Digital Rhetoric Trends of Climate Denial on Twitter

Introduction

Climate change was first brought up as a potential issue in 1896 by a Swedish scientist named Svante Arrhenius. He published the idea that carbon dioxide entering the atmosphere due to fossil fuels burned by humans could raise the Earth's average temperature (Weart, 2012). Since this moment, climate change has been the subject of heavy debate. Arrhenius's contemporaries argued that it was not possible for humans to impact Earth's climate. Today, most scientists have come to a consensus that the climate is changing drastically; but while scientists might have come to an agreement, the rest of the population has not. In a study done on climate opinions in The United States in 2021, 72% of participants said they believed global warming is happening, but only 57% said that global warming is mostly caused by human activities (Marlon et al, 2022). This is an example of something called the "backfire effect," which is the idea that sometimes people embrace concepts more strongly when they are faced with corrective information (McIntyre, 2021). While climate skeptics are in the minority in these surveys, their voices are still loud enough to impact policy and create discourse around the discussion.

As an Environmental Science major, I am surrounded by peers who have the same background on climate change as me. We all agree climate change is happening, and that it is an issue we need to solve immediately. All of our courses talk about climate change, and we learn how and why it is happening. In this setting, it is hard to not understand why others do not believe that climate change is a threat, and I think that if they had the same education as us they would understand. This might not actually be the case though. In a study done by Gallup, it was found that Republicans with higher levels of education were more likely to say that climate change is "generally exaggerated" than less educated Replications or educated and less educated Democrats (Newport and Dugan, 2015).

Social media has become a way to share information quickly and easily, but this also allows equally for the spread of misinformation. It was found during the 2016 election that the average adult saw at least one fake news story in the months surrounding the election, and over half who saw them believed them (Hunt and Gentzkow, 2017). This is no different than information surrounding climate change discussions. In the "New Media Index" from Pew Research Center, "climate change" and "global warming" have been among the top five most common keywords in English-language blogs (PEW Research Center, 2012). According to a study done by the Integrity Institute, it was found that Twitter has what they define as the "great misinformation amplification factor" (Myers, 2022). This is due to the "retweet" feature, which allows users to share posts from other users. The quote tweet feature allows users to make a tweet in response to another user's tweet, by including the original post inside their own. In the past month, climate skepticism has exploded on Twitter due to Elon Musk purchasing the platform in October. Soon after the purchase, Musk made the decision to welcome back users who had previously been banned (Calma, 2022). There has also recently been a failure from the platform to moderate harmful content, including climate misinformation. This, combined with the recent United Nations Climate Conference meeting, COP27, has created the perfect storm to promote misinformation. A prominent climate scientist, Katherine Hayhoe, describes it as follows; "Climate denial on Twitter was already a dumpster fire; now, it is as if it had a litre of gas thrown on it (Calma, 2022)." Climate scientists no longer see the platform as a place for productive conversations as they now are receiving more hate speech and death threats due to their profession. If climate scientists begin to leave social media sites such as Twitter, there will be a gap in credible and accurate information, and misinformation will take its place. Those with

a lack of knowledge on the climate change debate will then be flooded with misinformation, and they will struggle to spot it for what it is.

In this research, I analyzed social media posts including messages of climate skepticism in order to determine what themes are most prevalently used by climate skeptics and deniers. This can be used to determine what information climate change skeptics believe instead of climate change and what they consider to be reputable. It can also better shape action to combat misinformation around climate change denial.

Literature Review

While reading through the articles I chose from communication scholars, I searched for themes in climate change denial arguments. Terms such as hyperrationality and non-problematicity were discussed and even coined by the authors, but I also noticed a lack of discussion on other themes that appear in these posts. Arguments involving ad hominem themes were discussed the least in the literature especially surrounding climate change discussions.

Authors Tillery and Bloomfield coined the term hyperrationality. They define this as "framing the rational standards normally attributed to science as corrupt or lacking, necessitating a rational resource that is more rational than mainstream scientific argument (Tillery and Bloomfield 2022)." Hyperrationality is prominent among climate change deniers and tends to try and make the climate scientists sound like the incorrect or wrong side. They try to poke holes in climate change realists' arguments, claiming that science is about listening to new ideas and keeping an open mind. This seems to be the most prominent argument among climate deniers and is the easiest to twist climate change realists' words.

Non-problematicity is another term communication scholars have defined to explain counter arguments against climate change. The idea of non-problematicity is not quite denying

that climate change exists, but instead denies that climate change is a problem (McCright and Dunlap, 2003). This form of denial hinders the progress of climate change policy the most as it seems the most rational to those outside of the conversation. This issue seems to appeal to people due to the fact that it does not rely on scientific terms and concepts the average person might not know. It also appears to be harder to debate, because of the complexity of the climate change argument in contrast to the simplicity of a non-problem argument.

An ad hominem argument in a logical fallacy that attacks a person or their character instead of their argument. Even though by definition a logical fallacy is flawed or deceptive, that does not prevent people from using it in their arguments surrounding controversial topics. One study on the effect of ad hominem attacks on scientific claims, studied attacks on the empirical basis of the scientific claim, an ad hominem attack on the scientist who made the claim, or both of these claims together. They found that ad hominem attacks and attacks on the scientific claim both potentially have the same degree of impact on the credibility of the scientific claim (Barnes et al, 2018). In another study done on climate change advocacy and ad hominem attacks, it was found that climate scientists advocating for personal energy conservation were less credible to participants if their personal carbon footprint was high (Attari et al, 2018). Both of these studies show that even though ad hominem arguments are considered logical fallacies, scientific claims and scientists lose their credibility when attacked with this kind of argument. Since ad hominem attacks are becoming more prominent in discussions about climate change, more research should be done on the effects of these arguments on scientific claims.

Fear mongering, which is purposefully inciting public fear or alarm, was not touched on at all. Climate scientists tend to be at fault as well for fear mongering, as they tend to use the "doom and gloom" approach to scare people into action. Climate change deniers on the other

hand tend to use fear mongering to claim that climate scientists are a part of a "plot" or "narrative" to control the general population. There was not any discussion about fear mongering in any literature, even though it showed up in the Twitter posts often. There should be more research into the impact of fear mongering language about science, especially climate change. Since there was not any research, I did not elaborate too much on this theme.

As well as coining the term hyperrationality, Authors Tillery and Bloomfield also conducted a distant reading during their rhetorical analysis on the Facebook group "Watts up with That." This distant reading sorted words used in the group into the top 100 most frequently occurring words, not including function words that would overwhelm the analysis (Tillery and Bloomfield, 2022). Their top four words were "climate," "change," "global," and "warming," and they found that the top 20 most frequently used words were in some way related to scientific evidence or topics (Tillery and Bloomfield, 2022). This study stands out, because most social media platforms rely on keywords to promote posts through their algorithms.

Methodology

For my research I will be conducting a rhetorical criticism on social media posts found on Twitter, which has seen an increase of climate change skepticism since being purchased by Elon Musk. I will be evaluating the posts based on the rhetorical tools used in them and what the authors' arguments are. To find these posts, I will be using keywords in the search bar related to climate change. All the posts were found with Twitter's "Top" feature, which shows the most popular tweets under a keyword. It is also what is automatically shown to a user opposed to other ways of filtering tweets. I chose phrases such as; "climate change" and "global warming" due to their prominence in Tillery and Bloomfield's article on their analysis on the climate change denial group "Watts up with That." I also used tags Twitter recommended to me when typing in

"climate," these included the hashtags, "#ClimateScam" and "#ClimateEmergency." Other phrases I chose were "eco-fascism" and "climate myth" as they were phrases that showed up in multiple Tweets I looked through. All of these phrases are ones that the average user would come across in some way while searching through climate related Tweets.

I will be categorizing the posts I come across into three categories, hyperrationality, non-problematicity, or ad hominem arguments. Through doing this research, I wanted to learn what rhetorical themes are being used by climate deniers on social media. These themes can show us what arguments climate change deniers are using, and in turn what they believe about climate change.

Findings

Throughout my rhetorical criticism I read through forty tweets. All of these were in the top tweets recommended to me after using the hashtags mentioned above, and showed up frequently in my searches. Out of the forty tweets, I classified 23 as hyperrational, 8 as ad hominem, 3 as non-problem, 1 as more than 1 of these categories, and 2 that I was unsure of how to group. I also had three others that did not fit into the three categories I originally planned on, but classified them as fear mongering. I decided to still include these three tweets, because I wanted to represent all of the top tweets, instead of only choosing tweets that fit my categories. Fear mongering was not a topic talked about in the papers I have read even though many of the tweets have underlying themes of fear mongering even if it is not the dominant theme of the post. All the tweets I perform a rhetorical criticism on will be available to view in the artifacts section of this paper.

The first thing I noticed was that almost all the tweets were arguing for climate change denial. Only a handful were arguing for climate change, and I only saw them sporadically while

scrolling. The first hyperrational tweet is a quote tweet in response to a tweet from another user. The original tweet reads “Climate Change is Fact. The climate is changing and people are suffering because of it.” This is then quoted by the tweet I am analyzing and reads “If ‘climate change is fact’ (which it is, the climate has always changed) then why do so many climate catastrophists refuse to accept that it was warmer 1000 years ago than today, and that man had nothing to do with that? Doesn’t fit the script does it?” The author of this tweet poses a question to the original user, but they are not looking for an answer. They are posing a rhetorical question, which is used often to incite an emotional reaction. The person who wrote this tweet is essentially saying ‘checkmate.’ The statement the author made is not factual, and even if it was, does not consider what warmer conditions could entail for human life. Yet, the majority of those in the comments do not seem to acknowledge or notice this either, thinking that they have proven their point. The author also uses the term “catastrophists,” which puts climate change realists into an “othering” group that is meant to sound irrational. The phrase “doesn’t fit the script does it?” is a theme that shows up in multiple posts, implying that there is a plot among climate change realists. This “plot” is referenced, but never elaborated on in too much detail by posters, so any analysis of this would only be speculation.

The second hyperrational tweet states “Polar bear population is at its HIGHEST in 6 decades!! But it doesn’t fit the climate narrative, so we don’t hear about it @BjornLomborg #ClimateScam” and contains an image of a graph showing polar bear populations from 1960-2020. Again, we see “doesn’t fit the climate narrative,” implying that there is a plot that climate change realists are trying to push. This time though, the author accompanies their point with statistics and facts. They chose polar bear populations, as polar bears have been the poster child for climate change advocacy for many years now. Yet, the author strategically does not

include any information on why polar bear populations are increasing. This is another logical fallacy called a causal fallacy, which incorrectly concludes that a cause is related to an effect. The author believes that climate change is not happening, because polar bear populations are increasing.

The first tweet using non-problematicity as its argument received much less engagement but has been an argument I have seen frequently before. It simply states “Why do higher CO2 levels cause a greener earth? Because CO2 is the food the plants eat. #climatetruth #ClimateScam” The argument of non-problematicity is simple, because the more complicated it becomes the more of an actual problem it becomes. The case that CO2 cannot be bad because plants use it for food, ignores any nuances in the abundance of CO2, and CO2 from humans vs. naturally occurring CO2. Again, we see the rhetorical question posed, but this time it is answered by the author in a way that is supposed to make it sound like it is as simple as the author claims it to be.

The second tweet containing a non-problematicity tweet reads “Well done Twitterati! The climate CRISIS is a hoax. No one is denying that climate change is happening. And sensible people do not deny that man will have some impact. But no one knows how big an impact compared to natural factors. And we do know this is NOT a CRISIS.” The tweet also contains an image of a newspaper with the headline reading “Surge in climate-sceptic tweets after Musk buyout.” This tweet stands out, because most of the other tweets analyzed here have somehow tried to disprove the existence of climate change, especially the fact that man has any impact on it. The author of this tweet fully acknowledges the fact that it is happening and that humans have some impact. The emphasis on this tweet is on the fact that the climate *crisis* is not happening. While the author uses hyperrationality for their first statements about climate change happening

and being caused by human impact. They switch to the non-problematicity approach to conclude that since we do not know how much humans are impacting climate change it is not a crisis, due to the natural factors. The term “Twitterati” is an interesting portmanteau combining the words Twitter and Illuminati. Again, the most this analysis can do is speculate on what the author meant by this, but this ad hominem seems to be attacking a “secret plot” put on by Twitter or those associated.

The first ad hominem argument I analyzed reads “Carbon Tax: Something only the most stupid single-celled human organisms pay believing that it will ‘change the climate’. Also see - global government climate scam, eco-fascism, and ‘green corruption’.” This short tweet is full of rhetorical tools to analyze. The term “stupid single-celled human organisms” references climate change realists and is a very obvious ad hominem attack making them out to sound dumb and as if they cannot think for themselves. The phrase “change the climate” is in quotations in this tweet, as if the author has to physically separate it from their own ideas and beliefs. The last sentence includes “global government climate scam, eco-fascism, and ‘green corruption’.” which lean more towards fear mongering and tries to make people fear and believe the idea that climate change activists are yet again a part of a “plot” or in this case “scam.”

The final ad hominem argument had the most likes on Twitter out of all of the posts I analyzed. It features an image of a Simpsons character altered and picking their nose with the caption “The tv told me that if I eat bugs and pay more money to the government the weather will be gooder” With the tweet itself reading “#ClimateEmergency more like #ClimateScam” This tweet is the most interesting to me, because it requires much more social media background knowledge. The image is striking due to the editing done to it. The character now has blue hair, clothes with rainbows and hearts, facial piercings, and poorly done mascara. Some viewers may

not quite understand the full context of the tweet without knowing about a stereotype that has circulated the internet for quite some time now called “the blue-haired liberal.” The best definition of this term comes from Urban Dictionary, which is a crowdsourced, English-language slang dictionary. The user describes blue-haired liberals as “a white, left-leaning alternative girl. These girls tend to take everything very seriously and make everything about politics. They also tend to have dyed hair, piercings, and dress in an alternative fashion (Urban Dictionary, 2022).” With this definition, we can look back at the original tweet and see that the user has created a caricature of a blue-haired liberal with the Simpsons character. The image paired with the language in the tweet is a strong example of an ad hominem argument. Saying “the tv told me” and “gooder” coupled with no punctuation portray the liberal as dumb or unintelligent. Even the opening phrase “the tv told me” is supposed to convey that liberals cannot think for themselves and have to be told what to do. The arguments “eat bugs” and “pay more money to the government” are referencing potentially using insects as a form of protein instead of meat and carbon taxes respectively. Both of these are nuanced conversations about ways to mitigate climate change, but oversimplifying them takes away the context and makes it appear as if people believe these directly change the weather outside. Even using the term weather, instead of climate, oversimplifies what is happening. In its essence, this tweet is conveying to viewers that everyone who believes in climate change is a blue-haired liberal who is not competent enough to think for themself.

After reviewing these posts, we see that the overlying theme among them is that they tend to believe climate change realists are unintelligent, are part of a plot to push this climate change narrative, and that climate change does not exist or is not a problem. In the tweets I analyzed none of the authors proposed any evidence towards this climate change plot, and did not explain

what it is or why climate change realists would want to push this narrative. The only hint at why was the term "eco-fascism" that could hint at deniers believing climate change is a way for scientists or governments to take control, but there is no other evidence for this in any posts.

Discussion

The main two beliefs climate deniers have based on these posts are that they do not believe climate change is a threat and they do not trust climate scientists, or anyone else promoting information about climate change. This brings up the question though, do they not trust climate science because they do not believe in climate change, or do they not believe in climate change because they do not trust climate scientists. While these sound almost identical, there is an important distinction to make that will change what the response needs to be. If climate deniers simply do not believe in climate change, and they choose to distrust climate scientists, then the focus should be on making education around it more accessible. If climate change deniers do not trust climate scientists, then the focus needs to be on building the ethos of climate scientists, because no matter what they say, people will choose to ignore it. This information is helpful, because we can use it to learn how and why these arguments are effective on social media and how to reshape the climate discussion.

Many scientists do not want to talk to climate change deniers, because they believe it is a waste of their time due to the backfire effect mentioned earlier. Some scientists disagree with this, McIntyre believes that if scientists do not bombard deniers with facts and instead listen it would be more effective. Listening to deniers talk and then asking them questions such as "what evidence is not sufficient for them?" allows them to think more about their own beliefs instead of feeling like they are being attacked.

Another tactic climate scientists can use is to stop the "doom and gloom" approach, or fear mongering. Adam Briggle, a philosophy and religion professor wrote "An appropriate fear, then, won't come from just the facts of science but from the rhetorical frames that scientists choose to highlight (Briggle, 2018)." Stepping away from the doom and gloom approach can also make people feel attacked, because it makes them feel as if their way of life is being attacked as well.

Another point to consider is why climate change denial rhetoric has increased after Elon Musk purchased Twitter, and if this trend will continue over time. Further research should be done in this area and if this trend could be reflected in any way on other social media platforms.

Conclusion

Through a rhetorical analysis, I looked through forty tweets and sorted them into three categories; hyperrationality, non-problematicity, and ad hominem. Out of these three categories, hyperrationality was the most common theme, but all three shared overlap throughout the tweets. With this information I was able to conclude that the majority of users posting these tweets do not trust climate scientists and do not believe that climate change is a threat. This information can be used to reshape climate change advocacy by establishing more ethos among climate scientists and changing the way scientists speak and educate others around climate change. So far, the best approach is to make climate change deniers feel less attacked and instead keep the discussion open, by listening and asking about their beliefs.

Images

Image 1

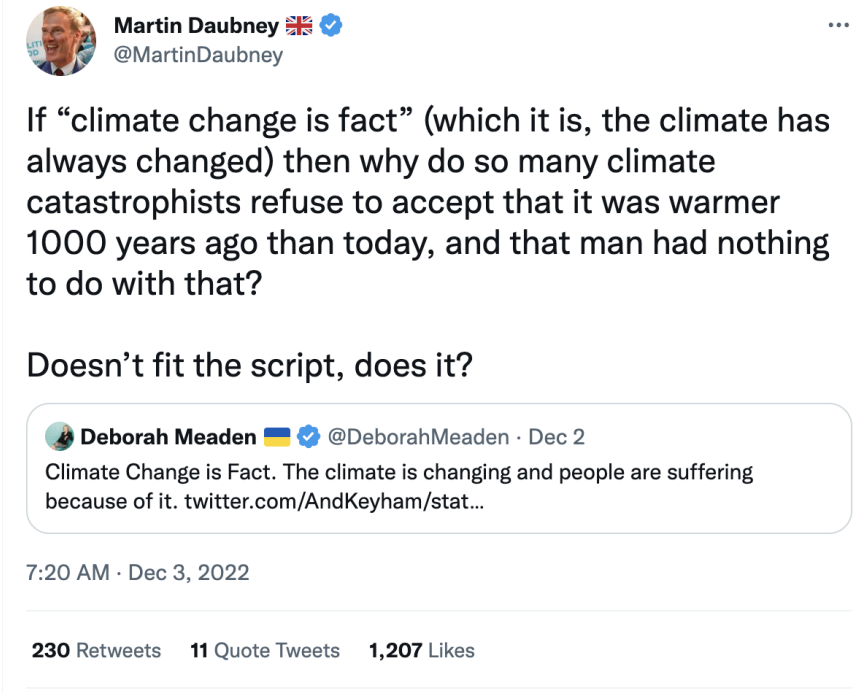


Image 2

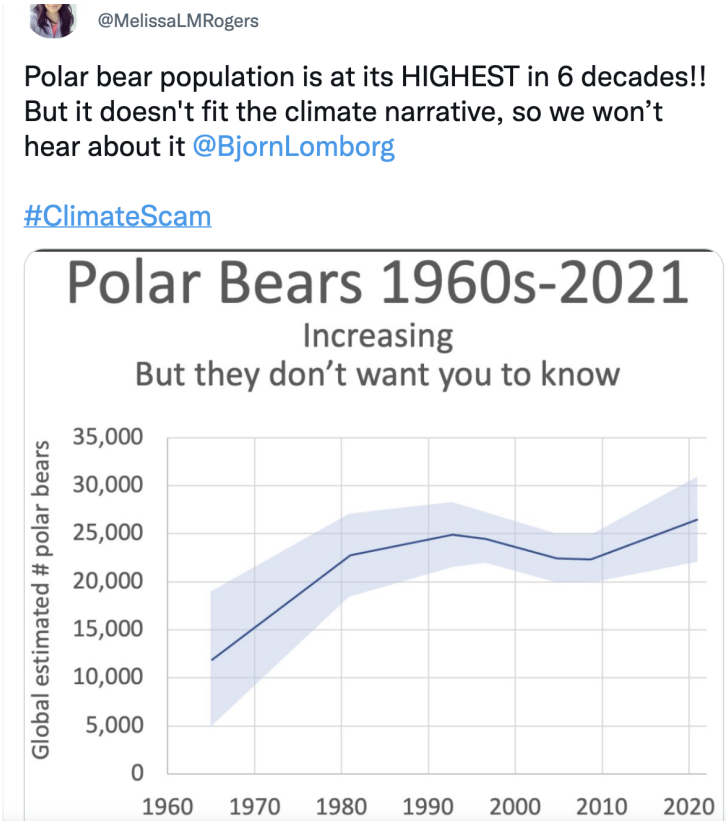


Image 3

Jeff Sr.
@3dom4domfreedom

Why do higher CO2 levels cause a greener earth? Because CO2 is the food that plants eat. #climatetruth #ClimateScam

8:03 PM · Dec 6, 2022

1 Like

Image 4

Lance Forman
@LanceForman

Well done Twitterati!

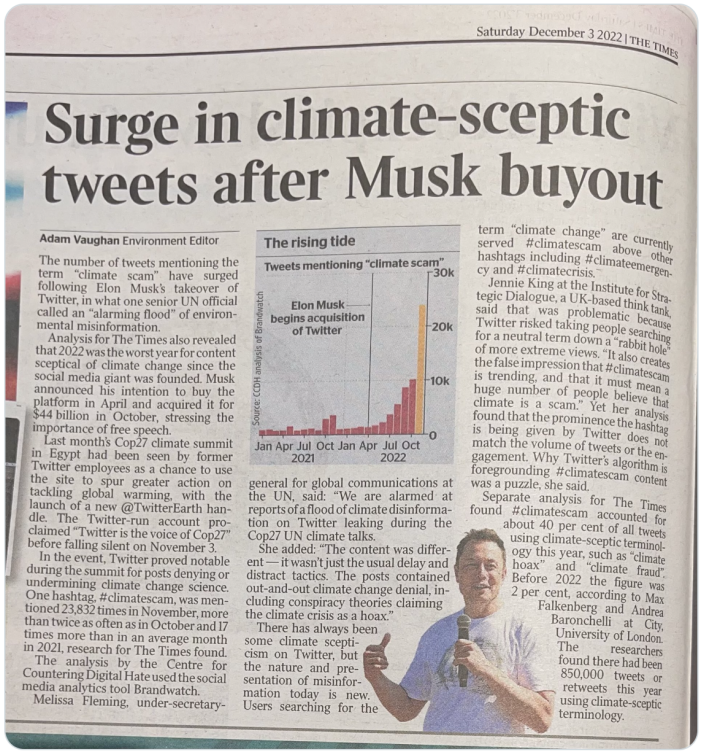
The climate CRISIS is a hoax.

No one is denying that climate change is happening.

And sensible people do not deny that man will have some impact.

But no one knows how big an impact compared to natural factors.

And we do know this is NOT a CRISIS.



Saturday December 3 2022 | THE TIMES

Surge in climate-sceptic tweets after Musk buyout

Adam Vaughan Environment Editor

The number of tweets mentioning the term "climate scam" have surged following Elon Musk's takeover of Twitter, in what one senior UN official called an "alarming flood" of environmental misinformation.

Analysis for The Times also revealed that 2022 was the worst year for content sceptical of climate change since the social media giant was founded. Musk announced his intention to buy the platform in April and acquired it for $44 billion in October, stressing the importance of free speech.

Last month's Cop27 climate summit in Egypt had been seen by former Twitter employees as a chance to use the site to spur greater action on tackling global warming, with the launch of a new @TwitterEarth handle. The Twitter-run account proclaimed "Twitter is the voice of Cop27" before falling silent on November 3.

In the event, Twitter proved notable during the summit for posts denying or undermining climate change science. One hashtag, #climatescam, was mentioned 23,832 times in November, more than twice as often as in October and 17 times more than in an average month in 2021, research for The Times found.

The analysis by the Centre for Countering Digital Hate used the social media analytics tool Brandwatch.

Melissa Fleming, under-secretary-general for global communications at the UN, said: "We are alarmed at reports of a flood of climate disinformation on Twitter leaking during the Cop27 UN climate talks.

She added: "The content was different — it wasn't just the usual delay and distract tactics. The posts contained out-and-out climate change denial, including conspiracy theories claiming the climate crisis is a hoax."

There has always been some climate scepticism on Twitter, but the nature and presentation of misinformation today is new. Users searching for the term "climate change" are currently served #climatescam above other hashtags including #climateemergency and #climatecrisis.

Jennie King at the Institute for Strategic Dialogue, a UK-based think tank, said that was problematic because Twitter risked taking people searching for a neutral term down a "rabbit hole" of more extreme views. "It also creates the false impression that #climatescam is trending, and that it must mean a huge number of people believe that climate is a scam." Yet her analysis found that the prominence the hashtag is being given by Twitter does not match the volume of tweets or the engagement. Why Twitter's algorithm is foregrounding #climatescam content was a puzzle, she said.

Separate analysis for The Times found #climatescam accounted for about 40 per cent of all tweets using climate-sceptic terminology this year, such as "climate hoax" and "climate fraud". Before 2022 the figure was 2 per cent, according to Max Falkenberg and Andrea Baronchelli at City, University of London. The researchers found there had been 850,000 tweets or retweets this year using climate-sceptic terminology.

The rising tide

Tweets mentioning "climate scam"

Image 5

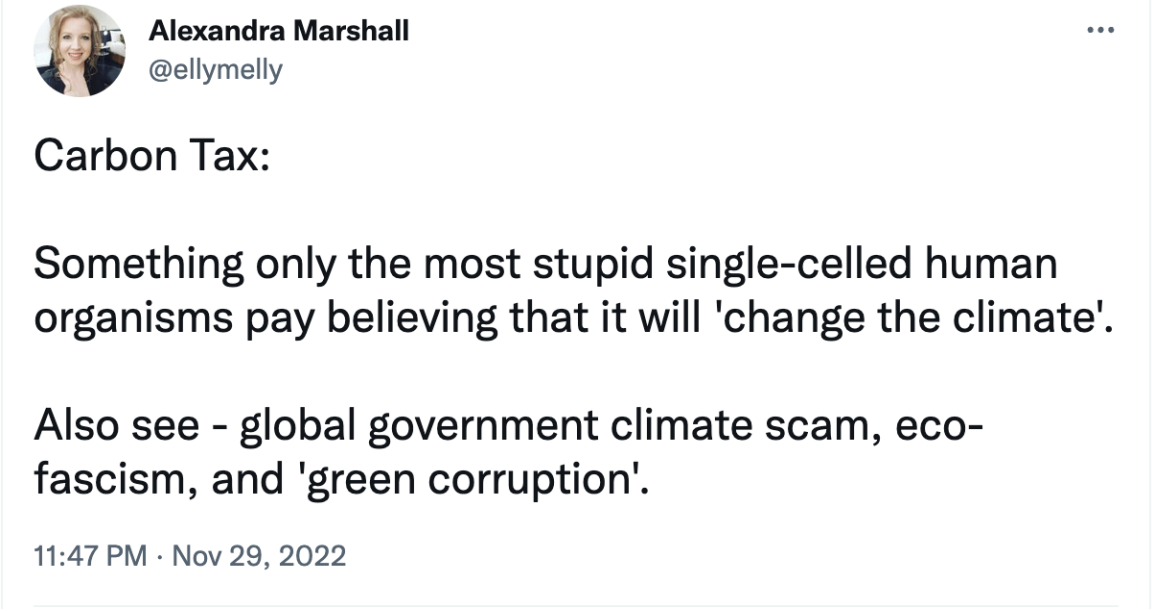


Image 6

Bibliography

Attari, S.Z., D.H. Krantz, and E.U. Weber. 2018. “Climate Change Advocacy and Ad Hominem Attacks.” *American Geophysical Union, Fall Meeting 2018*. December 2018. https://ui.adsabs.harvard.edu/abs/2018AGUFMPA31A..04A/abstract

Barnes, Ralph, Heather Johnston, Noah MacKenzie, Stephanie Tobin, Chelsea Taglang. 2018. “The Effect of Ad Hominem Attacks on the Evaluation of Claims Promoted by Scientists.” *PLOS One.* January 30, 2018. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0192025

Briggle, Adam. 2018. “Philosopher’s Corner: Fear Mongering & Fact Mongering.” *Issues in Science and Technology*. October 1, 2018. https://web.p.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=0&sid=181a9077-2af2-451f-aab0-64f87275d673%40redis

Calma, Justine. 2022. “Climate Misinformation Explodes on Twitter.” *The Verge*. December 5, 2022. https://www.theverge.com/2022/12/5/23494220/elon-musk-twitter-climate-misinformation-rise-analysis

Hunt, Allcott and Matthew Gentzkow. 2017. "Social Media and Fake News in the 2016 Election." *Journal of Economic Perspectives*, 31 (2): 211-36. https://www.aeaweb.org/articles?id=10.1257/jep.31.2.211

Klepper, David. 2022. “TikTok Search Results Riddled with Misinformation: Report.” *AP News*. September 14, 2022. https://apnews.com/article/russia-ukraine-technology-politics-covid-health-5cdbe1ec32312699acbe8ba9b6a00eb5

Marlon, Jennifer, Liz Neyens, Martial Jefferson, Peter Howe, Matto Midenberger, and Anthony Leiserowitz. 2022. “Yale Climate Opinion Maps 2021.” *Yale Program on Climate Change Communication.* February 23, 2022. https://climatecommunication.yale.edu/visualizations-data/ycom-us/

McCright, Aaron and Riley Dunlap. 2003. “Defeating Kyoto: The Conservative Movement’s Impact on U.S. Climate Change Policy.” *Social Problems* 50, no. 3 August 1, 2003. https://academic.oup.com/socpro/article/50/3/348/1617546?login=true

McIntyre, Lee. 2021. “Talking to Climate Deniers and Sceptics is Not Hopeless.” *Nature* 596 no. 165 August 5, 2021. https://www.nature.com/articles/d41586-021-02152-y

Myers, Steven. 2022. “How Social Media Amplifies Misinformation More than Information.” *The New York Times*. October 13, 2022. https://www.nytimes.com/2022/10/13/technology/misinformation-integrity-institute-report.html

Newport, Frank and Andrew Dugan. “College-Educated Republicans Most Skeptical of Global Warming.” *Gallup*. March 26, 2015. https://news.gallup.com/poll/182159/college-educated-republicans-skeptical-global-warming.aspx

PEW Research Center. 2012. Bloggers Debate Global Warming and Scientific Ethics. *PEJ New Media Index*. February 20–24, 2012. https://wires.onlinelibrary.wiley.com/doi/10.1002/wcc.191

Tillery, Denise and Emma Frances Bloomfield. 2022. “Hyperrationality and Rhetorical Constellations in Digital Climate Change Denial: A Multi-Methodological Analysis of the Discourse of Watts Up With That.” *Technical Communication Quarterly* 31 no. 4 January 20, 2022. https://www.tandfonline.com/doi/full/10.1080/10572252.2021.2019317

Urban Dictionary. 2022. “Blue-haired liberal (*n*.),” January 6, 2022. https://www.urbandictionary.com/define.php?term=blue-haired%20liberal

Weart, Spenser. 2012. “The Discovery of Global Warming [Excerpt].” *Scientific American.* August 17, 2012. https://www.scientificamerican.com/article/discovery-of-global-warming/