The Rhetoric of Climate Change Communications:

An Analysis of Articles from the *New York Times* and *Fox News* over a 25 Year Period

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Declaration

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Abstract

This paper is a rhetorical content analysis of the use of certain rhetorical devices (those being imagery, personification, congeries, metaphor and simile, conceptual metaphors, and allusion) by the *New York Times* and *Fox News* at five year increments over a 25 year period between the years of 1994 and 2019. The paper seeks to answer the following questions: Which rhetorical devices do the media use to communicate information about climate change? How have the rhetorical devices changed over time (since the advent of the internet to today)? How do rhetorical devices differ between publications with different political leanings (and therefore with different methods of framing information), and by extension, between those with different approaches to writing about climate change? This paper finds that imagery visualizes abstract data or depicts natural beauty, personification portrays the natural world as both a victim and an aggressor, congeries convey a multitude of weather chaos, metaphor and simile are used to explain scientific concepts, conceptual metaphors depict climate change as a war between humans and the natural world, and allusions are used for making connections, for emotional effect, for putting the climate situation into a historic perspective.

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Introduction

Climate change is the most pressing issue of the 21st century. The Intergovernmental Panel on Climate Change finds that global temperatures have risen by 1°C since pre-industrial times and humans are responsible (O. Hoegh-Guldberg et al, 2018, 282). The effects of climate change are already apparent, and will only worsen and continue to have adverse effects on society, ecosystems, poverty, agriculture, and natural disasters if action is not taken (O. Hoegh-Guldberg et al, 2018, 282). Climate change research has found that the concentration of atmospheric carbon dioxide has increased since 1850 due to human activities such as burning fossil fuels, and carbon dioxide's increase will result in rising temperatures on the planet (Rahmstorf, 2004, 77). Despite the already discernible effects of climate change which are beginning to severely impact a number of regions—as well as the scientific consensus on its existence—some deny it or see it as unimportant. Types and degrees of climate change skepticism vary, with some believing it is not happening, some believing humans are not the cause of it, and some even believing it will be beneficial. Such attitudes can be dangerous, but the media has the power to challenge these attitudes through the framing techniques and rhetorical devices they use when writing about climate change. The only way to enact real, impactful change in the way that our environment is treated is to unite and mobilize the public against the destruction of the planet. By persuading the public to see climate change as a real and urgent threat, the media has the power to prompt the public to get involved by talking about the issue to others, signing petitions, protesting, writing to MPPs, MPs, and local representatives, and perhaps most importantly, voting into office representatives that share their perspectives on the need to stop climate change.

The most significant way in which the public is informed about climate change is through the media. Few of us have the time or the capacity to sift through the growing number of scientific papers written on the subject. However, the media is an often imperfect method of communicating something as complex as climate change. Issues in communication can arise related to the difficulties of communicating specialized scientific knowledge to a public with a limited understanding of climate science, as well as due to the mediating role of journalists between scientists and the public. The presence of skepticism or denial among audiences is fueled by the inherent uncertainty in scientific discoveries, while the advent of new media and the internet can lead to echo chambers. The use of imagery can either promote or inhibit action, and rhetorical devices and word choice can make for effective or ineffective climate change communications. In order to examine how online news publications communicate about climate change through rhetorical devices, I will consider encoding and decoding practices, the process of knowledge translation, media coverage and framing, skepticism, and how rhetorical devices can make complex scientific concepts coherent to non-experts as well as how they can convey the importance of taking action against climate change. Beyond the issues of communication and miscommunication between scientists and the media and the media and the public, in an age of fake news, clickbait, and filter bubbles, it can be difficult for the average person to know where to find reputable information, and exactly what information to trust. Those who solely get their news from the *New York Times* will likely have entirely different perspectives on a given issue than those who solely get their news from *Fox News*. One of the few similarities between such publications of the political Left and Right is their reliance on framing and rhetorical devices to inform, explain, and convince. These framing methods and rhetorical devices are a primary

means of communication in the media, and the rhetoric used to discuss climate change can greatly sway audience opinions and beliefs.

This paper will examine the use of rhetorical devices in the media, namely, in the online archives of the *New York Times* and *Fox News*. For the purpose of this paper, rhetorical devices are defined as persuasive or stylistic techniques that are used to convey a meaning which may be implicit or explicit in the text. Rhetorical devices can be used as interpretive shortcuts to effectively explain, emphasize, or convey a concept, but they can also be used to obscure, misrepresent, or muddle an issue. There is no question that the way that the media uses rhetorical devices affects a reader's understanding of climate change. Therefore, the way that the media writes about climate change not only influences the reader's perceived importance of or belief in the issue, but rather it also has consequences for the future of our planet. Understanding how the media uses rhetorical devices can aid in understanding an article's subtext and what the journalist may truly be trying to communicate about climate change, as well as provide insight into the possible effects of rhetorical devices on readers.

Climate change communications are fraught with interpretive shortcuts related to media framing, political leanings, and rhetorical devices. Through a rhetorical content analysis that inductively examines the arguments, ideas, and techniques that have been the most prevalent in climate change communications over the past 25 years, I will answer the following questions: Which rhetorical devices do the media use to communicate information about climate change? How have the rhetorical devices changed over time (since the advent of the internet to today)? How do rhetorical devices differ between publications with different political leanings (and therefore with different methods of framing information), and by extension, between those with different approaches to writing about climate change? The rhetorical devices that will be

analyzed in this paper are: imagery, personification, congeries, metaphor and simile, conceptual metaphors, and allusion.

Literature Review

This literature review will focus on communicating specialized knowledge, the mediating role of journalists between scientists and the public, the presence of skepticism or denial among audiences, new media and the internet, and the use of imagery, rhetorical devices, and word choice which determine the efficiency of climate change communications. Understanding the commonly used images, rhetorical devices, and word choices in the media and their effects will allow for a better analysis of those devices used in the *New York Times* and *Fox News*, while the sections on journalism and skepticism will inform my analysis of how rhetoric differs between publications of different political leanings,.

Communicating Specialized Knowledge

Hall's encoding and decoding model provides a framework for the process of scientific knowledge translation. It explores each step in the transmission of meaning without which communication would not have consequences for the receiver (2003, 117-118). Hall explains the 'symmetry' or 'asymmetry' of transmission, wherein imperfect communication through the encoding/decoding process happens because of an asymmetry among the dual dimensions of an exchange of meaning (2003, 120). Hall describes three positions of decoding: dominant-hegemonic position (the encoded meaning is decoded), negotiated code (certain meanings are taken, and others are not), and oppositional code (the meaning is not taken, either intentionally or unintentionally) (2003, 126-7).

Scholars have acknowledged the relevance of Hall's model to the field of climate change communications, for example, Ungar notes that the encoded meanings in scientific knowledge must be translated in a way that makes sense to non-experts (2000, 308). It is often journalists and the media who decode and re-encode these meanings for the general public, but problems in transmission can occur. Bell argues that miscommunication generally arises in two ways: media misreporting, and audience misunderstanding (1994, 206). Personal beliefs, values, and experiences greatly factor into an audience's decoding practices of a message (Carvalho & Burgess, 2005, 1458), and audience interpretations are often founded on politics or self-interest (Nisbet, 2009, 14). Decoding in the oppositional code poses a threat to climate change communication, as evidenced through the 'boomerang effect,' in which the intended effect of a message has a reversed effect on those who receive the message (Hart and Nisbet, 2012, 4).

Another difficulty of scientific communication is the "gap" between scientists and the public (Peters, 2013, 14102). Scientists encode meaning in texts using scholarly and technical language which the average person will not be able to understand (Schneider, 2010, 175). Scientists therefore play a "gate-keeping role" between their findings and the public's understanding of climate change (Fahy & Nisbet, 2011, 781). Ungar reports that as specialized knowledge increases, so does ignorance, as most people are unable to understand emerging scientific developments (2000, 297). Unfortunately, even the most basic levels of scientific literacy are low among the general public, because many do not see a personal benefit in being informed, and tend to see scientific ignorance as natural and accepted among non-scientists (Ungar 2000, 308; Whitmarsh, 2009, 417). Latour explains that the public can be willfully ignorant about science because they are unable to see the connection between what is happening in scientific communities and their own lives (1994, 3). Essentially, there is a divide between

science and the public, “between the world of knowledge and the world of experience, which can be disempowering” (Ramos & Carvalho, 2008, 243). However, it is paradoxically only through knowledge that people can be aware of problems and be empowered towards change.

Effective Rhetorical Devices and Word Choice

Fahnestock highlights the “misconception that the domain of rhetoric does not extend to the sciences” (2003, xi). Rhetorical devices have emerged as a way of explaining the complexities of climate change to the public, for example, using a metaphor to describe the ozone hole (Ungar 2000, 305), metonymy to establish scientific objectivity and convey “empirical reality” (Ramos & Carvalho, 2008, 230), or nominalizations to create a detached “rhetoric of evidence” (Ramos & Carvalho, 2008, 235). Nisbet also identifies metaphors and allusions as a way of breaking through the public’s passive or limited ways of considering climate change (2009, 15). Fahnestock proposes schemes like incrementum and gradatio as useful in science communication to convey priorities (2003, 95). Gradatio could effectively communicate which action is needed from the public to fight climate change, and in what order it needs to happen.

One issue that can arise when using rhetorical devices to convey a concept is the ambiguity of figurative language. Gibbs and Colston acknowledge that factors such as age, language experience, gender, occupation, culture, political backgrounds, political beliefs, cognitive differences, bodily experiences, bodily actions, geographic origins, personalities, and social relationships and common ground may all influence the way that somebody interprets figurative language (2012, 263-4). They note that there are “a vast number of possible individual variations in what people bring to the task of speaking and understanding figurative language” and one must “find ways of accommodating all these, and many other, factors in creating

comprehensive accounts of what people do when using figures of speech” (Gibbs & Colston, 2012, 307). While there are common ways of interpreting rhetorical devices, it remains a possibility that meaning from the encoding process may still be lost in the decoding process and a miscommunication may occur.

Something as simple as terminology can influence interpretations, for example, the use of ‘global warming’ versus ‘climate change.’ Whitmarsh explores the intricacies of the connotations of the two terms, finding that climate change inspired a lower response than global warming, but that the term global warming is somewhat misleading and could lead to misconceptions (2009, 418). Terminology also has a political basis. Schuldt, Konrath, and Schwarz found that Republicans were more skeptical of global warming than climate change, though Democrats were not affected by the different terminology (2011, 122). They also mention global warming’s association with high temperatures, which means the term can be undermined by extremely cold weather (Schuldt, Konrath & Schwarz, 2011, 122). Latour notes the different connotations of ‘nature’ and ‘territory,’ in the sense that many are willing to defend property, but not the planet (2018, 8).

Journalists and the Media

Journalists and the media mediate between scientists and the public. Accordingly, the way that they deal with an issue has repercussions for public understandings of climate change (Brüggemann & Engesser, 2014, 400). Peters asserts that at times, scientists and journalists have had different goals, although now, their agendas fall more or less in line regarding the urgency of climate change education (2013, 14102). Analyses have shown that while the media may be receptive to publicizing scientific discoveries regarding climate change, a source’s “editorial

position” and “values and ideological cultures” also influence their coverage (Carvalho & Burgess, 2005, 1467).

Media coverage of climate change is further dictated by a variety of other factors, such as constraints of time and space (Bell, 1994, 271; Ungar 2000, 299; Weingart et al., 2000, 280), as well as news values (Bell, 1994, 260; Carvalho & Burgess, 2005, 1459). The media can have an agenda-setting effect on the public, and the amount of coverage given to climate change has implications for its importance in public perception (Trumbo, 1996, 281). Furthermore, the media often operates under “institutional, economic, political, and technological demands,” keeping the interests of their audience in mind when crafting content (Carvalho & Burgess, 2005, 1458-9). Climate change’s complexity can cause the media to oversimplify or even evade the issue, and instead choose to broadcast more ‘marketable’ information (Ungar 2000, 299). Peters notes that the media often uses “selected, simplified, sensationalized, and pedagogically tailored messages when addressing the general public” in order to convey scientific information (Peters, 2013, 14103). Bell sums up, “When the media are reporting, scientists lose that control” over the narrative of climate change (1994, 260). This means that the communications which reach the public are not necessarily bound to presenting the facts as accurately as possible. Bell points out that while journalists are governed by news values (to garner attention), scientists are governed by professional values (to find truth) (Bell, 1994, 260).

Issue Framing is an essential part of climate change coverage in the media. According to Nisbet, “Frames are interpretive storylines that set a specific train of thought in motion, communicating why an issue might be a problem, who or what might be responsible for it, and what should be done about it” (2009, 15). Nisbet argues that an ideal framing of climate change would accurately convey the scientific facts while also customizing communications to a variety

of audiences in a comprehensible way that makes the issue seem both immanent and important (Nisbet, 2009, 14). Personalized approaches to climate change framing are effective because audiences interpret meaning through individual concerns, current knowledge (Whitmarsh, 2009, 417), lived experience, political values, and social identities (Nisbet, 2009, 17). Also effective is encoding the meaning of scientific discoveries sequentially, in terms of “*past, current, and future events*,” so that audiences can use subjective interpretations to relate to the findings and decode their own understandings of the material and why it matters to them (Weingart, Engels, & Pansegrau, 2000, 276). This kind of sequential encoding frames information in a way that helps audiences to make sense of seemingly abstract scientific findings in more concrete ways.

Climate change can be framed in many different ways depending on the audience, for example, as an issue of morality and reverence for nature for creationists (Nisbet, 2009, 21), or as an opportunity for economic growth for Republicans (Nisbet, 2009, 20), or a way to lower energy bills for those of lower socio-economic status (Whitmarsh, 2009, 418). Recently, communication scholars have framed climate change as an issue of public health (linking pollution to things like asthma and disease), making the consequences of inaction personally relevant, familiar, and easy to understand (Maibach, Nisbet, Baldwin, Akerlof & Diao, 2010, 10). Framing climate change as a personal threat has been proven effective. Hart and Nisbet discovered that the “identity of potential victims in science-based messages may amplify audience polarization regarding controversial science issues” (2012, 16). They find that broadcasts depicting local rather than global communities affected by climate change have a greater impact on audiences (Hart & Nisbet, 2012, 2), and that broadcasts focusing on socially separate groups can actually increase polarization (15). Carvalho and Burgess also determine that in order to convey urgency, effects of climate change should be framed as realities of personal

“everyday experience” rather than as abstract international threats (Carvalho & Burgess, 2005, 1466). Morton, Rabinovich, Marshall, and Bretschneider found that rather than focusing on the future consequences of climate change, it is more effective to focus on the potential of avoiding these consequences through taking action in the present (2011, 2).

Climate Change Skepticism

Not all climate change skeptics deny the existence of climate change entirely. Rahmstorf breaks sceptics into three main categories: “trend sceptics” who do in fact believe climate change is not occurring, “attribution sceptics” who believe in climate change, but argue that it is not a result of human behaviours, and “impact sceptics” who believe in climate change and the accountability of human activity, yet propose that the results of climate change will not be damaging, or may even be favourable (Rahmstorf, 2004, 77-9). Poortinga, Spence, Whitmarsh, Capstick, and Pidgeon found that trend and attribution skepticism were not extensive, although impact skepticism was common (2011, 1015). Their study also found that skepticism was most prevalent in older conservatives from low socio-economic backgrounds, and less prevalent in those who were younger and from high socio-economic backgrounds” (Poortinga et al., 2011, 1015). Poortinga et al.’s findings relate to Hall’s notion of the “socio-cultural and political structure[s]” which inform an individual’s decoding practices (Hall, 2003, 119). Poortinga et al. emphasize that the media should keep the varying degrees and types of skepticism in mind when engaging with audiences who may fall into any (or none) of the three categories, and suggest that more distinct, specialized approaches will resonate differently with different individuals (2011, 1022).

Hart and Nisbet corroborate Poortinga et al.’s findings that an individual’s political views can be correlated with their belief in or skepticism of climate change, finding that Republicans

tend to be more skeptical than Democrats (2012, 2). Nisbet also observes that media outlets frame climate change differently for Democratic or Republican audiences, and that conservatives tend not to frame climate change as urgent, raise doubts about human impact, and raise financial concerns about taking action (2009, 18). Latour recognizes that some elites may comprehend the gravity of climate change, but believe it will not become catastrophic in their lifetime, or believe that if it does, their financial resources will offer them protection (2018, 23). He criticizes the ultra-wealthy's "obsessional denial of climate change" and the "fog of disinformation" that they spread in order to create doubt in the minds of an already dubious public (Latour, 2018, 24). Latour argues for new affiliations: not Right or Left, encapsulating Republican or Democrat, but rather Terrestrial, encapsulating all humans who depend on the earth for survival (2018, 56). Additionally, Antilla affirms that "corporations that profit substantially from fossil fuel consumption...provide financial support to their political allies in an effort to undermine public trust in climate science" (Antilla, 2005, 339), and alongside Boykoff, notes their detrimental presence in the media as well (Antilla, 2005, 350; Boykoff, 2007, 9).

Poortinga et al. assert that certain types of skepticism arise from a lack of conviction in the findings of the scientific community, in conjunction with the media's occasionally ambiguous treatment of climate change (2011, 1017). Many scholars criticize the journalistic practice of balanced reporting in providing visibility to skeptics (Antilla, 2005, 339; Nisbet, 2009, 19; Brüggemann & Engesser 2014, 419), especially if it is used intentionally to create controversy or a spectacle (Ramos & Carvalho, 2008, 227). Scientists welcome uncertainty as a means for new discoveries (Schneider, 2010, 175), but uncertainty makes the public uncomfortable (Morton, Rabinovich, Marshall, Bretschneider, 2011, 2). Ramos and Carvalho explain that when people think of science, they usually regard it as stable and as supplying

“eternally valid truths” (2008, 226). Therefore, temporary uncertainty in the field can challenge the public’s confidence in the institution. Ramos and Carvalho suggest that media should depict science as “a process and a construct rather than a universal truth that is “out there” and just needs to be grasped (2008, 232). Public perception of the relationship between facts and scientists is a hurdle of climate change communications. Latour recognizes the difficulties associated with the construction of science (1994, 6) and with seeing scientists as the “representatives of the facts” (28). Although “facts represent nature as it is,” the facts are encoded and decoded through humans interpretations (Latour, 1994, 28).

The inherent ambiguity of the research that leads to minor disagreements between climate change scientists can diminish the public’s faith in researchers in the field (Weingart et al., 2000, 280). Inconclusiveness within scientific communities is further complicated by how the media deals with uncertainty. Rahmstorf observes that those who rely solely on the media for news on climate change may arrive at entirely different conclusions than those that scientists have identified (Rahmstorf, 2004, 77). Furthermore, even if journalists’ intentions are to inform rather than entertain, they may be unequipped to deal with the uncertainty that arises in scientific findings. The media can at times “translate hypotheses into certainties” (Weingart et al., 2000, 274) or “downplay uncertainty to the point of disappearance” or else “amplify it to the point of hype” (Schneider, 2010, 175). Latour argues that “Facts remain robust only when they are supported by a common culture,” and for this reason the skepticism of a few individuals presented in the media can have consequences for all (2018, 23).

Implications of New Media

The internet has had a democratizing effect on many spheres of life, climate change communications included. Boykoff argues that social media platforms allow users to influence

public opinion (2013, 809), and Fahy and Nisbet highlight the increasingly participatory nature of online media engagement in recent years, which has “challenged the historically dominant and exceptional role of science reporters as privileged conveyers of specialist information to general audiences” (2011, 778). Fahy and Nisbet also indicate that scientists themselves are taking to blogs and social media in order to reach audiences in a more direct way, thus eliminating the mediation of journalists (2011, 782). In addition to an increasing number of platforms available through which to disseminate information, there is progressively more information available online in general, leading to what Fahy and Nisbet refer to as “highly motivated users” who can do a “deep dive” into scientific topics (2011, 783). On a less idealistic note, however, they recognize that “A diversity of deep content choices...also makes it very easy for these ‘science publics’ to only follow and participate at an aligned network of sites or blogs that reflect their worldviews” which can lead to filter bubbles and increased bias among scientists, journalists, and audiences alike (Fahy & Nisbet, 2011, 783).

Using Imagery to Promote Action

Another recent area of discussion surrounding climate change communications pertains to the use of imagery to inspire concern and action among the public. A 2013 study on the matter established that “Media representations are...powerful and important links between people’s daily realities and experiences, and the ways in which these are discussed at a distance between science, policy and public actors” (O’Neill, Boykoff, Niemeyer, & Day, 2013, 1). The study found that images showing the effects of climate change helped audiences recognize the gravity of the situation but did not improve self-efficacy, but that self-efficacy was promoted by pictures of energy futures, and finally that images of celebrities and politicians undercut audience perceptions of importance of the issues (O’Neill et al., 2013, 8). O’Neill et al. find that

“Arresting, startling, attention-getting, amazing, uplifting, upsetting and even shocking images ... have the potential to raise awareness, as well as inspire people to explore possible actions to take in the face of climate challenges. But in making the intangible tangible, climate imagery can also paralyse and demobilise” (2013, 8). Imagery may be used effectively, then, but it must be used carefully and to a specific end. Imagery has proven persuasive in presenting complicated concepts such as climate change, since it assists audiences in “meaning-making” and while “the cognitive processing system is rational, analytic, logical and deliberative, encoding reality in abstract terms; the experiential processing system is holistic, affective, fast and intuitive, encoding reality through imagery and metaphors” (O’Neill et al., 2013, 2).

Literature Review Conclusion

Effectively communicating climate change is a multifaceted and complex task. Issues can arise in the encoding and decoding process, as journalists try to make scientific concepts comprehensible to broad audiences and frame news in a way that promotes an audience’s perceived importance of climate change. Using rhetorical devices, careful word choice, and imagery can help the media to effectively convey scientific findings to the public. Nevertheless, many types and degrees of skepticism can arise in the public depending on how information is framed, as well as what kind of media source information comes from. Media sources of different political leanings may frame information in very different ways, leading to great disparities in how an audience of one source may regard climate change compared to an audience of another source. The emergence of new media forms only serves to heighten this disparity, as it has become easier than ever for people to pick and choose new sources that reinforce their already held beliefs.

Research Questions:

My literature review shows that climate change communications are fraught with interpretive shortcuts related to media framing, political leanings, and rhetorical devices. My first research question is: Which rhetorical devices do the media use to communicate information about climate change? My second research question is: How have the rhetorical devices changed over time (since the advent of the internet, to today)? My third research question is: How do rhetorical devices differ between publications with different political leanings (and therefore with different methods of framing information), and by extension, between those which support or deny climate change)?

Methodology

Data Collection

The data collection of the articles analyzed in this paper is informed by the concept of maximum variation sampling with the intention of representing a wide variety of climate change communications from the past 25 years. The data set is made up of articles that have been manually gathered from two major online North American publications that represent left and right leaning news publications respectively: the *New York Times* and *Fox News*. I have collected 10 articles from each publication at intervals of 5 years, selecting articles from the years 1994, 1999, 2004, 2009, 2014, and 2019. The earliest articles that could be found on the topic of climate change/global warming on *Fox News*'s website's article archives are from 2001, so I have used articles from 2001 as the data for comparison against the *New York Times*'s 1999 data, and do not have any data for comparison from *Fox News* against the *New York Times*'s 1994 data (though this circumstance seems in line with findings in the literature review regarding Left-leaning and Right-leaning political approaches to the issue of climate change in that

Republicans tend to be more skeptical than Democrats (Hart & Nisbet, 2012, 2) and this could account for the absence of early articles about climate change on *Fox News's* website).

The articles that form the data set for this paper have been taken from the archival databases of each of the publication's websites. The search fields used to find and select articles were "global warming" and "climate change," since my literature review suggests that those are the terms most often used when discussing the topic (Whitmarsh, 2009, 418). For each year of data collection (1994, 1999, 2004, 2009, 2014, and 2019), I have selected five of the top articles from each site under the search field "global warming," and five articles under the search field "climate change." During data collection, I filtered the search using the "sort by most relevant" option in order to select and analyze the articles that likely would have been the most popular, most often read, or most influential during the given year. Opinion pieces, interviews, video transcripts, and quotes from within the articles from each publication were occasionally included in the data set provided they could be found among the most relevant articles. From the most relevant articles, I tried to select pieces that covered a variety of topics and content, ranging from scientific to economic to political articles (so long as the dominant theme of the article discussed the topic in its relation to climate change). Using both early and recent sources, opposing political publications, and different stances on climate change for comparative purposes has helped me to understand which rhetorical devices are most common in climate change communication, and how the field may have evolved over time.

Data Analysis

I have used qualitative research, primarily rhetorical content analysis, to inductively explore the arguments, ideas, and techniques that arise in climate change communications, as well as the rhetorical paradigm perspective to analyze a diverse assortment of material and find

the most dominant themes as well as understand the messages of climate change communications. The dominant focus of this analysis will be on the use of rhetorical devices and the implications that their uses have on the field of climate change communication. For the purpose my analysis below, I began by selecting each of the rhetorical devices that were used by each publication in each article and compiling them into a data set, from which I began narrowing down the data set into those rhetorical devices which I felt were used to communicate specifically about climate change rather than more distant issues such as politics or economics (that were not directly related to the politics or economics of climate change in the context of the article). I also did not include rhetorical devices that were used for stylistic purposes. In particular, although they were used fairly often, rhetorical devices related to repeated sounds (such as alliteration, consonance, and assonance) or repeated words and phrases (such as anaphora, epanalepsis, and anadiplosis) were not included in the data set. Although these devices influence a reader or listener's cognition of a subject, they are less relevant to a discussion and analysis of media framing regarding climate change.

Furthermore, this is not a descriptive content analysis concerned with the frequency of each and every rhetorical device that has been used by the *New York Times* and *Fox News* over a 25 year period, but is rather a content analysis concerned with the effectiveness of the most relevant and prevalent rhetorical devices that appear in each publication over the designated data gathering period. The rhetorical devices are analyzed in the context of the article itself, the findings of scientific studies at the time of publication, as well as the findings of the literature review. Since it isn't possible to discern what a writer's intended effect of a given rhetorical device is, I have instead chosen to focus on what the potential effect may be on a reader and the reader's understanding of climate change. The rhetorical devices which will be analyzed are:

imagery (visually descriptive or figurative language that ‘paints a picture’ in the reader’s mind), personification (attributing human characteristics to something nonhuman, or representing an abstract quality in human form), congeries (a jumbled collection of words or phrases that creates a building effect), metaphor (a word or phrase that is applied to an object or action to which it is not literally applicable) and simile (a figure of speech involving the comparison of one thing with another thing of a different kind), conceptual metaphors (which refer to climate change in terms of a battle, war, or fight), and finally, allusion (a reference to a well-known figure, historical or cultural event, place, etc.). In some instances, more than one rhetorical device is in use in a particular passage, in which case I have organized it under whichever rhetorical device section in the analysis below I feel it is used more directly, effectively, meaningfully, or obviously due to the limited length and scope of this analysis.

In order to answer the first research question, of which rhetorical devices the media uses to communicate information about climate change, I have analyzed each article to determine which rhetorical devices they use when writing about climate change. In order to answer the second research question, of how the rhetorical devices have changed over time (since the advent of the internet to today), I have temporally analyzed how the rhetoric has changed over time (where there is in fact a perceptible change) by determining if different devices are in use or if the same devices being used differently. In order to answer the third research question, of how rhetorical devices differ between publications with different political leanings (and therefore with different methods of framing information), and by extension, between those with different approaches to writing about climate change, I have analyzed the rhetorical devices of different political leanings and supporters vs. deniers to see if there is a difference in rhetorical strategies, and examine how each side may attack the rhetoric of the other.

Research Findings and Discussion

Imagery

The media often uses imagery to help the reader visualize or make sense of what would otherwise be complex or abstract data or concepts. For example, Malcolm Browne, writing for the *New York Times*, uses imagery (with simile) to describe how “a graph of rising global temperature looks more like an upward-tilting saw blade than a straight line” due to the effects of El Nino (1994, Dec 20). These rhetorical devices convey that while the global temperature is not necessarily rising steadily or consistently year to year (one reason being that El Nino, which affects global temperatures, is a phenomenon which occurs every four years), the long-term trend is nevertheless towards globally warming temperatures. This idea is communicated through the visual of the line on the graph, jagged like a saw blade, indicating the rise of temperatures will be intermittent. Fifteen years later, Greg Gutfeld for *Fox News* also uses simile and imagery in an article about what he sees as “global warming hysteria” to describe how a graph of global temperatures appears, referring to “that infamous ‘hockey stick’ chart — you know, the graph that showed flat temperatures for centuries, then rising sharply like the end of a hockey stick” (2009, Dec 14). Gutfeld, like Browne, uses these two rhetorical devices to illustrate the shape of the graph, though he then discredits what such a graph signifies by asserting that there have been times in the planet’s history which were warmer than it is today, implying that we are not in an unprecedented temperature situation and lamenting that this evidence of an earlier warming period that has been “erased” from contemporary data (2009, Dec 14). Though Gutfeld doesn’t specify which earlier warming period he has in mind, it is possible that he is indirectly referring to “hothouse earth” periods such as the Paleocene–Eocene Thermal Maximum (which took place somewhere between 66 and 33.9 million years ago) during which global temperatures were more

than 8 °C warmer than they are today—though this is an entirely different phenomenon from the type of human-caused climate change the planet is currently experiencing. Imagery is also used in the data set to help visualize a graph of the accumulating carbon dioxide in the Earth's atmosphere, also known as 'Keeling's curve' after the scientist Charles David Keeling. Jonathan Weiner for the *New York Times* describes the line on this graph as an “ascending squiggle” and contrasts it with the “descending squiggle” of oxygen levels in earth's air (1994, Oct 23). Weiner uses the image to draw an immediately observable connection between how increasing levels of carbon dioxide can cause oxygen levels to decrease. As O'Neill et al. found, imagery is persuasive in explaining the scientific complexities climate change and it helps audiences to grasp abstract meanings (2013, 2).

Another common (and perhaps more traditional) use of imagery in the data set is to illustrate either the beauty of the natural world or its destruction due to climate change. Journalists writing for the *New York Times* especially used the rhetorical device in this way with imagery-filled sentences such as: “Deep inside a Costa Rican rain forest, white-faced capuchin monkeys leapt through the tree tops. Nunbirds and toucans flew overhead, and a huge butterfly, flashing wings of an iridescent blue, fluttered through the air” to highlight the kind of spectacular biodiversity that can be lost if forests like those in Costa Rica are not restored and protected (Gillis, 2014, Dec 23). French W. Howard for the *New York Times* uses imagery to juxtapose nature's majesty with the disconcerting effects of rising temperatures, relating how “Streaming white waterfalls fed by melting glaciers pour from mountains” (French, 2004, Nov 9). Here, the beauty of the waterfalls is subverted by the fact that its beauty is fed by the destruction of glaciers such as Zepu in Tibet, of which 100 yards of depth has melted in the past 30 years.

Repeatedly, idyllic natural imagery is undermined by the ominous undertones of climate change's effects on the natural world:

At the New York Botanical Garden in the Bronx, fragrant white blooms with a pink blush are breaking out on specimens of a popular landscaping shrub called the Koreanspice viburnum -- four to five months early. Snowdrops, among the earliest bulbs to send up shoots when winter ends, have already poked up their noses. In some New York suburbs, yellow forsythia blossoms have brought a premature touch of spring to December.

(Stevens, 1999, Dec 19)

Here, a *New York Times* journalist chronicles the various types of spring flowers that are growing in New York — many months too early, and in December no less — due to the effects caused by globally rising temperatures. This effectively reminds readers that something unnatural and unsettling underlies spring's early arrival, and that the cheerful flowers surfacing in the midst of winter are not necessarily a cause for celebration.

The data shows that both the *New York Times* and *Fox News* use familiar images (such as saw blades or squiggles) to visualize data or concepts. This kind of imagery is especially common when illustrating the shape of a graph. Pure data and numbers can be difficult for a reader to grasp or make sense of, but recognizable images can make the information more tangible for the average member of the public. In the *New York Times*, imagery is often used to convey the beauty of the natural world and its destruction. Such imagery may appeal to a reader's emotion, as it serves the purpose of highlighting what will be lost if climate change continues to worsen.

Personification

The natural world is frequently personified by the media to varying degrees and to different effects. Commonly, the natural world is referred to as “Mother Nature.” For the *New York Times*, Peter Passell acknowledges “the near-consensus that civilization is playing high-stakes games with Mother Nature” (1994, Sept 08), Bill McKibben quotes a professor who states that “[noctilucent clouds near the equator] may be a message from Mother Nature that we are upsetting the equilibrium of the atmosphere” (1999, Sept 04), and Thomas Friedman argues that “The only engine big enough to impact Mother Nature is Father Greed: the Market” (2009, Dec 19). Through the use of personification, the natural world is almost always set at odds with humans, our impact on the atmosphere, and our greed, often while also being presented as being alive to a human extent itself. The name “Mother Nature” personifies the natural world as a vital, life-supplying figure which nourishes us, and without which we would not exist. In a way, this sentiment echoes Latour’s notion of finding a Terrestrial world-view which acknowledges that all humans are dependent on the earth to survive (2018, 56).

Yet if we are indeed in conflict with the natural world personified, it appears, unfortunately, as though we are winning. Many of the instances of personification present nature as an underdog or a victim: suffering, but struggling to survive. Carol Kaesuk Yoon for the *New York Times* describes how “plant species living high in the Alps are climbing farther up their summits to escape the heat of a warming climate,” how they must find “shelter,” and must “save themselves” (1994, June 21), while *Fox News*’s Associated Press quotes Ted Schuur, a University of Florida ecologist, who states that plants “can’t keep up” and “get overwhelmed” by heat (Associated Press, 2009, May 27). Other instances of personification depict the injuries done to the planet in the terms of physical ailments. McKibbin for the *New York Times* argues

that we are “Indifferent to a Planet in Pain” (1999, Sept 04) and Cornelia Dean for the *New York Times* deplores “a sick coral colony” (2004, Dec 21).

Instances of personification in *Fox News* articles from this data set are more difficult to pin down. The first significant instance of personification by *Fox News* claims that the “global warming myth has proven difficult to kill,” suggesting that climate change discourse is not only a fiction, but that it has taken on its own life and must be eradicated (Milloy, 2001, June 10). One prevailing trend in *Fox News*’s uses of personification show a natural world conversing with humanity in instances such as: “spring is coming earlier than it used to. The lilacs say so” and in quoting David Wolfe, a plant ecology professor at Cornell: “‘It’s not just the weather data telling us there is a warming trend going on. We are now seeing the living world responding to the climate change as well’” (Associated Press, 2004, Dec 15).

The living world is indeed ‘speaking’ to us in the only way that it can. A final, more recently emerging trend in personification usage in this data set characterizes both climate change and the natural world as an aggressor. For example, in a 2004 article, *Fox News* notes that rising temperatures have caused a “recent increase in melting [that] has eaten into much of that multi-year ice” (Associated Press, 2004, Nov 14). For *New York Times*, John Schwartz and Mitch Smith, recount flooding in the Midwest: “the river seemed to grow fiercer” and “Cars were swallowed by the river” (Schwartz & Smith, 2019, May 15). Unnatural human behaviour in the natural environment which has caused rising global temperatures has led to abnormal and extreme weather and temperature patterns on earth. Personification of the natural world as an aggressor may indicate that the planet’s response may feel like a personal attack (or retaliation) on those populations living in areas which are susceptible to the effects of climate change.

In this data set, the natural world is often personified as “Mother Nature,” a life-supplying being, and as a victim by the *New York Times*. While *Fox News* doesn’t explicitly characterize the natural world as a victim, there are instances where *Fox News* quotes an expert who does characterize the natural world in this way. More recently, the natural world is personified as an aggressor by both news publications, indicating that despite political differences, it cannot be denied that extreme weather events are becoming more frequent and violent.

Congeries

Congeries are one of the most effective rhetorical devices for conveying the multitude of weather chaos that has ensued from a warming planet. Congeries have made more and more frequent appearances in the media as the years have gone by and as extreme weather has become more and more common. For example, William Stevens outlines the early impacts of climate change for readers of the *New York Times* in 1994:

The United States has suffered through the extra-cold summer that chilled the Northeast in 1992; Hurricane Andrew in August 1992, the most destructive American hurricane ever; the East Coast "storm of the century" in March 1993; the devastating flooding in the upper Midwest last summer; and the seemingly unending snows of early 1994 in the Northeast, accompanied by record warmth in the West. (Stevens, May 24)

The congeries here have a building effect, emphasizing the amount and scale of the disasters which have impacted the United States in such rapid succession, and they further highlight the irregularity and danger of this unprecedented situation. However, congeries can be used to present an opposing view as well. As Weiner explains in the *New York Times*, also in 1994, “When I ask people if they ever think about the greenhouse effect, they like to remind me that

ice paved the streets last January, trees fell across power lines in February and the North Pole insinuated itself through the windowpanes even in March” (Oct 23). In this instance, Weiner reveals the rhetoric of climate change deniers, who use the many examples of cold weather to argue that global warming cannot be happening so long as there is still snow on the ground. As Schuldt, Konrath, and Schwarz noted, climate change, and the term ‘global warming’ in particular, can be either confused for or intentionally misconstrued as merely the idea that ‘it’s getting hotter’ and therefore any instance of cold weather can lead to skepticism or denial (2011, 122). Therefore, congeries that focus on snow, ice, polar vortexes, etc., can be used to misrepresent climate change despite the fact that globally rising temperatures will in fact cause all types of disturbances in weather, including colder than normal temperatures in some regions.

The documenting of precise extreme weather events in early examples of congeries, such as Steven’s, tend to be more specific and focused on particular regional occurrences. More recently, congeries have become somewhat more general, broad, and large-scale, perhaps due to the increase in their frequencies. They have transformed from local disruptions to globally catastrophic and potentially existential threats. Coral Davenport for the *New York Times* writes about “the tipping point at which the world will be locked into a near-term future of drought, food and water shortages, melting ice sheets, shrinking glaciers, rising sea levels and widespread flooding — events that could harm the world’s population and economy” (2014, Dec 13). Congerie use over time reflects the reality that climate change no longer merely affects a relatively small number of people living in a certain region experiencing a hurricane or flooding, but rather that its effects have damaged the entire climate system and it will now have consequences globally, not to mention that the consequences of inaction only continue to grow as time passes.

In this data set, *Fox News* tends to use the same examples of congeries that the *New York Times* does, however, the effect is quite contradictory. Instead of attempting to convey the gravity of the effects of climate change, the publication at times uses congeries of chaotic weather in an ironic or derisive way. For example, *Fox News* provides a platform for John Coleman, the founder of the weather channel, who seems to mock those who fear melting glaciers, endangered species, and extreme weather:

Well, it's very difficult for anybody to be against it because the media has told the nation over and over again, day after day for 20 years that the oceans are rising, the polar bears are dying, the sea -- the ice is melting, the storms are going to sweep the earth and that we're all gonna die of a heat wave. (Fox News, 2014, Oct 28).

Although the host of the interview, Megyn Kelly did not seem to endorse or share Coleman's views, scholars have criticized the practice of media outlets providing a platform for climate change skeptics or outright deniers on the basis of balanced reporting (Antilla, 2005, 339; Nisbet, 2009, 19; Brüggemann & Engesser 2014, 419), and during a time when people have more ability than ever to seek out news outlets that reinforce their views, climate denial can thrive in filter bubbles and echo chambers in which the dangers of climate change are treated with ridicule (Fahy & Nisbet, 2011, 783). Another possible reason *Fox News* may present such controversial content is to gain attention and viewership. As Bell notes, journalists often adhere to news values, while scientists adhere to professional values (1994, 260). At times, *Fox News* seems to present congeries in an attempt at hyperbole to insinuate that fears about climate change are overblown and that the current weather may not be a cause for concern: "With every flood, devastating wildfire and even a deep freeze, climate change seems to get the blame. News headlines sound alarms with fears about survival, destruction of the planet and the end of

humans” (Springer, 2019, April 02). However, at other times within the same year, *Fox News* journalists acknowledge the human component of climate change and its effects, even quoting researchers at the National Center for Atmospheric Research:

Some examples briefly illustrated include 'snowmageddon' in February 2010, Superstorm Sandy in October 2012 and supertyphoon Haiyan in November 2013, and, in more detail, the Boulder floods of September 2013, all of which were influenced by high sea surface temperatures that had a discernible human component. (Re, 2019, March 18)

This suggests that the publication may be moving towards a more weighty discussion of climate change.

Both the *New York Times* and *Fox News* use congeries to explain who will be affected by climate change and how. For the *New York Times*, Stevens notes that travelers may have to find different places to explore and enjoy nature: “Beachgoers, skiers, scuba divers, autumn leaf-peepers, anglers and just plain sightseers all may have to find new places to go, and some of today's prized destinations may wither as new ones blossom” due to a warming world (1999, Nov 07). The *New York Times* also uses congeries to show the effects of climate change on a region and its inhabitants, for example in the wake of flooding in the Midwest, which led to “A truck-size hole in the temporary flood barrier, dead fish on mud-caked Pershing Avenue, and an urgent conversation about how to shield the city from the next flood” as well as “submerged farms and stores, split open levees and, in some places, ... people stranded for days or weeks” (Schwartz & Smith, 2019, May 15). On *Fox News*, congeries have been used to a similar effect to show the human cost of climate change in a quote by Defense Secretary Chuck Hagel: “Rising global temperatures, changing precipitation patterns, climbing sea levels, and more extreme weather events will intensify the challenges of global instability, hunger, poverty, and conflict”

(Military.com, 2014, Oct 14). However, some believe that taking actions regarding climate change will have a human cost as well. In an earlier *Fox News* article, Gene Koprowski quotes Czech Republic President Vaclav Klaus who expresses concern about what would happen if legislation began to take global warming into account:

We'll be the victims of irrational ideology. They will try to dictate to us how to live, what to do, how to behave," Klaus said. "What to eat, travel, and what my children should have. This is something that we who lived in the communist era for most of our lives — we still feel very strongly about. We are very sensitive in this respect. And we feel various similarities in their way of arguing or not arguing. In the way of pushing ahead ideas regardless of rational counter-arguments. (2009, Dec 18)

Here, Klaus uses congeries to convey that legally binding decisions regarding climate change would lead to all the trappings and ills of a tyrannical state. The congeries have an oppressive, overbearing effect which reflects a recurring fear that taking action against climate change must happen at the level of individual sacrifice. Paul Wagenseil for *Fox News* also uses congeries to express to complexities inherent in solving such a large-scale and global problem as climate change as outlined in the first draft of a new global warming treaty:

The documents present a range of options on core issues: how much industrial countries must cut carbon emissions; how to raise the tens of billions of dollars needed annually for developing countries to adapt to climate change like shifts in agriculture or coastal erosion due to rising sea levels; and how to compensate tropical countries for slowing the destruction of the rain forests, either from an established fund or from selling credits on the carbon market for avoiding deforestation. (2009, June 03)

While all of these are necessary and valid considerations that must be acknowledged in order to take steps to mitigate climate change, presenting them in such a way could lead to feelings of hopelessness in a reader.

To sum up, congeries are most commonly used to describe the weather chaos that has increased since global temperatures have risen. Contrarily, as the *New York Times* explains, they are also used by climate change deniers to recount instances of cold weather in an attempt at detracting from the idea that the planet is warming. *Fox News* often uses similar congeries describing weather chaos to the *New York Times*, however does so in an ironic rather than sincere way. In recent years, congeries become more prevalent in the data set. This may be because these extreme weather events are also becoming more prevalent as time passes. Congeries have also come to detail the more large-scale effects of global warming as the threat of climate change continues to grow. Both of the publications use congeries to explain the effects of climate change on earth's inhabitants.

Metaphor and Simile

Metaphor is the most commonly used rhetorical device in news media in climate change reporting. Frequently, it is employed in a way that may help the average reader, who likely has limited scientific knowledge (Ungar 2000, 308; Whitmarsh, 2009, 417), make sense of an abstract or complex scientific concept. Metaphors of this nature were most common during the earlier years of the data set, perhaps because during later years phenomena such as the greenhouse effect and El Niño had entered into the realm of common knowledge for many audiences (perhaps even through the metaphors in early media). For example, Browne for the *New York Times* describes an ocean circulation pattern as “a kind of flywheel for storing and dispensing the energy that drives global climate” which “plays a vital role as the earth's heat

engine” (1994, Dec 20). Here, Browne uses the familiar concepts of a flywheel and an engine as points of comparison to explain how an event like El Nino can affect earth’s temperatures. Also for the *New York Times*, Stevens presents the impact of the El Nino-La Nina cycle on weather as “‘teleconnections,’ or chains of cause and effect,” metaphorically likening the interrelated nature of tropical ocean warming or cooling and climate systems to the linked structure of a chain, in which all parts are connected (1994, May 24). Similar to Browne’s metaphor of “the earth’s heat engine” and how it is related to ocean circulation patterns (1994, Dec 20), Stevens depicts the length of intervals between El Ninos as a kind of battery, dependent on “how long it takes to recharge the tropical system by reaccumulating heat at the sea surface” and indicates that “Global warming ... may enable the system to recharge faster, making El Nino appear more often” (1999, May 18). Stevens explains abstract concepts such as El Nino in terms of a familiar object in a way that may help a reader with limited scientific knowledge to make sense of the natural phenomenon.

Metaphors and similes are most often used as interpretive shortcuts to simplify or dramatize natural or scientific concepts. For example, *Fox News* quotes Jason Box, a scientist for the Danish Meteorological Institute, who likens the intense rate of Arctic warming to being “on steroids” (Associated Press, 2019, April 08). *New York Times* journalists describe snow “as a blanket, preventing the escape of heat absorbed by the ground before the snow fell” (Stevens, 1994, Feb 08), and the amount of heat we add to the air through carbon dioxide (that being two watts per square meter) as if “we have put a tiny pilot light just above each one of those trillion squares of land, sea and ice, and each light is shining down on its plot of earth by day and night” (Weiner, 1994 Oct 23). Weiner further describes industrial pollution as “the cloud from the human volcano,” using metaphor to view humankind as a massive, destructive force which rivals

the power of the natural world (Weiner, 1994 Oct 23). Weiner is not the only journalist to use metaphors of catastrophe. *Fox News* describes global warming as a “‘slow-motion time bomb’ of trapped greenhouse gases” which “may not go off quite as fast as once feared” in an article about how plant life in thawing parts of Alaska are absorbing greenhouse gasses. This metaphor is complex, because while the likening of global warming to a ‘time bomb’ conveys emergency, the qualifier of ‘slow-motion’ perhaps undermines the urgency of taking action (2009, May 27). As Nisbet notes, conservatives do not tend to frame climate change as urgent (2009, 18). A different type of metaphor describes the future consequences of living in a world in which climate change is allowed to continue deteriorating the natural world. Davenport for the *New York Times* refers to a “tipping point at which the world will be locked into a near-term future of drought, food and water shortages, melting ice sheets, shrinking glaciers, rising sea levels and widespread flooding,” using the phrase “tipping point” to indicate a point of no return into which we will be “locked” (2014, Dec 13). Davenport uses these metaphors to express the inescapable nature of climate change that we will reach if our behaviour does not change and we reach a point of no return.

Recalling graphs that look like the blade of a saw (Browne, 1994, Dec 20) or the ascending and descending squiggles of levels of carbon dioxide and oxygen in earth’s air (Weiner, 1994, Oct 23), it should come as no surprise that metaphors of irregularity or ‘ups and downs’ are also common. Stevens for the *New York Times* explains the “seesaw sort of winter circulation pattern in which prevailing westerly winds in the Arctic, sub-Arctic and North Atlantic vary between two basic states, one stronger and one weaker” (1999, Nov 17) and Kendra Pierre-Louis for the *New York Times* acknowledges the increasing frequency of “climactic seesaws” such as a year of drought followed by a year of equally extreme

precipitation (2019, Jan 23). The sorts of uncertainty in climate science and erratic nature of climate data are also reflected in metaphors that indicate the unpredictability of our climate situation. For example, for the *New York Times*, Stevens likens forecasting long-term weather as a “roulette table” (1994, May 24) and refers to certain atmospheric conditions as “a wild card” (1999, Dec 19) while Schwartz and Smith pinpoint uncertainty in the statement that “Floods ... have a complex cocktail of causes” and go on to explain that while some believe climate change may play a part in increased floods, others do not (2019, May 15). As evidenced by the literature review, scientists welcome uncertainty (Schneider, 2010, 175), but the public does not (Morton, Rabinovich, Marshall, Bretschneider, 2011, 2). Using metaphor to convey the irregularity and uncertainty of climate change science may be helpful in normalizing it in the eyes of the public and reducing the likelihood of their experiencing feelings of skepticism when confronted with dubious data.

Metaphors are also used to write about the politics surrounding climate change, particularly with regards to how world nations do or do not come together to fight against climate change (be it through treaties, agreements, legal action, etc.). For example, Philip Clapp for *The New York Times* writing about The United Nations world climate conference discusses the concern of some that “developing countries are getting a free ride” when it comes to carbon dioxide reduction, and how “the United States has been the skunk at the garden party” (1999, Nov 04). These metaphors outline the tension that permeates climate talks and conferences, with nations often not wanting to put in more work than the the others. As John Broder for the *New York Times* argues, “China ... has dragged its feet throughout the week [of Climate Negotiations] by raising one technical objection after another to the basic negotiating text” (2009, Dec 16). Some metaphors indicate the viewpoint that fighting climate change is an unimportant chore, for

example Dana Blanton for *Fox News* explains that “Americans put addressing the issue of global warming at the bottom of the national to-do list” (2009, Dec 17). Others see fighting climate change as an idealistic pipedream that is only beginning to enter into the real world: “His [Jay Inslee’s] rollout of two policy papers ... with more promised, has been hailed by some climate activists as putting real meat on the bones of the Green New Deal resolution, which was criticized as a progressive wish list without details” (Gabriel, *New York Times*, 2019, May 24).

Another common use of metaphor that appeared in the data set was to disparage environmentalists. Milloy accuses environmentalists of “playing the ‘environment card,’” in other words, of gaining unearned advantage in the upcoming year's Senate race (2001, Dec 07) and states that “Global warming pushers should be choking on soot this week. Instead, the global warming-friendly media is choking a potentially devastating story” in reference to what he sees as a study that “raises serious questions about the theory that humans are measurably changing global climate” (2001, April 04). In another instance, Bill O'Reilly for *Fox News* says that “Liberals of course, are crazed over man made climate change demanding immediate action pounding the table to save the icebergs,” painting the left as irrational and undermining the importance of the melting arctic (2014, May 19). Metaphors like these attack the (usually Leftist) rhetoric that is concerned by changes to the climate, and portray in a negative light.

In conclusion, both the *New York Times* and *Fox News* use metaphor and simile to explain climate change science to readers with limited scientific knowledge. This use of the devices was especially noteworthy early on in the data set before certain aspects of climate science entered the realm of common knowledge. In both publications, metaphor and simile often simplify or dramatize natural or scientific concepts, again, to either explain a complex idea or to sensationalize a topic. In the *New York Times*, metaphors express the irregularity and

uncertainty that is often present in climate change science. Other metaphors by both publications highlight the politics of climate change. *Fox News* also at times uses metaphors to deride environmentalists and those who are concerned about climate change.

Conceptual Metaphors

Conceptual metaphors appear very frequently in the data set. Conceptual metaphors, as explained by Lakoff and Johnson in *Metaphors We Live By*, subtly influence the way we think by using a familiar idea to provide an understanding of something else. Certain types of phrases occurred often, such as “combat global warming” (Milloy, *Fox News*, 2001, Dec 07), “hold hands and attack this problem” (Friedman, *New York Times*, 2009, Dec 19), “the nation fights vehicle pollution” (Associate Press, *Fox News*, 2004, Sept 24), “a new battle against global warming” (Hakim, *New York Times*, 2004, Dec 09), and “tackle a narrower agenda of issues” (Revkin & Broder, *New York Times*, 2009, Dec 19). In addition to these recurring phrases, more specific conceptual metaphors depict climate change as a war we are fighting that leaves behind casualties, loss, and destruction. James Kanter for the *New York Times* writes about the “the front lines of climate change” (2009, Dec 20), Tyler Schmall for *Fox News* quotes Jeff Meyers, Chief Operating Officer for The Recycling Partnership in saying, “More than ever, we need the next generation to lead the charge” (2019, April 23), Dean for the *New York Times* refers to sardines, who improve the climate situation by eating phytoplankton, as “Earth's Uncanned Crusaders” (2004, Nov 23), and Springer for *Fox News* tells of “a kind of boot camp for students willing to fight for the planet” (2019, April 02). At times, the rhetoric is not only of war, but of nuclear war. Kanter writes that the “Copenhagen Accord also promised \$100 billion dollars in yearly payments by the end of the next decade to poor nations that risk bearing the brunt of the global warming fallout” (2009, Dec 22) and Gabriel writes that Jay Inslee “favors abolishing the

filibuster for legislation in the Senate to enact sweeping climate bills, a “nuclear option” (2019, May 24). By likening what is happening in the environment to nuclear war, a potentially catastrophic outcome is conveyed, which may be used to convey the gravity of the climate situation. In another instance of conceptual metaphors in the *New York Times*, Revkin notes that as climate change threatens Inuit communities, these communities “are casting the issue as no longer simply an environmental problem but as an assault on their basic human rights” and “the elected chairwoman of the Inuit Circumpolar Conference ... said the biggest fear was not that warming would kill individuals but that it would be the final blow to a sturdy but suffering culture” (2004, Dec 15). David Jolly for the *New York Times* states that rising temperatures are “hitting the elderly particularly hard” (2014, Dec 08). These instances of conceptual metaphors explain the dangers of climate change at a more individual and personal level.

This data shows that both the *New York Times* and *Fox News* use conceptual metaphors regularly. Conceptual metaphors like “fight climate change” are nearly imperceptible as figurative language, though they perhaps implicitly suggest that climate change should be regarded as an enemy, and that if we do not put up a fight, we will be defeated by our opponent. Both publications also portray climate change as a war or battle with great consequences to the human race.

Allusion

Both the *New York Times* and *Fox News* often use allusion as an interpretive shortcut. By referencing a well-known figure or event, for example, journalists are more quickly able to make a connection in the reader’s mind. In an early instance of allusion, McKibbin for the *New York Times* uses timely cultural references of 1999 to convey the horrors of climate change: “Almost daily some new piece of evidence appears; the weekly editions of the journals *Science* and

Nature make “The Blair Witch Project” look like “The Baby-Sitters Club”” (1999, Sept 04). Here, McKibbin highlights the fact that what is happening to the environment in real time is more frightening than anything that could be imagined, even for a horror movie. References to literature are especially common, for example, Milloy for *Fox News* calls the EPA’s attempt to remove PCBs from the Hudson River “quixotic” (in other words, foolish and idealistic) in reference to Miguel de Cervantes’s *Don Quixote*, and Schwartz and Smith for the *New York Times* quote Larry Weber, a founder of the Iowa Flood Center at the University of Iowa, who references Lewis Carroll’s *Alice in Wonderland* by saying he won’t “go down that rabbit hole” by responding to climate change deniers, suggesting that to take such a stance on the issue would be to indulge in a delusional, fantastical world (2019, May 15). Victor Garcia for *Fox News* quotes a political commentator for *Fox News*, Jesse Waters, who references the Trojan War as told by Homer’s *Iliad*, arguing that “Global warming hysteria is just the Trojan horse to get into all of the things that they [Democrats] want to do,” and implying that like Odysseus snuck soldiers into Troy in a hollow horse, the Democrats are trying to push their own agendas and policies into the senate (2019, May 13).

Other journalists allude to real historical events or figures for the purpose of interpretive shortcuts, such as Koprowski for *Fox News*, who refers to Vaclav Klaus as “the Margaret Thatcher of Central Europe” perhaps indicating qualities such as moral absolutism, nationalism, interest in the individual, and an uncompromising leadership style, though Koprowski states that in a particular interview, “he sounded more like Winston Churchill, vowing to defend liberty and freedom from those who would restrain global economic growth” (2009, Dec 18). In an article for the *New York Times*, Peter Baker quotes John Feehery, a Republican strategist and former Capitol Hill aide, who alludes to the Pyrrhic War, calling Obama’s nonbinding agreement to

fight global warming a pyrrhic victory and signifying that he does not see the agreement as a victory at all (2009, Dec 19). Friedman likens the fight against climate change to the space race of the mid 50s to 70s, asserting that “Today, we need the Earth Race: who can be the first to invent the most clean technologies so men and women can live safely here on Earth” and arguing that during the 2009 United Nations Climate Change Conference, Obama should have seen “clean-tech” as his “moon shot” (2009, Dec 19). Friedman here interprets the fight against climate change as an opportunity to bring honour and triumph to the United States through technological innovation. Allusions to history are also used for jarring, emotional effects. For example, McKibbin for the *New York Times* alludes to the United States’ historically abhorrent treatment of African Americans in order to convey that often, we are “blind” to such horrors until we have the perspective of history:

I used to wonder why my parents' generation had been so blind to the wrongness of segregation; they were people of good conscience, so why had inertia ruled for so long? Now I think I understand better. It took the emotional shock of seeing police dogs rip the flesh of protesters for white people to really understand the day-to-day corrosiveness of Jim Crow. (1999, Sept 04)

By alluding to segregation, Jim Crow, and the civil rights movement in the 50s and 60s, McKibbins draws a connection between the grievous mistreatment of African Americans (which is now prevailingly condemned) to the grievous mistreatment of the environment, suggesting that future generations may wonder how those of us alive during the onset and worsening of climate change could have been so blind. Nisbet noted that allusions can be a way to break through the limited ways of considering climate change (2009, 15), and McKibbins here recontextualizes climate change by alluding to another historic atrocity. Revkin and Broder for the *New York*

Times report on the 2009 Climate Conference and climate deal, writing that “Speaker after speaker from the developing world denounced the deal as a sham process fashioned behind closed doors by a club of rich countries and large emerging powers. The debate reached such a pitch that the Sudanese delegate likened the effect of the accord on poor nations to the Holocaust,” which draws a similar connection to the disparity between privileged and less privileged nations and peoples (2009, Dec 19). A recurring concern throughout climate talks over the years is how “developing” countries can compete with “developed” countries on making strides towards lowering carbon emissions and transitioning into clean, renewable energy. By 2014, this situation was still tenuous, and Davenport reports on the United Nations conference in Lima, Peru, during which “Speaking for the Like-Minded Countries, the Malaysian delegate, Gurdial Singh Nijar, said: ‘We are in a different stage of development. Many of you colonized us, and we started from a completely different point. Those red lines were not addressed in the text’” (2014, Dec 13). By referencing the colonial history of certain countries, Nijar offers a reason that less privileged nations may not be able to do as much for the climate as more privileged nations — a reason for which some of these more privileged nations are responsible.

Another significant use of historical allusion that emerged in the data set is to put the current climate situation into historical perspective. For example, for the *New York Times*, Jolly states that June 2003 was “the hottest since at least 1540, the year King Henry VIII discarded his fourth wife, Anne of Cleves” (2014, Dec 08) and Pierre-Louis explains that “The last time the atmosphere contained as much carbon dioxide as it does now, birdlike dinosaurs roamed what was then a verdant landscape” (2019, Jan 23). Alluding to such distant historical (even seemingly ancient) events helps a reader to understand the degree to which the current climate situation is unprecedented. Such allusions also comment on how our period of history may be viewed from

the future: “A hundred years from now, people may well remember the 1990's not as the decade of the Internet's spread or the Dow's ascension but as the years when global temperatures began spiking upward” (McKibben, *New York Times*, 1999, Sept 04). This example of allusion suggests that climate change may end up being such a historically significant and critical event that its importance will be greater than something as influential as the internet.

Here, both the *New York Times* and *Fox News* allude to well-known figures or events in order to make associations in the reader's mind. Most common are cultural references relevant to the time, literary references, and historical references. The *New York Times* alludes to tragic historical moments or events which can have an emotional impact on a reader. Also notable in the *New York Times* are allusions to remote or even ancient history, which provides a greater perspective for the current climate situation and the degree to which it is unprecedented.

Analysis on Media Framing and Rhetorical Devices

In this paper, I have examined the use of rhetorical devices in the media. Through a qualitative content analysis of articles from the *New York Times* and *Fox News* over a 25 year period, I have found that the most prevalent uses of imagery either help a reader visualize or make sense of complex or abstract data or concepts such as graphs depicting global temperatures or serve the purpose of illustrating the beauty of the natural world, its destruction, or in some instances, both of these things. Personification of the natural world is common, and it is often personified as a life-supplying figure, as an underdog or victim at our own hands, or more recently, as an aggressor which is capable of bringing death or misfortune to earth's inhabitants. Congeries are most common when a journalist is conveying the large amount of weather chaos that has been brought about by globally rising temperatures. They are also used to the opposite effect, to describe instances of cold weather in order to discredit the notion that the planet is

warming. Congeries have become more frequent in the data set as time passes, perhaps corresponding to the increasing frequency of these extreme weather events as the climate situation worsens. Recently, congeries have also described more general and large-scale effects of global warming as the threats have become potentially globally catastrophic. In this data set, *Fox News* tends to use the same examples of congeries as the *New York Times* does so in an ironic or derisive rather than sincere or concerned way. Both the *New York Times* and *Fox News* use congeries to explain who will be affected by climate change and how. Metaphor and simile are used to help readers with limited scientific knowledge understand the science behind climate change and are often interpretive shortcuts to simplify or dramatize natural or scientific concepts. Metaphors of irregularity or ‘ups and downs’ are commonly used to convey the irregularity and uncertainty of climate change science. Other metaphors provide insight into the politics surrounding climate change. In this data set, *Fox News* tends to use metaphors to disparage environmentalists. Conceptual metaphors depict climate change as a war (or at times, even a nuclear war) which we are fighting that leaves behind casualties, loss, and destruction. Allusion to well-known figures or events, help to make connections in the reader’s mind. The most common types of allusion are timely cultural references, references to literature, and references to real historical events or figures. Allusions to some of history’s darker moments are used for jarring, emotional effects and allusions to very distant history puts the current climate situation into historical perspective, helping a reader to understand the degree to which the current climate situation is unprecedented.

Metaphor and simile were by far the most common rhetorical devices that were used in the data set. This may be due to the fact that they can be used for both stylistic effects as well as for explaining scientific concepts, which is often necessary in articles about climate change.

Conceptual metaphors were also very common in the data set, though this is likely due to the repetition of phrases such as “battle climate change,” “fight climate change,” “combat climate change,” etc. The most notable change in rhetorical devices over time is in the use of congeries, which become more catastrophic and broad as time goes on, and in personification, which becomes more focused on the earth as an adversary than a victim as time goes on. This may be because of the worsening nature of climate change, and the increasing frequency of extreme weather events that have highly detrimental effects on many regions. The most obvious difference between the rhetorical devices that were used by the *New York Times* and the rhetorical devices that were used by *Fox News* is not necessarily in which devices were used, but rather in the way that a given device was used and to what effect. One example of this is in how *Fox News* may appear to be presenting congeries in a way that is similar to how the *New York Times* is using congeries (such as to convey a multitude of extreme weather or document the effects of such extreme weather), but the apparent effect is instead one that undermines the idea of dangerous or unprecedented weather and instead suggests concerns over such weather is unfounded and not necessary.

Conclusion

Further research may conduct a similar rhetorical content analysis with a much larger data set. This larger data set could include a greater number of media publications from countries other than the United States which would be useful for a comparison of how the news sources of different nations have written about climate change over time. A larger data set could also include a variety of different mediums in addition to print articles, such as newscasts, documentaries, or speeches which would benefit a comparison of how climate change is discussed through various platforms and in different formats. Continuing research may also seek

to address the research questions from this paper in a quantitative way. Descriptive research could examine a data set of rhetorical devices quantitatively, and focus more heavily on the frequency of each instance of a certain rhetorical device. Each instance could be tracked and graphed in order to show more precisely which rhetorical devices the media uses to communicate information about climate change, how the rhetorical devices have changed over time, and how rhetorical devices differ between publications with different political leanings.

Scientists agree on the urgency of fighting climate change, and the media has a duty to convey this urgency to the public. Using rhetorical devices is one of the primary ways journalists can both explain the science behind climate change, and perhaps even more importantly, help the public to understand why it is so important to take action against climate change. It is not yet too late to address the many threats to our planet due to climate change. However, we have already been aware of climate change and what we can do to mitigate it for decades, and if we continue to deal with the issue at such a glacial pace, the consequences will be enormous.

Reference List

- Antilla, L. (2005). Climate of scepticism: US newspaper coverage of the science of climate change. *Global environmental change*, 15(4), 338-352.
- Associated Press. (2004, Sept 24). Calif. Passes World's Strictest Car Emissions Rules. *Fox News*. Retrieved from <https://www.foxnews.com/story/calif-passes-worlds-strictest-car-emissions-rules>
- Associated Press. (2009, May 27). Climate-Change 'Time Bomb' Delayed, Scientists Find. *Fox News*. Retrieved from <https://www.foxnews.com/story/climate-change-time-bomb-delayed-scientists-find>
- Associated Press. (2019, April 08). Global warming is shrinking glaciers faster than we thought. *Fox News*. Retrieved from <https://www.foxnews.com/science/global-warming-is-shrinking-glaciers-faster-than-we-thought>
- Associated Press. (2004, Nov 14). Report: Global Warming a Real Phenomenon. *Fox News*. Retrieved from <https://www.foxnews.com/story/report-global-warming-a-real-phenomenon>
- Associated Press. (2004, Dec 15). Spring Coming Earlier Than It Used To. *Fox News*. Retrieved from <https://www.foxnews.com/story/spring-coming-earlier-than-it-used-to>
- Baker, Peter. (2009, Dec 19). Compromising on 2 Issues, Obama Gets Partial Wins. *New York Times*. Retrieved from <https://www.nytimes.com/2009/12/20/us/politics/20obama.html?searchResultPo>

- Bell, A. (1994). Media (mis)communication on the science of climate change. *Public Understanding of Science*, 3(3), 259-275. doi 10.1088/0963-6625/3/3/002
- Boykoff, M. T. (2007). Flogging a dead norm? Newspaper coverage of anthropogenic climate change in the United States and United Kingdom from 2003 to 2006. *Area*, 39(4), 470-481.
- Broder, John M. (2009, Dec 16). Poor and Emerging States Stall Climate Negotiations. *New York Times*. Retrieved from <https://www.nytimes.com/2009/12/17/science/earth/17climate.html?searchResultPosition=6>
- Browne, Malcolm W. (1994, Dec 20). Most Precise Gauge Yet Points to Global Warming. *New York Times*. Retrieved from <https://www.nytimes.com/1994/12/20/science/most-precise-gauge-yet-points-to-global-warming.html?searchResultPosition=2>
- Brüggemann, M., & Engesser, S. (2014). Between consensus and denial: Climate journalists as interpretive community. *Science Communication*, 36(4), 399-427.
doi:10.1177/1075547014533662
- Carvalho, A., & Burgess, J. (2005). Cultural circuits of climate change in UK broadsheet newspapers, 1985–2003. *Risk Analysis: An International Journal*, 25(6), 1457-1469.
- Clapp, Philip E. (1999, Nov 04). America Must Act on Global Warming. *New York Times*. Retrieved from <https://www.nytimes.com/1999/11/04/opinion/IHT-america-must-act-on-global-warming.html?searchResultPosition=1>

- Blanton, Dana. (2009, Dec 17). Fox News Poll: Majority of Americans Don't See Global Warming As Crisis. *Fox News*. Retrieved from <https://www.foxnews.com/story/fox-news-poll-majority-of-americans-dont-see-global-warming-as-crisis>
- Davenport, Coral. (2014, Dec 13). Nations Plod Forward on Climate Change Accord. *New York Times*. Retrieved from <https://www.nytimes.com/2014/12/14/world/climate-change-summit-meeting-in-lima.html?searchResultPosition=15>
- Dean, Cornelia. (2004, Dec 21). As the Seas Warm, Algae Help Some Coral Stand Up to the Heat. *New York Times*. Retrieved from <https://www.nytimes.com/2004/12/21/science/as-the-seas-warm-algae-help-some-coral-stand-up-to-the-heat.html?searchResultPosition=2>
- Dean, Cornelia. (2004, Nov 23). Earth's Uncanned Crusaders: Will Sardines Save Our Skin? *New York Times*. Retrieved from <https://www.nytimes.com/2004/11/23/science/earth/earths-uncanned-crusaders-will-sardines-save-our-skin.html?searchResultPosition=19>
- Fahnestock, J. (2003). *Rhetorical figures in science*. New York: Oxford Univ. Press.
- Fahy, D., & Nisbet, M. C. (2011). The science journalist online: Shifting roles and emerging practices. *Journalism*, 12(7), 778-793.
- French, Howard W. (2004, Nov 9). A Melting Glacier in Tibet Serves as an Example and a Warning. *New York Times*. Retrieved from <https://www.nytimes.com/2004/11/09/science/earth/a-melting-glacier-in-tibet-serves-as-an-example-and-a-warning.html?searchResultPosition=20>
- Fox News. (2014, Oct 28). Weather Channel founder blasts climate change. *Fox News*. Retrieved from <https://www.foxnews.com/transcript/weather-channel-founder-blasts-climate-change>

- Friedman, Thomas L. (2009, Dec 19). Off to the Races. *New York Times*. Retrieved from <https://www.nytimes.com/2009/12/20/opinion/20friedman.html?searchResultPosition=11>
- Gabriel, Trip. (2019, May 24). Climate Change Is Catching On With Voters. Why Isn't Jay Inslee? *New York Times*. Retrieved from <https://www.nytimes.com/2019/05/24/us/politics/jay-inslee-climate-change.html?searchResultPosition=2>
- Garcia, Victor. (2019, May 13). Jesse Watters: Dems talk up 'global warming hysteria' because it 'makes them feel like they are saving the world'. *Fox News*. Retrieved from <https://www.foxnews.com/politics/jesse-watters-dems-global-warming-bill-nye>
- Gibbs, R. W., & Colston, H. L. (2012). *Interpreting Figurative Meaning*. Cambridge: Cambridge University Press.
- Gillis, Justin. (2014, Dec 23). Restored Forests Breathe Life Into Efforts Against Climate Change. *New York Times*. Retrieved from <https://www.nytimes.com/2014/12/24/science/earth/restored-forests-are-making-inroads-against-climate-change-.html?searchResultPosition=4>
- Gutfeld, Greg. (2009, Dec 14). More Fun With Climate Change Data. *Fox News*. Retrieved from <https://www.foxnews.com/story/more-fun-with-climate-change-data>
- Hakim, Danny. (2004, Dec 09). Steering California's Fight on Emissions. *New York Times*. Retrieved from <https://www.nytimes.com/2004/12/09/business/steering-californias-fight-on-emissions.html?searchResultPosition=7>
- Hall, S., Hobson, D., Lowe, A., & Willis, P. (Eds.). (2003). *Culture, media, language: working papers in cultural studies, 1972-79*. Routledge.

- Hart, P. S., & Nisbet, E. C. (2012). Boomerang effects in science communication: How motivated reasoning and identity cues amplify opinion polarization about climate mitigation policies. *Communication Research*, 39(6), 701-723.
- Jolly, David. (2014, Dec 08). Heat Waves in Europe Will Increase, Study Finds. *New York Times*. Retrieved from <https://www.nytimes.com/2014/12/09/world/europe/global-warming-to-make-european-heat-waves-commonplace-by-2040s-study-finds.html?searchResultPosition=5>
- Kanter, James. (2009, Dec 20). An Air of Frustration for Europe at Climate Talks. *New York Times*. Retrieved from <https://www.nytimes.com/2009/12/21/world/europe/21scene.html?searchResultPosition=5>
- Kanter, James. (2009, Dec 22). E.U. Blames Others for 'Great Failure' on Climate. *New York Times*. Retrieved from <https://www.nytimes.com/2009/12/23/world/europe/23iht-climate.html?searchResultPosition=3>
- Koprowski, Gene J. (2009, Dec 18). Czech President Klaus: Global Warming Not Science, but a 'New Religion. *Fox News*. Retrieved from <https://www.foxnews.com/science/czech-president-klaus-global-warming-not-science-but-a-new-religion>
- Latour, B., & Porter, C. (2018). *Down to Earth: Politics in the New Climatic Regime*. Cambridge, UK ; Medford, MA, USA: Polity.
- Latour, B., & Porter, C. (1994). *We have never been modern*. Cambridge, MA: Harvard University Press.

- Maibach, E. W., Nisbet, M., Baldwin, P., Akerlof, K., & Diao, G. (2010). Reframing climate change as a public health issue: an exploratory study of public reactions. *BMC public health*, 10(1), 299.
- McKibben, Bill. (1999, Sept 04). Indifferent to a Planet in Pain. *New York Times*. Retrieved from <https://www.nytimes.com/1999/09/04/opinion/indifferent-to-a-planet-in-pain.html?searchResultPosition=8>
- Military.com. (2014, Oct 14). Army Braces for Global Warming Impacts on Bases. *Fox News*. Retrieved from <https://www.foxnews.com/us/army-braces-for-global-warming-impacts-on-bases>
- Milloy, Steven. (2001, June 10). Bush Push for Son of Kyoto Is Misguided. *Fox News*. Retrieved from <https://www.foxnews.com/story/bush-push-for-son-of-kyoto-is-misguided>
- Milloy, Steven. (2001, April 04). Global Warming's Dirty New Secret. *Fox News*. Retrieved from <https://www.foxnews.com/story/global-warmings-dirty-new-secret>
- Milloy, Steven. (2001, Dec 07). When Environmental and Political Science Clash. *Fox News*. Retrieved from <https://www.foxnews.com/story/when-environmental-and-political-science-clash>
- Morton, T. A., Rabinovich, A., Marshall, D., & Bretschneider, P. (2011). The future that may (or may not) come: How framing changes responses to uncertainty in climate change communications. *Global Environmental Change*, 21(1), 103-109.
- Nisbet, M. C. (2009). Communicating climate change: Why frames matter for public engagement. *Environment: Science and policy for sustainable development*, 51(2), 12-23.
- O. Hoegh-Guldberg, D. Jacob, M. Taylor, M. Bindi, S. Brown, I. Camilloni, A. Diedhiou, R. Djalante, K. Ebi, F. Engelbrecht, J. Guiot, Y. Hijikawa, S. Mehrotra, A. Payne, S. I.

- Seneviratne, A. Thomas, R. Warren, G. Zhou, 2018, Impacts of 1.5°C Global Warming on Natural and Human Systems. In: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [V. Masson-Delmotte, P. Zhai, H. O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J. B. R. Matthews, Y. Chen, X. Zhou, M. I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, T. Waterfield (eds.)]. In Press.
- O'Neill, S. J., Boykoff, M., Niemeyer, S., & Day, S. A. (2013). On the use of imagery for climate change engagement. *Global environmental change*, 23(2), 413-421.
- O'Reilly, Bill. (2014, May 19). Bill O'Reilly: Climate change chaos. Fox News. Retrieved from <https://www.foxnews.com/transcript/bill-oreilly-climate-change-chaos>
- Passell, Peter. (1994, Sept 08). Economic Scene; A study says global warming may help U.S. agriculture. *New York Times*. Retrieved from <https://www.nytimes.com/1994/09/08/business/economic-scene-a-study-says-global-warming-may-help-us-agriculture.html?searchResultPosition=3>
- Peters, H. P. (2013). Gap between science and media revisited: Scientists as public communicators. *Proceedings of the National Academy of Sciences*, 110(Supplement 3), 14102-14109.
- Pierre-Louis, Kendra. (2019, Jan 23). As Climate Warms, Plants Will Absorb Less CO₂, Study Finds. *New York Times*. Retrieved from <https://www.nytimes.com/2019/01/23/climate/plants-co2-climate-change.html?searchResultPosition=6>

- Poortinga, W., Spence, A., Whitmarsh, L., Capstick, S., & Pidgeon, N. F. (2011). Uncertain climate: An investigation into public scepticism about anthropogenic climate change. *Global environmental change*, 21(3), 1015-1024.
- Rahmstorf, S. (2004). The climate sceptics. *Weather catastrophes and climate change*, 76-83.
- Ramos, R. L., & Carvalho, A. (2008). Science as rhetoric in media discourses on climate change.
- Re, Greg. (2019, March 18). Bill de Blasio, pitching \$10B climate change plan, blames global warming for Hurricane Sandy. *Fox News*. Retrieved from <https://www.foxnews.com/politics/de-blasio-pitching-10b-climate-change-plan-blames-global-warming-for-hurricane-sandy>
- Revkin, Andrew C. (2004, Dec 15). Eskimos Seek to Recast Global Warming as a Rights Issue. *New York Times*. Retrieved from <https://www.nytimes.com/2004/12/15/world/americas/eskimos-seek-to-recast-global-warming-as-a-rights-issue.html?searchResultPosition=1>
- Revkin, Andrew C. & Broder, John M. (2009, Dec 19). A Grudging Accord in Climate Talks. *New York Times*. Retrieved from <https://www.nytimes.com/2009/12/20/science/earth/20accord.html?searchResultPosition=14>
- Schmall, Tyler. (2019, April 23). Majority of Americans think climate change will cause humanity's extinction. *Fox News*. Retrieved from <https://www.foxnews.com/science/majority-of-americans-think-climate-change-will-cause-humanitys-extinction>
- Schneider, J. (2010). Making space for the “nuances of truth”: Communication and uncertainty at an environmental journalists’ workshop. *Science Communication*, 32(2), 171-201.

Schuldt, J. P., Konrath, S. H., & Schwarz, N. (2011). “Global warming” or “climate change”?

Whether the planet is warming depends on question wording. *Public Opinion Quarterly*, 75(1), 115-124.

Schwartz, John & Smith, Mitch. (2019, May 15). In Flood-Hit Midwest, Mayors See Climate

Change as a Subject Best Avoided. *New York Times*. Retrieved from

<https://www.nytimes.com/2019/05/15/us/midwest-flooding-climate-change.html?searchResultPosition=5>

Springer, Dan. (2019, April 02). Global warming bringing you down? Washington state college

offers course on 'eco-anxiety,' 'climate grief'. *Fox News*. Retrieved from

<https://www.foxnews.com/us/global-warming-bringing-you-down-washington-state-offers-course-on-eco-anxiety-climate-grief>

Stevens, William K. (1999, May 18). Climate Experts' New Worry: Altered Air Patterns. *New*

York Times. Retrieved from [https://www.nytimes.com/1999/05/18/science/climate-](https://www.nytimes.com/1999/05/18/science/climate-experts-new-worry-altered-air-patterns.html?searchResultPosition=6)

[experts-new-worry-altered-air-patterns.html?searchResultPosition=6](https://www.nytimes.com/1999/05/18/science/climate-experts-new-worry-altered-air-patterns.html?searchResultPosition=6)

Stevens, William K. (1994, Feb 08). Deeper Look at Cold, Snowy Winter Reveals Balmier

Future. *New York Times*. Retrieved from

<https://www.nytimes.com/1994/02/08/science/deeper-look-at-cold-snowy-winter-reveals-balmier-future.html?searchResultPosition=7>

Stevens, William K. (1999, Nov 17). Thinning Sea Ice Stokes Debate on Climate. *New York*

Times. Retrieved from [https://www.nytimes.com/1999/11/17/us/thinning-sea-ice-stokes-](https://www.nytimes.com/1999/11/17/us/thinning-sea-ice-stokes-debate-on-climate.html?searchResultPosition=2)

[debate-on-climate.html?searchResultPosition=2](https://www.nytimes.com/1999/11/17/us/thinning-sea-ice-stokes-debate-on-climate.html?searchResultPosition=2)

Stevens, William K. (1999, Nov 07). Travel Advisory: Correspondent's Report; Altered

Itineraries As the World Heats Up. *New York Times*. Retrieved from

- <https://www.nytimes.com/1999/11/07/travel/travel-advisory-correspondent-s-report-altered-itineraries-as-the-world-heats-up.html?searchResultPosition=4>
- Stevens, William K. (1994, May 24). Violent Weather Battering Globe In Last 2 Years Baffles Experts. *New York Times*. Retrieved from <https://www.nytimes.com/1994/05/24/science/violent-weather-battering-globe-in-last-2-years-baffles-experts.html?searchResultPosition=4>
- Stevens, William K. (1999, Dec 19). 1999 Continues Warming Trend Around Globe. *New York Times*. Retrieved from <https://www.nytimes.com/1999/12/19/world/1999-continues-warming-trend-around-globe.html?searchResultPosition=8>
- Trumbo, C. (1996). Constructing climate change: claims and frames in US news coverage of an environmental issue. *Public understanding of*
- Ungar, S. (2000). Knowledge, ignorance and the popular culture: climate change versus the ozone hole. *Public Understanding of Science*, 9(3), 297-312.
- Wagenseil, Paul. (2009, June 03). Climate-Change Talks Move Into Next Phase. *Fox News*. Retrieved from <https://www.foxnews.com/science/climate-change-talks-move-into-next-phase>
- Weiner, Jonathan. (1994, Oct 23). Winter Forecast: Frigid. But Don't be Fooled. *New York Times*. Retrieved from <https://www.nytimes.com/1994/10/23/magazine/winter-forecast-frigid-but-don-t-be-fooled.html?searchResultPosition=2>
- Weingart, P., Engels, A., & Pansegrau, P. (2000). Risks of communication: discourses on climate change in science, politics, and the mass media. *Public understanding of science*, 9(3), 261-284.

Whitmarsh, L. (2009). What's in a name? Commonalities and differences in public understanding of “climate change” and “global warming”. *Public understanding of science*, 18(4), 401-420.

Yoon, Carol Kaesuk. (1994, June 21). Warming Moves Plants Up Peaks, Threatening Extinction. *New York Times*. Retrieved from <https://www.nytimes.com/1994/06/21/science/warming-moves-plants-up-peaks-threatening-extinction.html?searchResultPosition=15>