

Introduction: Critical Challenges in Communicating Climate Change

Juliet Pinto, Robert E. Gutsche, Jr. and Paola Prado

Language matters. In May 2019, *The Guardian*, a progressive news outlet in the United Kingdom, announced it was changing its “home style” of how to report on changes to global climates. Instead of ‘climate change,’ the website and newspaper reported, “the preferred terms are ‘climate emergency, crisis or breakdown’ and ‘global heating’ is favored over ‘global warming’, although the original terms are not banned” (Carrington, 2019a). In explaining the changes in approved terminology to be used in news reporting, *Guardian* editor Katharine Viner said, “We want to ensure that we are being scientifically precise, while also communicating clearly with readers on this very important issue” and that “[t]he phrase ‘climate change’, for example, sounds rather passive and gentle when what scientists are talking about is a catastrophe for humanity.”

Newsroom decisions to use terms such as “crisis,” “emergency,” “breakdown,” and others present new challenges for scholars seeking to understand the variables that impact mediated communication of changing climates and associated impacts around the world. Journalists must navigate not only the complex science around accelerating climate change, but also the politics, cultural shifts, technological innovations and commercial pressures that can influence publics’ reception of such information. As news organizations struggle to cover climate change in an era of shrinking newsrooms and politicized rhetoric, old assumptions and definitions of climate change as an activist issue, a purely scientific or environmental beat, or an event-driven issue must be revisited. So, too, must be scrutinized the machinations of power and hegemony, and the structural inequalities underlying how these issues are constructed, disseminated, and received.

And the scientific and political contexts surrounding climate change can also facilitate coverage that overwhelming frames it as a controversy or danger, use emotion-laden terms, or emphasize politics over information that can help communities build resiliency. Increasingly, dire scientific reports on worsening climate change continue to make international news, but with different emphases for various publics (or audiences, which *The Guardian* example highlights), understanding the potential to save the planet becomes complicated. The United Nations’ Intergovernmental Panel on Climate Change’s

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“Special Report on Global Warming of 1.5°C” outlined in stark detail the grave implications of warming just a fraction of a degree over the threshold of warming global temperature limit of 1.5°C, long considered the limit to stave off the worst outcomes for human and non-human species (IPCC, 2018). In 2019, the UN committee Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services released a report that one-eighth of all species on Earth are under threat of extinction, a stunning indictment of the devastation ever-increasing human populations are wreaking on the natural world and ecosystems they depend on for survival (IPBES, 2019).

In May 2019, the Earth’s “climate system sounded simultaneous alarms” (Samenow, 2019): the temperature in Russia’s Arctic region hit a record 84 C. During the same period, atmospheric carbon registered 415 ppm, far past the 350 ppm considered to be the limit for maintaining climate stability, and a concentration not seen in the historical record for three million years. A warming Arctic presents additional problems in terms of greenhouse gas release: stored methane, which warms the planet dozens of times more than carbon dioxide, is being discharged as the permafrost melts (Yumashev et al., 2019). It also can mean accelerating sea level rise, with new projections indicating much higher levels by the end of the twenty-first century (Bamber, Oppenheimer, Kopp, Aspinall, & Cooke, 2019).

Even these data, to some, are shocking and startling, while to others the simple meaning – the Earth is heating up – leaves them looking to authorities who can explain the context, predict the outcomes, and simplify the science. Hence the problem for environmental communicators. Just who should and can explain the science? Who can create the context? Who can navigate the contestation about climate change and potential solutions?

Meanwhile, the impacts of a warming Earth as greenhouse gases trap heat are perceptible in most regions of the world in various ways. Eighteen of the 19 hottest years on record have occurred since 2000, with 2014–2018 the five warmest on record (Suskind, Schmidt, Lee, & Iredell, 2019). Extreme heat episodes are expected to dramatically increase in frequency. Land-based ice continues to melt – including rapidly retreating glaciers and reductions in continental snow cover – increasing sea level rise (Pittock, 2017).

While rising seas currently impact various coastal regions with flooding from high tides and more dangerous storm surge levels, as the rise accelerates particularly in the latter half of the twenty-first century, wide swaths of global populations will be affected (Nerem et al., 2018). And because warmer temperatures impact precipitation patterns, wetter weather and fluctuations in temperature can mean severe inland flooding: Scientists attributed some of the causes of the severe flooding in the US Midwest in March 2019 to climate change (Harrington, 2019), for instance. Drought conditions can also increase in frequency, spurring potential for wildfires, and public health officials have warned of the spread of vector-borne diseases, among other impacts. Globally, populations can expect many of these trends to continue for hundreds of years, regardless of emission reduction now. As Solomon, Plattner, Knutti, & Friedlingstein (2009, p. 1704) write:

The severity of damaging human-induced climate change depends not only on the magnitude of the change but also on the potential for irreversibility. [T]he climate change that takes place due to increases in carbon dioxide concentration is largely irreversible for 1,000 years after emissions stop.

Politics of Climate Change: Where Commerce Meets Culture

At the core of communicating issues of climate change, it has become hard to ignore just how human activities play outsized roles in greenhouse gas emissions (IPCC, 2018), yet this debate continues to play out amid a simultaneous global rise in populist governments that prioritize neoliberal futures to sustainable ones. Discourses that narrate what humans may have done, may be doing, and what we may do to turn the tide and, in the process, provide resources for the millions already negatively impacted by great heat, rising seas, polluted water, and toxic air can inject emotion, a sense of urgency, and a hurried tone to mediated content.

Journalists, public relations professionals, artists, and citizens must function along tightropes of discourse that can obfuscate scientific data and language, mired amid political and economic rhetoric designed to hide the man-made influence on global environmental change. One slip in the use of language can delegitimize or polarize those who strive to communicate dynamic conditions of complex systems, so that the messages of environmental needs and human conditions on a warming planet get lost in debate about energy costs, profit, death, and attempts to stave off inevitable change.

These voices, the least of which echoed from within the White House and peppered all over President Donald Trump's Twitter feed, like to complicate that which is already complex through resounding rebuttals to climate change that ignore the specifics of science in order to politicize and propagate divide that slows positive action to resist damaging human activity. In April 2019, for instance, Trump announced a "strong market economy" in the United States, in a statement that simultaneously ignored how an economy highly dependent on fossil fuels impacts climate change (Milman, 2019). "Environmental protection and economic prosperity go hand in hand," Trump said. He added:

A strong market economy is essential to protecting our critical natural resources and fostering a legacy of conservation. My administration is committed to being effective stewards of our environment while encouraging opportunities for American workers and their families.

Yet details matter when it comes to communicating the environment, who it affects, and how. The second article of the United Nations Framework Convention on Climate Change (UNFCCC, 1992, p. 5) calls for the prevention of further "dangerous anthropogenic interference with the climate system." However, as Mann (2009, p. 4065) noted, "the devil is in the details," when it comes to human impacts on global warming of the planet's climate; the very use of the term "dangerous

anthropogenic interference” begs the question, for example, “Dangerous to whom?” What amounts to the tacit acceptance of some level of risk implies that risk will not be shared equally among all nations and people, or other life on earth.

Rather than reduce carbon emissions, the world’s largest greenhouse gas polluters have done relatively little to meaningfully implement policy outcomes that sharply reduce carbon emissions. In the United States, the case is particularly egregious, as global warming and climate change have been politicized to the extreme, which is not the case elsewhere (Van der Linden, Leiserowitz, Rosenthal, & Maibach, 2017). This was not an accident; as climate change began to garner more news coverage in the 1980s, lobbyists and industry actors made concerted efforts to emphasize the scientific uncertainty, undermine scientific legitimacy, and sway public opinion (Bolsen & Shapiro, 2018; Mann, 2017; Oreskes & Conway, 2011).

At the same time, lobbyist and corporate groups targeted news media with a demand that reporters follow professional norms of balanced journalism and include opposing views in order to gain prominent access to mediated content for so-called “climate deniers” as sources on a par with climate scientists. This tactic prompted widespread “balance as bias” through much reporting on climate, and therefore delegitimized the idea of a strong scientific consensus that climate change is real and that the acceleration of impacts observed in recent decades is largely human-caused (Boykoff & Boykoff, 2004).

Such denialism gained significant traction. Scientists and experts in climate change have been repeatedly targeted and vilified by right-wing and fossil fuel industry groups to undermine their credibility (McKie, 2012; Qui, 2018; Waldman & Heikkinen, 2018), and some working for government organizations have been pressured to censor reports, particularly those mentioning climate change or linking it to human causes (Green, 2019; Shogren, 2019). By 2017, Trump declared the United States would withdraw from the 2015 Paris climate accord, and one of his presidential campaign promises called for renewed commitment to US coal production. Such political maneuvering in the United States took a toll on public awareness about the seriousness of climate change and the broad scientific consensus of the role of human activity in global warming, as well as on public trust in the scientific evidence (Lee, Markowitz, Howe, Ko, & Leiserowitz, 2015).

However, those trends may be reversing. In early 2019, public opinion polling on climate change showed most Americans were not only aware, but were “alarmed by it” (Gustafson, Leiserowitz, & Maibach, 2019). And yet, while the United States case remains an outlier in terms of denialism at the highest political levels, scholars have noted similarities with the “small pockets of climate denial that exist in social democratic and political progressive nations” (Walters, 2018, p. 169), particularly in terms of the denials’ demographics of conservative white males (Jylhä, Cantal, Akrami, & Milfont, 2016). The election of Jair Bolsonaro to the presidency of Brazil in October 2018 signaled one such instance of a sharp turn toward denialism led by conservatives committed to neoliberal policies that privilege large-scale extractive and agro-industrial projects to the detriment of environmental protection of the Amazonian rainforest.

Public opinion, politics, and scientific legitimacy can clash in other ways. Particularly in the global South, research in public opinion has observed consistently

high levels of awareness and alarm about climate change (Lee et al., 2015), even as carbon outputs from many of these countries barely contribute to the total concentration of greenhouse gases. However, politicization persists, particularly in international policy realms. A graphic published in the 2001 IPCC assessment report about the causes and consequences of climate change that came to be known as “Burning Embers” (Smith et al., 2009) showed degrees of risk as temperatures increased. The graphic was dropped from the 2007 report, according to news reports, because some scientists thought it was too “vague” or “subjective,” and some governments found it “unnerving”; the information was eventually published in a journal by the scientists who authored the original report (Revkin, 2009).

The Scholarly Challenge: Capturing Complexities of Climate Communication

Intersections of public policy, media messages, and global publics make climate change communication a topic of scholarly interest across disciplines, from anthropologists who seek to understand coastal population adaptation strategies, to zoologists who wish to raise public awareness of the challenges species under stress face from impacts. The robust body of research on climate change communication and that related to its various processes is testament to this. Discussions about how global publics understand climate change, the uneven distribution of risk, the mechanisms of power and politics scaled across global, national and local levels, mediated communication and its roles of power and persuasion become important arenas to unpack (Gutsche & Shumow, 2019).

The import of how climate change is presented in mediated contexts cannot be understated. Mediated content is often the primary source of information about climate change, as well as other scientific and environmental issues, for general publics (Boykoff & Rajan, 2007). Therefore, understanding how media industries, journalists, advertisers, public relations professionals, academics, governments, and scientists communicate climate change is of utmost importance. Interdisciplinary research offers a critical, comparative view of twenty-first century communication about climate change and provides critical examinations of the interfaces of mediated expressions communicated to the public through news reports, artistic expressions, scholarly work, and examinations of voice and policy (Shumow & Gutsche, 2016).

Comparative international perspectives are also necessary – and challenging in their own ways – to complicate the layered meanings of how communities, nations, and individuals across the world interact with messages about our changing planet. It can be problematic, however, to attempt to capture this global dimension of research, as news coverage of climate-related events, for example, can present a developed-world perspective (Gurwitt, Malkki, & Mitra, 2017). The majority of studies on climate change and media have traditionally focused on English-language Western media, in particular those in the United States and Europe (e.g., Boykoff, 2007; Carvalho, 2005; Carvalho & Burgess, 2005; Johns & Jacquet, 2018; Lanvers & Coleman, 2017; Painter & Gavin, 2015; Taylor & Nathan, 2002).

Research that does examine non-English language media often focuses on case studies within particular national media systems (e.g., Billett, 2010; Carvalho &

Pereira, 2008; Gkiouzepas & Botetzagias, 2017; Horta, Carvalho, & Schmidt, 2017; Lyytimäki & Tapio, 2009; O'Neill, Williams, Kurz, Wiersma, & Boykoff, 2015; Peters & Heinrichs, 2008; Tsekos & Matthopoulos, 2008; Uzelgun & Castro, 2017; Waisbord & Peruzzotti, 2009). Others have done comparative studies that include non-English language media coverage of climate change (e.g., Brossard, Shanahan, & McComas, 2004; Brüggemann & Engesser, 2014; Lück, Wessler, Wozniak, & Lycarião, 2018; Pinto & Vigon, 2014, 2018; Schmidt, Ivanova, & Schäfer, 2013; Takahashi & Pinto, 2016; Takahashi, Pinto, Chavez, & Vigon, 2018; Zamith, Pinto, & Villar, 2013). The growing comparative body of research from diverse perspectives is a promising sign. More internationally comparative work is necessary to better understand the underlying causes, associations and variables at play when climate change is communicated across mediated channels and to global publics claims, particularly in order to understand the power structures and nuances that influence processes.

Communication scholars also face challenges in explaining the controversy and violence of language and actions that correlate with environmental change, policy, and economic influences of a warming and energy-hungry planet (Hansen, 2010; Lester & Hutchins, 2012; Pinto, Prado, & Tirado, 2017; Stibbe, 2015). As O'Brien (2017) writes:

Climate change has been created by generations of decisions from privileged people who seek to make themselves safe and comfortable, who contribute disproportionately to the problem of climate change while tending to avoid its worse effects. (p. 2)

Scholars who address questions of power within environmental change will likely create detractors, if the questions and answers attributed to climate change attack power systems too harshly. Still, critical scholarship that attacks power systems of and within communication structures (i.e., Gutsche, Jacobson, Pinto, & Michel, 2017) is necessary to pose potential problems of tomorrow by analyzing those of today.

In this Volume: Climate Change from the News to the Arts

The acceleration of massive global climate change provides a nexus for the examination of power, political rhetoric, science communication, and sustainable development. This edited volume seeks to understand how government policies, environmental news reports, corporate messages, and social influences communicate the complexities of climate change to the public. In particular, the authors examine the roles that journalism, entertainment, and strategic messaging play in mediating meanings of science, health, economy, and sustainable solutions, and brings together scholars from a variety of disciplines and research thematic areas, methodological approaches and theoretical perspectives.

Broadly, the volume focuses on three areas of study regarding climate change: health, news, and the arts. We begin with a preface from Dr Hollie Smith, who discusses the importance of exposing the underlying structural inequalities and

social and political injustices that often overlay not only how climate change is communicated, but who is most vulnerable to the worst of its impacts.

The first section of the volume presents chapters that examine public health implications and community health in an age of accelerating climate change. Moses Shumow's chapter examines the narratives from mainstream media, social media channels and official responses to the dumping of storm debris in African-American neighborhoods in Florida's Miami-Dade County in the aftermath of Hurricane Irma. Shumow probes the institutional and citizen responses in the wake of devastating storms and how issues of race and historic geographic marginalization were either acknowledged or ignored, as the problems associated with climate change grew ever more acute and pressing. Next, Jessica Myrick's chapter compared strategies focused on climate change as a health problem rather than an environmental one to understand how and why some messages become persuasive. Myrick examined a social media context where users often encounter persuasive climate change messages, and found variables operating at individual and at community levels have significant import for theory and practice.

The following section examines news production of climate change across media systems in Canada and in Ghana, as a means of providing comparative case studies for the social construction of mediated information. Shelley Boulianne and Stephanie Belland examined information sources used in climate change education, with particular emphasis on trust and expertise of scientific voices in news discourse. Based on a survey of citizens in Alberta, Canada and a content analysis of news media, the researchers provide a useful case study of public trust in scientists, the mediated construction of scientific legitimacy, and implications for the public's knowledge, level of concern, and beliefs in the need for action on this issue. Modestus Fosu, Timothy Quashigah, and Paulina Kuranchie also used mixed-methods to approach discussion of climate change in Ghanaian online media. Combining content analyses of online news with in-depth interviews of opinion leaders, the authors present their findings in the context of potentials for agenda setting.

Susan Jacobson, Juliet Pinto, Robert E. Gutsche, Jr, and Allan Wilson examine local news coverage of climate change and sea level rise in South Florida to better understand implications for local understandings of direct impacts. They focus on the case study of regional news about sea level rise in Miami, often called "Ground Zero" for the United States' vulnerability to sea level rise, with billions of dollars of assets potentially at risk to rising seas. In the face of a vacuum of national leadership on climate change – and in various cases, state leadership as well – local municipalities are often left with the burden of dealing with floodwaters on city streets, malfunctioning septic tanks or storm water systems, cleanup of debris, and other impacts related to sea level rise. The authors ask does this translate into more local coverage, and if so, in what ways? What are the implications for public understanding and policy outcomes?

The third section of the book presents research in the arts and humanities and climate change. Floribert Patrick C. Endong employs semiotic analysis of environmental cartoons in Nigerian news as a means to explore social and political activism and deepen understanding of the visual rhetoric that surrounds political

discussion of environmental news. Ronald Rice, Stacy Rebich-Hespanha and Huiru (Jennifer) Zhu conducted a broad search of artistic and entertainment representations (including movies, museum or art exhibitions, performance arts, music, etc.) of the environment in the context of climate change messages, campaigns, news, or studies in order to identify a central set of primary topics based on a range of examples across a variety of sources. They argue for more systematic approach to interpretations of mediated representations of climate change, as well as more study of the synergies among art, media, and science.

It is our hope that this edited volume presents a step forward toward more comprehensive, interdisciplinary study of climate change communication, as well as opportunities to engage with journalistic practices as they shift to address the reality of accelerating climate change. All the chapters present new knowledge along with opportunities to deepen scholarly understanding of mediated communication about climate change. We welcome the opportunity to join global dialogues on climate change that examine how, when, and why the topic enters mediated arenas and the discussions that surround its presentations.

Beyond the decisions about reshaping language, *The Guardian* also announced it will include the atmospheric carbon count adjacent to daily weather information – along with historical data for comparison – as a means to educate and raise public awareness of the role of human activity impacts on global warming (Carrington, 2019b). Other news outlets are also making public plans to substantially upgrade their climate coverage. *The Nation* and *Columbia Journalism Review* unrolled plans to “dramatically improve the media’s coverage of the most urgent story of our time” (Hertsgaard & Pope, 2019) by September 2019, which signaled a newfound determination to dedicate resources, convene events, generate focused news coverage and train journalists, and more. In a keynote speech delivered to launch the initiative at Columbia University Graduate School of Journalism in April 2019, veteran US journalist Bill Moyers acknowledged the failure of the news media to report the true scale of the threat presented by climate disruption and reminded the audience that journalists share the responsibility “to tell the story so people get it” (Moyers, 2019).

Even as fluctuations in climate quicken in pace and usher in unimaginable challenges to the global environment we all share, the authors in this volume ask us to pause and consider how best to communicate the magnitude of the risk, and in so doing invite us to reflect upon our moral responsibility to do so.

The time is now to find new ways to tell the climate story.

References

- Bamber, J. L., Oppenheimer, M., Kopp, R. E., Aspinall, W. P., & Cooke, R. M. (2019). Ice sheet contributions to future sea-level rise from structured expert judgment. *Proceedings of the National Academy of Sciences*, 116(23), 11195–11200. doi:10.1073/pnas.1817205116
- Billett, S. (2010). Dividing climate change: Global warming in the Indian mass media. *Climatic Change*, 99, 1–16.

- Bolsen, T., & Shapiro, M. A. (2018). The US news media, polarization on climate change, and pathways to effective communication. *Environmental Communication, 12*(2), 149–163.
- 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*, 470–481.
- Boykoff, M. T., & Boykoff, J. M. (2004). Balance as bias: Global warming and the US prestige press. *Global Environmental Change, 14*(2), 125–136.
- Boykoff, M. T., & Rajan, S. R. (2007). Signals and noise: Mass-media coverage of climate change in the USA and the UK. *EMBO Reports, 8*(3), 207–211.
- Brossard, D., Shanahan, J., & McComas, K. (2004). Are issue-cycles culturally constructed? A comparison of French and American coverage of global climate change. *Mass Communication and Society, 7*, 359–377.
- Brüggemann, M., & Engesser, S. (2014). Between consensus and denial: Climate journalists as interpretive community. *Science Communication, 36*(4), 399–427.
- Carrington, D. (2019a). Why The Guardian is changing the language it uses about the environment. *The Guardian*, 17 May. Retrieved from <https://www.theguardian.com/environment/2019/may/17/why-the-guardian-is-changing-the-language-it-uses-about-the-environment>. Accessed on May 17, 2019.
- Carrington, D. (2019b). Why the Guardian is putting global CO₂ levels in the weather forecast. *The Guardian*, April 5. Retrieved from <https://www.theguardian.com/environment/2019/apr/05/why-the-guardian-is-putting-global-co2-levels-in-the-weather-forecast>. Accessed on May 24, 2019.
- Carvalho, A. (2005). Representing the politics of the greenhouse effect: Discursive strategies in the British media. *Critical Discourse Strategies, 2*, 1–29.
- Carvalho, A., & Burgess, J. (2005). Cultural circuits of climate change in UK broadsheet newspapers, 1985–2003. *Risk Analysis, 25*, 1457–1469.
- Carvalho, A., & Pereira, E. (2008). Communicating climate change in Portugal: A critical analysis of journalism and beyond. In A. Carvalho (Ed.), *Communicating climate change: Discourses, mediations and perceptions* (pp. 126–156). Braga, Portugal: Centro de Estudos de Comunicação e Sociedade, Universidade do Minho.
- Gkiouzepas, G., & Botetzagias, I. (2017). Climate change coverage in Greek newspapers: 2001–2008. *Environmental Communication, 11*(4), 490–514.
- Green, A. (2019). In Florida, a new governor speaks the words ‘climate change.’ *WLRN*, April 30. Retrieved from <https://www.wlrn.org/post/florida-new-governor-speaks-words-climate-change>. Accessed on May 16, 2019.
- Gurwitt, S., Malkki, K., & Mitra, M. (2017). Global issue, developed country bias: The Paris climate conference as covered by daily print news organizations in 13 nations. *Climatic Change, 143*(3–4), 281–296.
- Gutsche, R. E., Jr, Jacobson, S., Pinto, J., & Michel, C. (2017). Reciprocal (and reductionist?) newswork: An examination of youth involvement in creating local participatory environmental news. *Journalism Practice, 11*(1), 62–79.
- Gutsche, R. E., Jr, & Shumow, M. (2019). When local is national: An analysis of interacting journalistic communities in coverage of sea rise. *Journalism Studies, 20*(3), 442–462.
- Gustafson, A., Leiserowitz, A., & Maibach, E. (2019). Americans are increasingly ‘alarmed’ by global warming. *Climate Note*, February 12. Yale Program on Climate Change Communication. Retrieved from <https://climatecommunication.yale.edu/publications/americans-are-increasingly-alarmed-about-global-warming/>. Accessed on May 16, 2019.
- Hansen, A. (2010). *Environment, media and communication*. London: Routledge.
- Harrington, S. (2019). Did climate change cause the flooding in the Midwest and Plains? An unlucky combination of factors led to a record-breaking disaster. *Yale Climate*

- Connections*, April 2. Retrieved from <https://www.yaleclimateconnections.org/2019/04/did-climate-change-cause-midwest-flooding/>. Accessed on May 15, 2019.
- Hertsgaard, M., & Pope, K. (2019). Transforming the media's coverage of the climate crisis. *Columbia Journalism Review*, May 22. Retrieved from <https://www.cjr.org/watchdog/climate-crisis-media.php>. Accessed on May 24, 2019.
- Horta, A., Carvalho, A., & Schmidt, L. (2017). The hegemony of global politics: News coverage of climate change in a small country. *Society & Natural Resources*, 30(10), 1246–1260.
- IPBES. (2019). Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. Retrieved from <https://www.ipbes.net/document-library-catalogue/summary-policy-makers-global-assessment-report-biodiversity-ecosystem>. Accessed on May 16, 2019.
- IPCC. (2018). V. Masson-Delmotte, P. Zhai, H. O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, ... & T. Waterfield (Eds.), *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*. Retrieved from <https://www.ipcc.ch/sr15/>. Accessed on May 13, 2019.
- Johns, L. N., & Jacquet, J. (2018). Doom and gloom versus optimism: An assessment of ocean-related US science journalism (2001–2015). *Global Environmental Change*, 50, 142–148.
- Jylhä, K. M., Cantal, C., Akrami, N., & Milfont, T. L. (2016). Denial of anthropogenic climate change: Social dominance orientation helps explain the conservative male effect in Brazil and Sweden. *Personality and Individual Differences*, 98, 184–187.
- Lanvers, U., & Coleman, J. A. (2017). The UK language learning crisis in the public media: A critical analysis. *The Language Learning Journal*, 45(1), 3–25.
- Lee, T. M., Markowitz, E. M., Howe, P. D., Ko, C. Y., & Leiserowitz, A. A. (2015). Predictors of public climate change awareness and risk perception around the world. *Nature Climate Change*, 5(11), 1014.
- Lester, L., & Hutchins, B. (2012). The power of the unseen: Environmental conflict, the media and invisibility. *Media, Culture & Society*, 34(7), 847–863.
- Lück, J., Wessler, H., Wozniak, A., & Lycarião, D. (2018). Counterbalancing global media frames with nationally colored narratives: A comparative study of news narratives and news framing in the climate change coverage of five countries. *Journalism*, 19(12), 1635–1656.
- Lyytimäki, J., & Tapio, P. (2009). Climate change as reported in the press of Finland: From screaming headlines to penetrating background noise. *International Journal of Environmental Studies*, 66, 723–735.
- Mann, M. E. (2009). Defining dangerous anthropogenic interference. *Proceedings of the National Academy of Sciences*, 106(11), 4065–4066.
- Mann, M. E. (2017). Climate change: Al Gore gets inconvenient again. *Nature*, 547(7664), 400.
- McKie, R. (2012). Death threats, intimidation and abuse: climate change scientist Michael E. Mann counts the cost of honesty. *The Guardian*, March 3. Retrieved from <https://www.theguardian.com/science/2012/mar/03/michael-mann-climate-change-deniers>. Accessed on May 16, 2019.
- Milman, O. (2019). Trump issues Earth Day message without mentioning climate change. *The Guardian*, April 22. Retrieved from <https://www.theguardian.com/us-news/2019/apr/22/trump-earth-day-message-climate-change-strong-market-economy>. Accessed on May 17, 2019.
- Moyers, B. (2019). What if reporters covered the climate crisis like Edward R. Murrow covered the start of World War II? *Columbia Journalism Review*, May 22. Retrieved from <https://www.cjr.org/watchdog/bill-moyers-climate-change.php>. Accessed on May 29, 2019.

- Nerem, R. S., Beckley, B. D., Fasullo, J. T., Hamlington, B. D., Masters, D., & Mitchum, G. T. (2018). Climate-change-driven accelerated sea-level rise detected in the altimeter era. *Proceedings of the National Academy of Sciences*, 115(9), 2022–2025.
- O'Brien, K. J. (2017). *The violence of climate change: Lessons of resistance from nonviolent activists*. Washington, DC: Georgetown University Press.
- O'Neill, S., Williams, H. T., Kurz, T., Wiersma, B., & Boykoff, M. (2015). Dominant frames in legacy and social media coverage of the IPCC Fifth Assessment Report. *Nature Climate Change*, 5(4), 380.
- Oreskes, N., & Conway, E. M. (2011). *Merchants of doubt: How a handful of scientists obscured the truth on issues from tobacco smoke to global warming*. New York, NY: Bloomsbury Publishing.
- Painter, J., & Gavin, N. T. (2016). Climate skepticism in British newspapers, 2007–2011. *Environmental Communication*, 10(4), 432–452.
- Peters, H. P., & Heinrichs, H. (2008). Legitimizing climate policy: The “risk construct” of global climate change in the German mass media. *International Journal of Sustainability Communication*, 3, 14–36.
- Pinto, J., Prado, P., & Tirado, J. A. (2017). *Environmental news in South America: Conflict, crisis and contestation*. New York, NY: Springer.
- Pinto, J., & Vigon, M. (2014). Press freedom, democracy and climate change reporting in Latin America. *Hemispheres*, 23(Summer), 24–32.
- Pinto, J., & Vigon, M. (2018). Comparing South Florida Spanish-language and Cuban media coverage of sea level rise. In B. Takahashi, J. Pinto, M. Chavez & M. Vigon, (Eds.), *News Media Coverage of Environmental Challenges in Latin America and the Caribbean: Mediating Demand, Degradation and Development* (pp. 47–64). London: Springer.
- Pittock, A. B. (2017). *Climate change: Turning up the heat*. London: Routledge.
- Qui, L. (2018). The baseless claim that climate scientists are ‘driven’ by money. *The New York Times*, November 27. Retrieved from <https://www.nytimes.com/2018/11/27/us/politics/climate-report-fact-check.html>. Accessed on May 16, 2019.
- Revkin, A. (2009). Climate ‘embers’ burning brighter. *The New York Times*, February 23. Retrieved from <https://dotearth.blogs.nytimes.com/2009/02/23/warming-embers-burning-brighter/>. Accessed on May 15, 2019.
- Samenow, J. (2019). It was 84 degrees near the Arctic Ocean this weekend as carbon dioxide hit its highest level in human history. *The Washington Post*, May 14. Retrieved from https://www.washingtonpost.com/weather/2019/05/14/it-was-degrees-near-arctic-ocean-this-weekend-carbon-dioxide-hit-its-highest-level-human-history/?utm_term=.b9e58e827126. Accessed on May 15, 2019.
- Schmidt, A., Ivanova, A., & Schäfer, M. S. (2013). Media attention for climate change around the world: A comparative analysis of newspaper coverage in 27 countries. *Global Environmental Change*, 23(5), 1233–1248.
- Shogren, E. (2019). Scientist who resisted censorship of climate report lost her job. *Grist.com*, February 17. Retrieved from <https://grist.org/article/scientist-who-resisted-censorship-of-climate-report-lost-her-job/>. Accessed on May 16, 2019.
- Shumow, M., & Gutsche, Jr., R. E. (2016). *News, neoliberalism, and Miami’s fragmented urban space*. Lanham, MD: Lexington.
- Smith, J. B., Schneider, S. H., Oppenheimer, M., Yohe, G. W., Hare, W., Mastrandrea, M. D., ... & Fussler, H. M. (2009). Assessing dangerous climate change through an update of the Intergovernmental Panel on Climate Change (IPCC) “reasons for concern”. *Proceedings of the National Academy of Sciences*, 106(11), 4133–4137.
- Solomon, S., Plattner, G. K., Knutti, R., & Friedlingstein, P. (2009). Irreversible climate change due to carbon dioxide emissions. *Proceedings of the National Academy of Sciences*, 106(6), 1704–1709.
- Stibbe, A. (2015). *Ecolinguistics: Language, ecology and the stories we live by*. London: Routledge.

- Susskind, J., Schmidt, G. A., Lee, J. N., & Iredell, L. (2019). Recent global warming as confirmed by AIRS. *Environmental Research Letters*, 14(4), 044030.
- Takahashi, B., & Pinto, J. (2016). Climate change, commercial news media and Hispanics: An exploration of cultural processes and mediated environmental information. In P. C. Godfrey & D. Torres, (Eds.), *Systemic crises of global climate change: Intersections of race, class and gender* (pp. 107–119). Oxfordshire: Routledge.
- Takahashi, B., Pinto, J., Chavez, M., & Vigon, M. (Eds.). (2018). *News media coverage of environmental challenges in Latin America and the Caribbean: Mediating demand, degradation and development*. London: Springer.
- Taylor, N., & Nathan, S. (2002). How science contributes to environmental reporting in British newspapers: A case study of the reporting of global warming and climate change. *The Environmentalist*, 22, 325–331.
- Tsekos, C. A., & Matthopoulos, D. P. (2008). Environmental news in Greece: Evaluation of the way newspapers deal with environmental issues. *International Journal of Environmental Studies*, 65, 209–218.
- United Nations Framework Convention on Climate Change (UNFCCC, 1992). Retrieved from <https://unfccc.int/sites/default/files/conveng.pdf>. Accessed on May 13, 2019.
- Van der Linden, S., Leiserowitz, A., Rosenthal, S., & Maibach, E. (2017). Inoculating the public against misinformation about climate change. *Global Challenges*, 1(2), 1600008.
- Waisbord, S., & Peruzzotti, E. (2009). The environmental story that wasn't: Advocacy, journalism and the asambleismo movement in Argentina. *Media, Culture & Society*, 31, 691–709.
- Waldman, S., & Heikkinen, N. (2018). As climate scientists speak out, sexist attacks are on the rise. *Scientific American*, August 22. Retrieved from <https://www.scientificamerican.com/article/as-climate-scientists-speak-out-sexist-attacks-are-on-the-rise/>. Accessed on May 16, 2019.
- Walters, R. (2018). Climate change denial: 'Making ignorance great again'. In *Ignorance, Power and Harm* (pp. 163–187). Cham, Switzerland: Palgrave Macmillan.
- Yumashev, D., Hope, C., Schaefer, K., Riemann-Campe, K., Iglesias-Suarez, F., Jafarov, E., ... & Whiteman, G. (2019). Climate policy implications of nonlinear decline of Arctic land permafrost and other cryosphere elements. *Nature Communications*, 10(1), 1900.
- Zamith, R., Pinto, J., & Villar, M. (2013). Constructing climate change in the Americas: An analysis of news coverage in U.S. and South American newspapers. *Science Communication*, 35(3), 334–357.