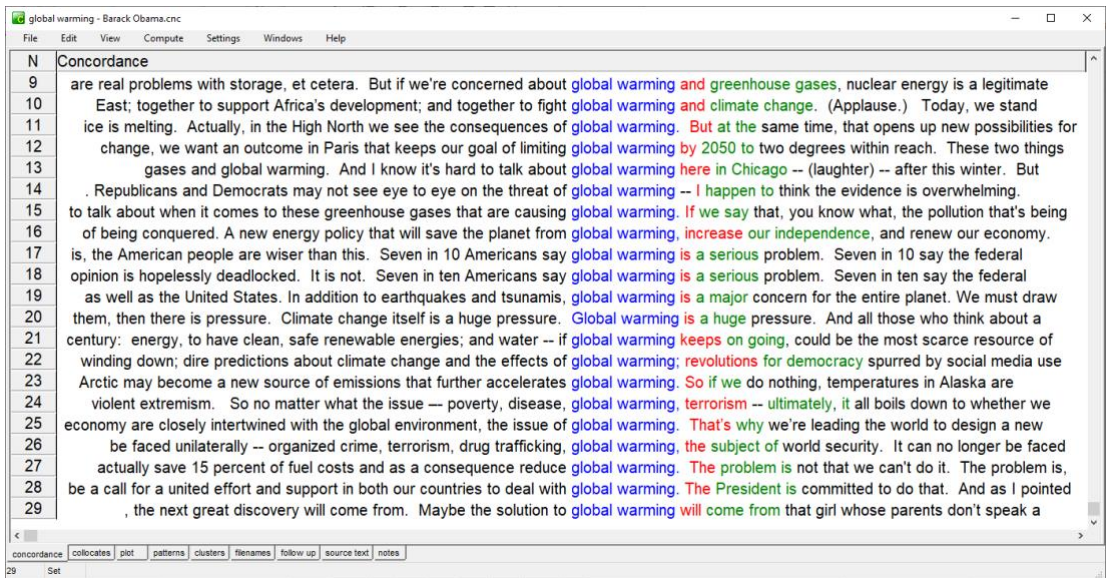


Figure 5: Concordance lines of ‘global warming’ in Barack Obama’s public statements

As we see in Figure 5, Obama openly acknowledges that the climate crisis is a partisan issue and that ‘Republicans and Democrats may not see eye to eye on the threat of global warming’. He emphasizes that ‘the evidence is overwhelming: global warming is a serious problem’, ‘a major concern for the entire planet’, and ‘a huge pressure’. He repeats the message that “even though seven in ten Americans say global warming is a serious problem, it is important that the effort is a whole-of-society effort, if we want to stem the potential catastrophe and avoid the dire predictions that could result if we continue to see global warming continuing unabated.”

Meanwhile, Figure 6 shows that a strong collocate of ‘climate’ is resilience/resilient, as well as science/scientists, as we will also see in Joe Biden’s corpus.

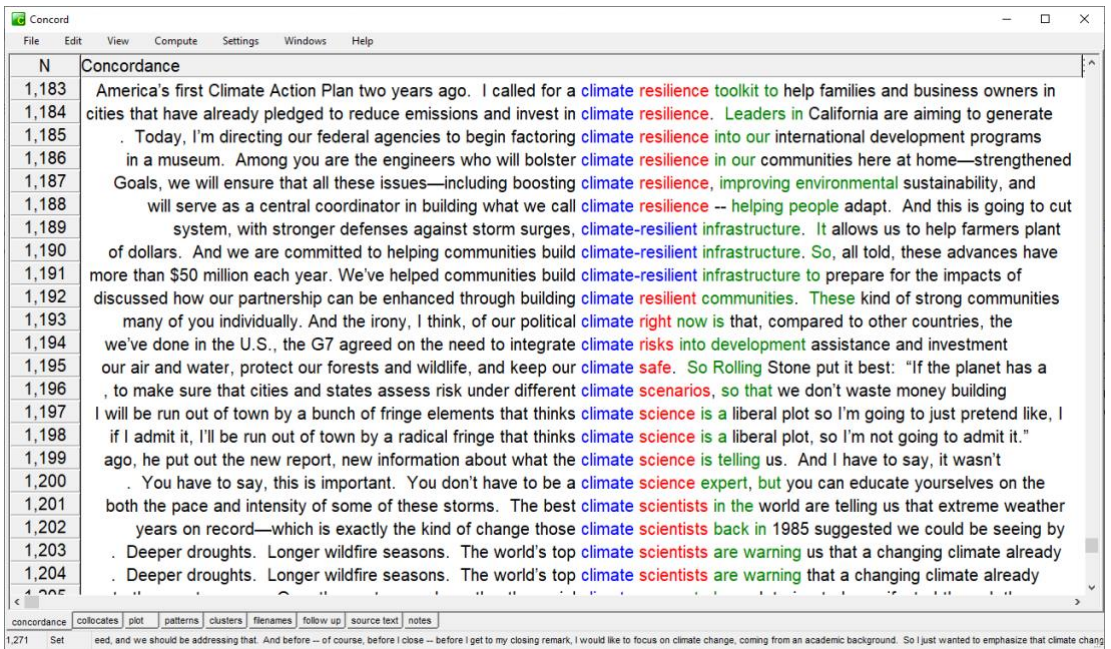


Figure 6: Concordance lines of ‘climate resilience/resilient’ and ‘climate science/scientists’ in Barack Obama’s public statements

Under the Obama administration, both the President and Vice President were adamant that the U.S. must take moral, environmental, economic, and security responsibility to tackle climate change in a serious and sustainable manner. Unsurprisingly, the Biden administration has approached the climate crisis along similar lines. Just as Obama prioritized reversing the Bush administration’s attempts to chip away at clean air and water standards, one of Biden’s first priorities was to reverse the Trump administration’s long record of climate and scientific denialism.

As was the case in Obama’s statements, the term ‘resilience/resilient’ is a strong collocate of climate in Joe Biden, as well, who repeatedly argues that every government project should be climate resilient and developed through a climate lens:

We commit to build resilient, low- and zero-carbon infrastructure systems that are aligned with the pathways towards net-zero emissions by 2050, which are needed to keep the goal of limiting global average temperature change to 1.5 degrees Celsius within reach. Further, we commit to viewing all projects carried out through infrastructure development partnership through the lens of climate change.

Two new collocates in Joe Biden’s corpus that the three previous presidents did not use are ‘smart’ and ‘advisor’, e.g., climate-smart agriculture/climate-smart infrastructure, and climate advisor.

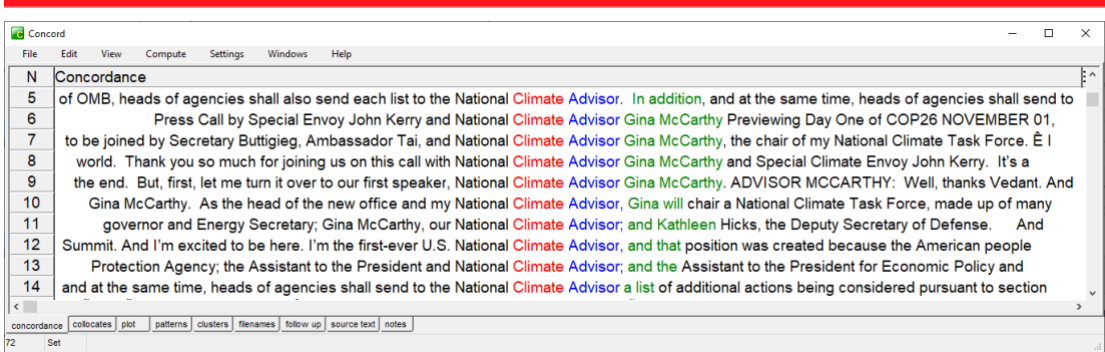


Figure 7: Concordance lines of ‘climate advisor’ in Joe Biden’s public statements

Obama nominated Regina McCarthy to serve as EPA administrator, making her the face of his administration’s global warming and climate change initiative. McCarthy was later appointed by Joe Biden to serve as the first-ever White House National Climate Advisor to counsel the new administration on domestic climate change policy. In November 2020, President-elect Biden also announced that former U.S. Secretary of State John Kerry would serve as his Special Presidential Envoy for Climate. These appointments were a sea change from the Trump administration, during which neither science nor experts played prominent roles. Indeed, Trump continually endorsed the arrogance of ignorance, arguing that “we have had enough of experts”. Under the Biden administration, instead, we have been wondering whether the climate crisis and the Covid-19 pandemic have killed U.S. populism and have brought experts back in fashion.

4. The Social Media Setting

4.1 *Climate change and global warming statements on social media*

All presidents but Trump vividly discuss the climate crisis on social media platforms, which is significant, given the fundamental role social media plays in shaping public opinion.⁴⁸ The findings of recent research show that everyday conversations about the climate crisis on social media are highly politicized, and that people use social media to frame political issues and collective action more than the traditional mainstream news outlets do.⁴⁹

The use of social media platforms for political communication purposes can be traced to Barack Obama, the first U.S. presidential candidate to utilize Facebook, Twitter, Instagram, Snapchat, and other social media platforms to raise awareness and financial support of his campaigns. Obama managed to mobilize the public through social media, especially Facebook, generate consensus at the grassroots level, and create a sense of ethos and trust between the voters and his successful campaigns in 2008 and 2012. There is no doubt that technology shaped Obama’s electoral victories, and for this reason he has been dubbed by some as “the first social media president”. Yet, despite all the advantages and power of social media and technology, Obama has recently said that today social media are ‘designed’ to weaken democracy and, intentionally or not, social media have made democracies more vulnerable. Scholars agree that misinformation spread through social media is eroding the public’s confidence in democracy.

⁴⁸ See, e.g., Nick Anstead and Ben O’Loughlin, “Social Media Analysis and Public Opinion: The 2010 UK General Election”, *Journal of Computer-Mediated Communication*, 20.2 (2015), 204-220.

⁴⁹ Kaiping Chen et al. “How Climate Movement Actors and News Media Frame Climate Change and Strike: Evidence from Analyzing Twitter and News Media Discourse from 2018 to 2021”, *The International Journal of Press/Politics*, 28.1 (2023), 384-413.

Wignell et al.⁵⁰ call Barack Obama and Donald Trump the “twittering presidents”. Both administrations, just like Joe Biden’s today, made use of Twitter. The presidents have all posted information using an official White House account, @WhiteHouse, with the President’s official account, @POTUS⁴⁴, POTUS⁴⁵, and @POTUS⁴⁶ respectively, as well as through each president’s private account: @BarackObama, @realDonaldTrump, @JoeBiden.⁵¹



Figure 8: A sampling of presidential tweets

It is noteworthy that Donald Trump’s username co-occurs with the adjective ‘real’, which implies the authenticity of his messages, gives an impression of spontaneity and matter-of-factness that other politicians⁵² might lack, and underlines that the information is reliable and trustworthy. One consistent motif in Trump’s tweets has been a continuing battle with what he calls the ‘fake’ news media. Trump went so far as to say that “I wouldn’t be here if it wasn’t for Twitter”; “Twitter is my own form of media”, and “if I didn’t have social media, I’d have no way of getting out my voice”. He consistently labels much of the mass media “dishonest, fake and despicable”, as well as “corrupt, crooked, fraudulent, lame stream”⁵³. For these reasons, while he was in office, Trump framed Twitter as the best way “to get your news directly from the president”, and as “the only way to get the unvarnished truth”.⁵⁴ Like his two predecessors, the incumbent president of the United States, Joe Biden, is a frequent user of social media. He relies heavily on Twitter and Facebook to make his climate narrative heard, to the point that he has been referred to, together with Swedish activist Greta Thunberg, as the most mentioned and driving actor in the worldwide climate change discussion.⁵⁵

⁵⁰ Peter Wignell, Sabine Tan, Kay L. O’Halloran, and Kevin Chai, “The Twittering Presidents. An Analysis of Tweets from @BarackObama and @realDonaldTrump”, *Journal of Language and Politics*, 20.2 (2021), 197-225.

⁵¹ Donald Trump was banned from Twitter in January 2021 after the attack on Capitol Hill. For this reason, Twitter made Joe Biden’s @ POTUS⁴⁶ account start with zero followers rather than transferring them over from the previous administration. Two years later, in February 2023, Elon Musk lifted the ban, yet at the time of writing Donald Trump is still using TRUTH Social, a social media platform he himself founded in October 2021.

⁵² Donald Trump repeated on several occasions that he was different from the other politicians because he is not a politician, and he is indeed the antithesis of the conventional politician, distancing himself even from his own political party, calling moderate Republicans RINOs, ‘Republicans In Name Only’, who “can be almost worse than our enemy”.

⁵³ Milizia, “Framing”.

⁵⁴ Demata, “I think that Maybe I Wouldn’t Be Here”, 73.

⁵⁵ Anil Can Kara et al., “Central Figures in the Climate Change Discussion on Twitter”, *Information Integration and Web Intelligence, Lecture Notes in Computer Science*, 13635 (2022), 575-580.

4.2 Barack Obama and Joe Biden’s climate narratives on social media

It is clear from Barack Obama’s tweets that his social media posts and what he said in traditional contexts have a degree of mutual influence. As we see in Figure 9, the collocates are the same ones as in his speeches, i.e., ‘issue’, ‘threat’, and not too surprisingly, ‘science’ (lines 152-157): “the best scientists in the world know that climate change is happening” (line 13), and “scientists agree climate change is man-made and we can do something about it” (line 24).

Meanwhile, Obama affirms that climate change is man-made (lines 141-143), and that scientists agree climate change is caused by human activity. Figure 9b shows that Obama sees climate change as a global problem, an issue, dangerous, and happening now. It is real and a fact, just like gravity exists and the Earth is round (line 12).

In line 21 we read that “the science of climate change is leaping out at us like a scene from a 3D movie ... it’s compelling us to act”, and act now, as we can’t sit idly by (line 22), we must take bold steps now (line 5), because time is not on our side. These are themes that appear in Joe Biden’s corpus, as well.

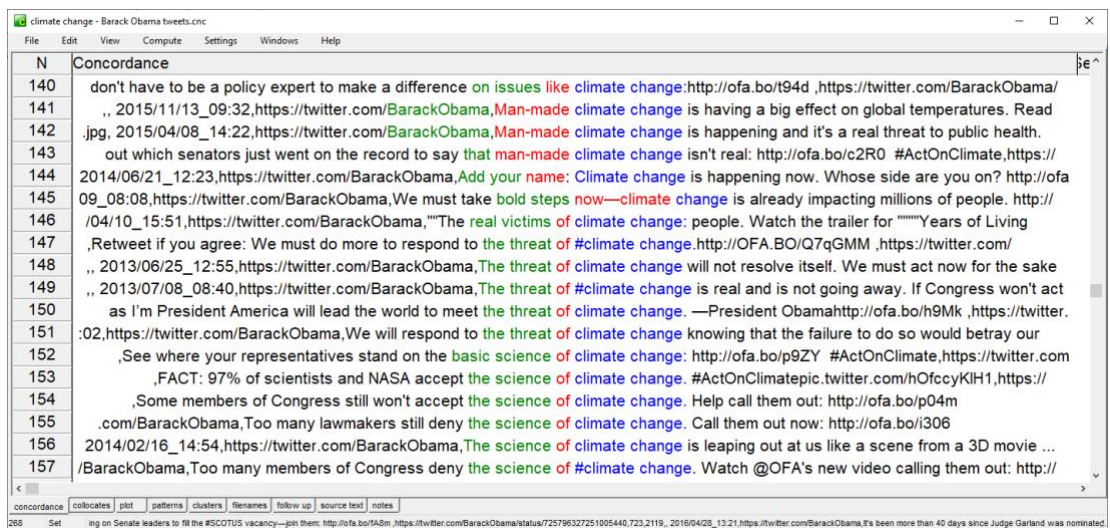


Figure 9a: Concordance lines of ‘climate change’ in Barack Obama’s tweets

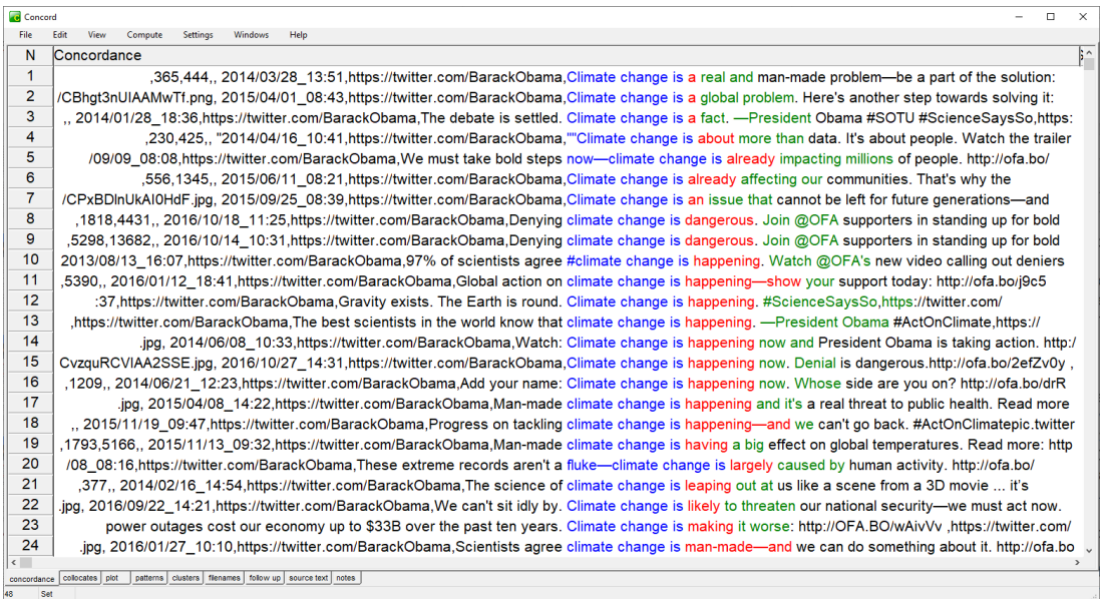


Figure 9b: Concordance lines of ‘climate change’ in Barack Obama’s tweets

A frequent collocate of climate change is the word ‘denier’; Barack Obama asserts that we shouldn’t let climate change deniers prevent, derail or jeopardize progress, and that they shouldn’t stand in the way nor have the final say. In a well-known tweet, Barack Obama wrote: “it is time climate deniers feel the heat!”

The word ‘denier’ is a strong collocate of climate in Joe Biden’s corpus as well, and these references are mainly to Donald Trump, whom he calls ‘the climate denier’ par excellence:

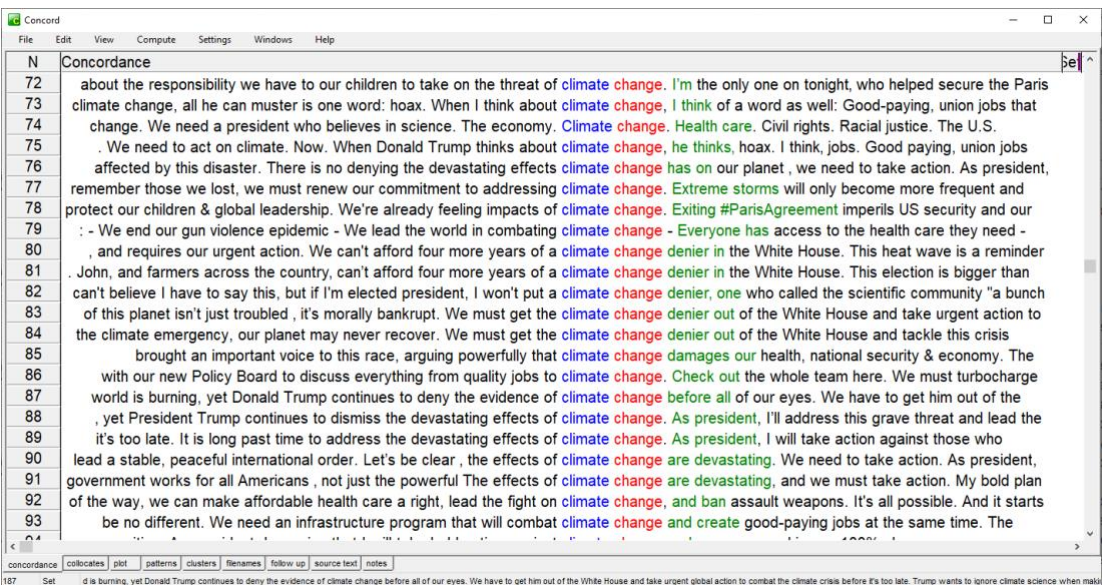


Figure 10a: Concordance lines of ‘climate change’ in Joe Biden’s tweets

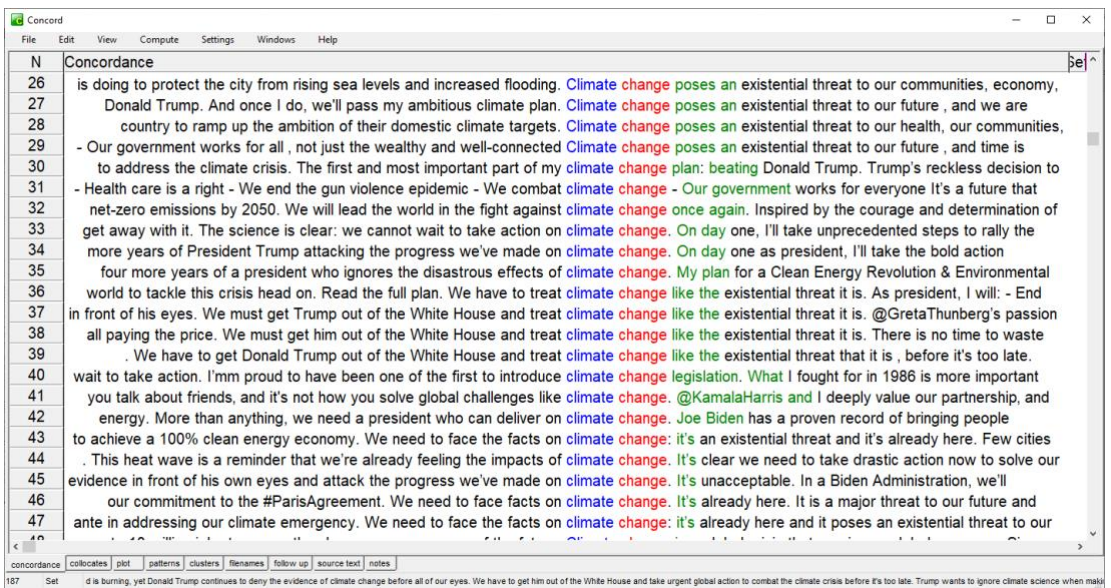


Figure 10b: Concordance lines of ‘climate change’ in Joe Biden’s tweets

As illustrated in lines 80-84, a country which votes for a climate denier, or a “climate arsonist”, “isn’t just troubled, it’s morally bankrupt”, and we cannot trust somebody who has called the scientific community “a bunch of thugs” (line 82). In contradicting Trump, Biden has gone so far as to say that “Listening to scientists is not a bad thing. I can’t believe that has to be said”.



Figure 11: Joe Biden’s tweet on scientists

Unsurprisingly, Joe Biden’s argumentative strategies resemble Barack Obama’s in many respects. Just as he frequently asserts concerning the management of the coronavirus pandemic, Biden reiterates that his administration will always “follow the science” and “listen to the science”. It seems clear that for Biden, ‘science’ or, indeed, ‘the science’, is really a metonym for “what scientists believe”, indicating that the government is heeding the advice of scientists.⁵⁶

⁵⁶ Jonathan Charteris-Black, *Metaphors of Coronavirus* (Cham: Palgrave Macmillan, 2021).

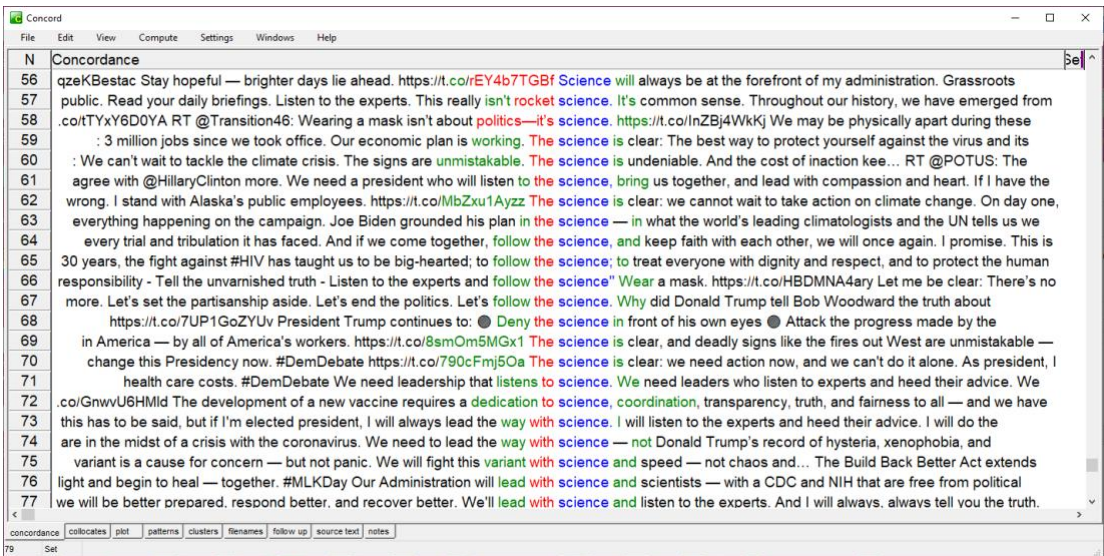


Figure 12: Concordance lines of ‘science’ in Joe Biden’s tweets

Biden goes on claiming that we cannot wait to tackle the climate crisis, the signs are unmistakable, the science is undeniable. He makes it clear that his administration has grounded its plan in ‘the science’, and in what the world’s leading climatologists and the UN tell us we need to achieve, providing a comprehensive path forward on how to address what he calls “the most pressing issue of our time”. Ignoring ‘the science’ “won’t make the threat go away”: the climate crisis is “an existential threat”, as we read in Figure 9b, an existential threat to our communities, to our economy, to our health, and to our future. Biden insists that the climate threat is already here, there is no time to waste, that time is running out, and that we are running out of time.

To reach the Paris Agreement’s goal, i.e., get to net-zero emissions by 2050, Biden has pledged, with his PREPARE⁵⁷ plan, to support climate adaptation efforts affecting more than a half a billion people worldwide.

In short, “Listen to the science” and “be guided by the best scientists” is official White House policy under the current administration. As Biden wrote in one executive order: “It is, therefore, the policy of my Administration to listen to the science”, which was very likely a way to contrast himself with Donald Trump, who continually denied the threats posed by both climate change and the coronavirus pandemic, readily embracing conspiracy theories instead.

As anticipated earlier, not one occurrence of ‘global warming’ appears in either Barack Obama or Joe Biden’s tweets and social media posts, even though Obama speaks of a warming planet, our warming world, and the warming of the planet.

⁵⁷ PREPARE stands for President’s Emergency Plan for Adaption and Resilience.

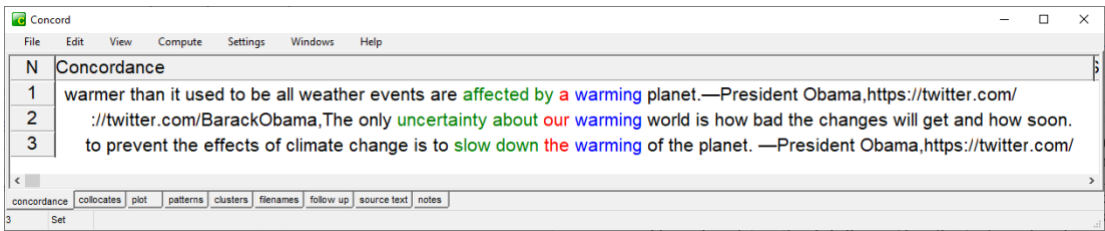


Figure 13: Concordance lines of ‘warming’ in Barack Obama’s tweets

4.3 Donald Trump’s climate narrative on social media

Donald Trump made extensive – arguably addictive – use of social media, especially Twitter, to disseminate his climate rhetoric. It is essential to bear in mind that social media largely lack ‘gatekeepers’ to manage the flux and content of posts. As Figure 14 shows, along the same line as his interviews and statements, Trump asserts that “The badly flawed Paris Climate Agreement protects the polluters, hurts Americans, and costs a fortune” (lines 2-3). Meanwhile, he argues with impunity that “Whether climate change or global warming, the fact is we didn’t cause it” (lines 21-22).

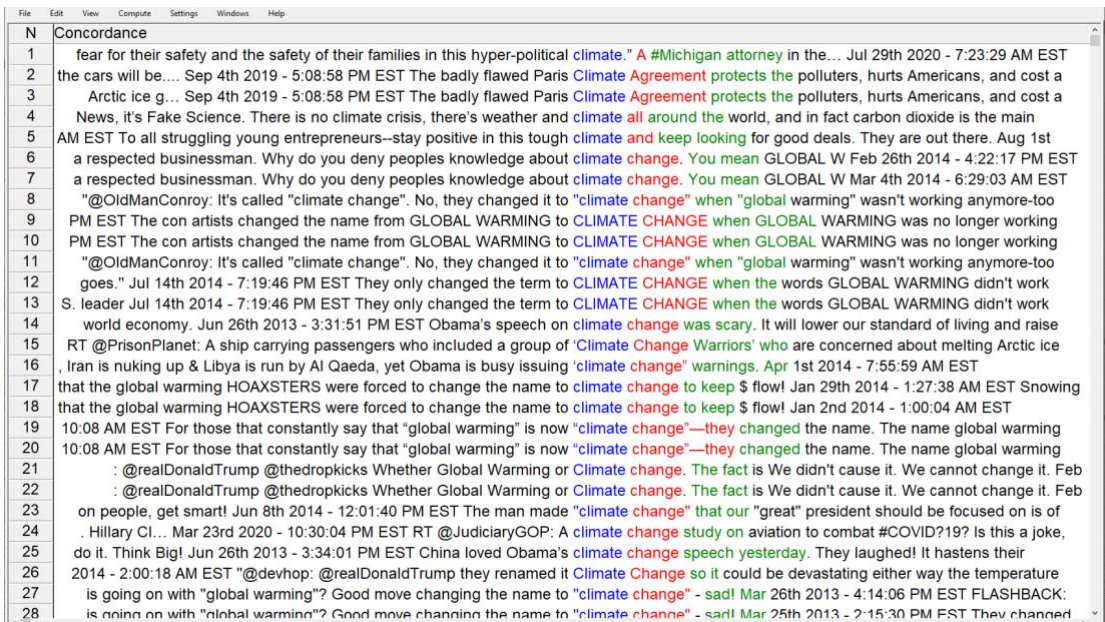


Figure 14: Concordance lines of ‘climate change in Donald Trump’s tweets

As we saw also earlier, this mechanism of avoiding responsibility and ‘passing the buck’, as it were, to other countries, is a key feature of right-wing populist politicians. As Kreis⁵⁸ aptly observes, Donald Trump has employed Twitter as a strategic instrument of power politics to disseminate a right-wing populist agenda. The findings in Figure 14 illustrate how he uses a provocative communication style to construct and reinforce a narrative of ‘us’ versus ‘them’, insisting that “They changed the terminology to climate change when global warming wasn’t working anymore”. In reiterating the fact that “climate

⁵⁸ Ramona Kreis, “The ‘Tweet Politics’ of President Trump”, *Journal of Language and Politics*, 16.4 (2017), 607-618.

change was formerly called global warming” and contending that ‘they’ have renamed it because there is, from Trump’s standpoint, no global warming whatsoever, he is implying that a trick or secret conspiracy has been engineered in order to “keep \$ flow” (lines 17-18). In reality, Donald Trump is ignoring the fact that the phrase ‘climate change’, as we saw in section 2.1, was coined twenty years before ‘global warming’ was. Irony is certainly one of the more prevalent features of Trump’s colorful rhetorical style.⁵⁹ His phrasal repetition seems to serve the dual purposes of reinforcement and establishing an important form of cohesion.⁶⁰ For example, we read, “*Good* move changing the name to climate change”, or “*Lucky* they changed the name from global warming to climate change. G.W. just doesn’t work”, or “They *defily* changed it to climate change because it’s freezing”, or “*Smart* that global warming hoaxsters changed name to climate change \$\$\$”. Irony and hyperbole are among Trump’s most prominent affiliation strategies, used to garner attention and generate (virtual) community. He uses these strategies to build alignment with his audience, but without necessarily engaging with them; in fact, he tends to ignore replies to his tweets.⁶¹

Trump’s unconventional, aggressive, and often offensive language is clearly more apparent on social media. ‘They’, i.e., the people who changed the name from global warming to climate change, are referred to as ‘con artists’ (lines 9-10) or ‘hoaxsters’, i.e., the people who have spread the ‘hoax’ of climate change.

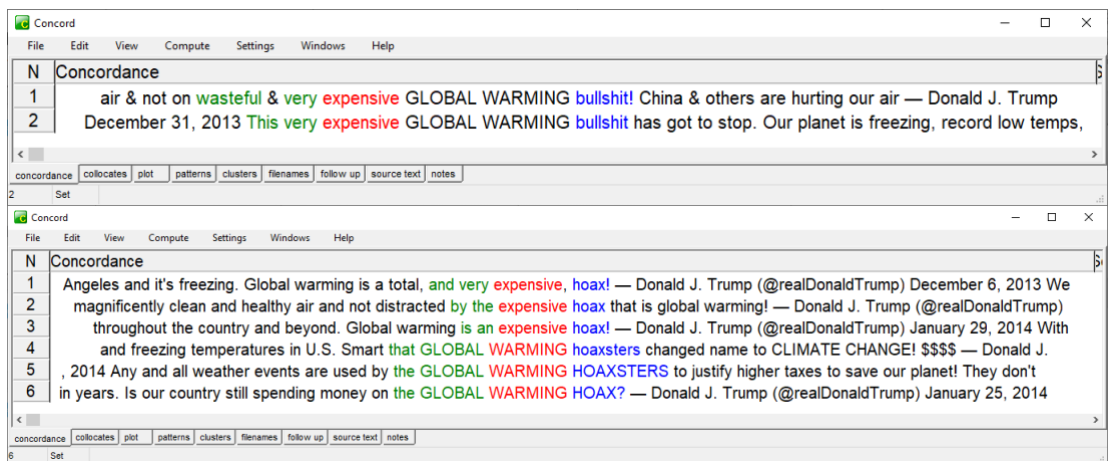


Figure 15: Concordance lines of ‘global warming’ in Donald Trump’s tweets

It is worth remembering that when Trump was asked in interviews “Do you think global warming is a hoax?” and “Do you think climate change is a hoax?”, his abrupt answer was “No, not at all”, whereas on social media we read “Global warming is a total, and very expensive hoax”, besides being a “wasteful and very expensive bullshit”, and “a nonsense”. His frequent refrain is that China and other countries besides the U.S. are polluting the air, while our planet is freezing at record low temperatures. It seems clear that Donald Trump is, once again, confusing the weather with the climate, forgetting that the effects

⁵⁹ Another high-profile right-wing leader, India’s Narendra Modi, also makes ample use of irony in his tweets: Joyojeet Pal et al., “Innuendo as Outreach: @narendramodi and the Use of Political Irony on Twitter,” *International Journal of Communication* 11 (2017), 4197-4218.

⁶⁰ Martin Montgomery, “Post-truth Politics? Authenticity, Populism and the Electoral Discourses of Donald Trump”, *Journal of Language and Politics*, 16.4 (2017), 619-639.

⁶¹ Michele Zappavigna, *Discourse of Twitter and Social Media: How We Use Language to Create Affiliation on the Web* (London: Continuum, 2011).

of climate change include not only hotter summers but also colder winters, as well as other weather extremes.



Figure 16: Donald Trump’s ironic tweet on global warming

To be sure, hyperbole and irony are important in constructing public discourse. In line with Trump’s populist idea, which needs to necessarily identify an antagonist in a politics of resentment,⁶² his use of irony is obviously addressed to his opponents. This is how Trump has always gained consensus: he did not need to be loved to win, he needed only to make his opponent more hated. He used this ploy to further his political agenda in 2016 and in 2020 by discrediting Hillary Clinton and Joe Biden, respectively, i.e., employing a negative other-presentation and a positive self-representation. Previous studies⁶³ have shown that one in every ten of Trump’s tweets contained uncivil wording or attacks on other candidates. For example, Figure 14 (lines 14, 16 and 25), illustrates his attacks on Barack Obama: “Obama’s speech on climate change was scary. It will lower our standard of living”, “Iran is nuking up & Libya is run by Al Qaeda, yet Obama is busy issuing climate change warnings”, and “China loved Obama’s climate change speech yesterday. They laughed!”. Via such language, Trump ridiculed Obama’s conduct on climate change, adamant as he was to establish that global warming is a canard, and that the left needs a dose of reality.

5. Conclusion

Despite overwhelming scientific consensus and broad international acknowledgment that climate change is real, “just like gravity exists and the Earth is round” (as Barack Obama said), among Americans a stark political divide in climate change sentiment persists, varying from belief to disbelief, and swaying from support to skepticism. Millions of Americans see the issue as a far-off problem, while others remain indifferent or even downright opposed to the idea that climate change is caused, in no small part, by human activity. Indeed, since the Paris Agreement, emissions have increased annually, with a temporary drop in 2020 due to the COVID-19 pandemic, the largest annual reduction ever observed.⁶⁴

In this paper we have analyzed the ways American presidents from George W. Bush to Joe Biden have communicated about the climate crisis over the last twenty years. We have looked at both their public statements and their social media posts, particularly their tweets. The findings of our corpora show that

⁶² Hans-George Betz, “The New Politics of Resentment: Radical Right-wing Populist Parties in Western Europe,” *Comparative Politics* 25.4 (1993), 413-427.

⁶³ Jayeon Lee and Weiai Xu, “The More Attacks, the More Retweets: Trump’s and Clinton’s Agenda Setting on Twitter”, *Public Relations Review*, 44 (2018), 201-213.

⁶⁴ Filipe Duarte Santos et al., “The Climate Change Challenge: A Review of the Barriers and Solutions to Deliver a Paris Solution”, *Climate* 10.5, 75.

Republican presidents, i.e., Bush and Trump, have turned away from the climate emergency, while Democratic presidents, i.e., Obama and Biden, have taken the issue seriously. This polarization has been more apparent in social media, where tweeters, lacking ‘gatekeepers’, can go as far as to say that “climate change does not exist”, and “There is no climate change”. After acknowledging the existence of the climate crisis in interviews and press releases, President Trump used Twitter instead to assert that climate change and global warming (using the two phrases interchangeably) are a total fraud, a canard, wasteful and very expensive bullshit. Furthermore, Trump stands out for his confusion of the weather with the climate. Relying on his ironic and sarcastic style typical of a populist leader, he has tweeted during cold weather, “Where the hell is global warming? Please come back fast, global warming, we need you”, thus denying its existence altogether. Elsewhere, he implies that a conspiracy has been engineered by China or unnamed ‘Others’ for financial reasons. Barack Obama harshly criticized Trump’s blatant hostility toward climate science at the COP26 summit in Glasgow, and Joe Biden did the same at the COP27 summit in Sharm El Sheikh, calling Trump’s climate denialism and his disdain for scientific facts “unconscionable”.

Social media have transformed public conversations of a variety of topics, and climate change is no exception.⁶⁵ In an age dominated by the so-called “TL; DR” (Too Long; Didn’t Read) phenomenon,⁶⁶ Trump in particular found in Twitter the ideal environment to disseminate his rhetoric despite, or rather thanks to, its character limit.

The climate crisis is a wicked problem, and few political leaders have taken the drastic and swift action necessary to mitigate its effects, much less to reverse it.⁶⁷ Meanwhile, social media have transformed political participation. The emergence of social media is, of course, not a physical cause of the worsening climate crisis, but it would be a mistake to assume that the two phenomena are unrelated. Social media have given a voice to otherwise marginalized groups and actors, allowing mobilization by youth-led organizations such as Fridays for Future. Social media platforms have also given politicians the opportunity to share bite-sized comments calling for action – or denying reality. Despite the positive action social media can facilitate, it also enables lies to spread at lightning speed.⁶⁸ The reality is that social media permit the shameless normalization of right-wing discourse,⁶⁹ allowing the limits of the sayable to shift, which is a major challenge for political actors who wish to confront the climate crisis directly.

⁶⁵ Jennifer R. Fownes et al. “Twitter and Climate Change”, *Sociology Compass*, 12.6 (2018).

⁶⁶ Demata, “I think that Maybe I Wouldn’t Be Here”, 85.

⁶⁷ Frank Inropera, *Climate Change: A Wicked Problem: Complexity and Uncertainty at the Intersection of Science, Economics, Politics, and Human Behavior* (Cambridge, MA: Cambridge U.P., 2016).

⁶⁸ Fake news spreads six times faster than real news: Soroush Vosoughi et al., “The Spread of True and False News Online,” *Science* 359.6380 (2018), 1146-1151.

⁶⁹ Wodak, *The Shameless*.