

# Chapter 16

## Understanding and Countering Misinformation About Climate Change

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### **ABSTRACT**

*While there is overwhelming scientific agreement on climate change, the public has become polarized over fundamental questions such as human-caused global warming. Communication strategies to reduce polarization rarely address the underlying cause: ideologically-driven misinformation. In order to effectively counter misinformation campaigns, scientists, communicators, and educators need to understand the arguments and techniques in climate science denial, as well as adopt evidence-based approaches to neutralizing misinforming content. This chapter reviews analyses of climate misinformation, outlining a range of denialist arguments and fallacies. Identifying and deconstructing these different types of arguments is necessary to design appropriate interventions that effectively neutralize the misinformation. This chapter also reviews research into how to counter misinformation using communication interventions such as inoculation, educational approaches such as misconception-based learning, and the interdisciplinary combination of technology and psychology known as technocognition.*

### **INTRODUCTION**

Every six to seven years, the Intergovernmental Panel on Climate Change (IPCC) issue a summary of the state of scientific research into climate change. Over the last few decades, their statements on the human contribution to recent global warming have grown increasingly definitive, from “a discernible human influence on the global climate” in the Second Assessment Report (Houghton et al. 1996) to “human influence has been the dominant cause of the observed warming since the mid-20th century” in the Fifth Assessment report (pp17, Qin et al 2014). Parallel to the strengthening scientific consensus in the IPCC reports, a number of other studies have sought to quantify the level of agreement on human-caused global warming among climate scientists. A synthesis of this research concluded that between

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90 to 100% of scientists who publish climate research have concluded that humans are the predominant cause of global warming, with multiple studies converge on 97% consensus (Cook et al., 2016).

Despite strong expert agreement, much of the public remain confused about the reality of human-induced global warming. Only 12% of the American public are aware that the scientific consensus is higher than 90% (Leiserowitz et al., 2017), a misconception referred to as the “consensus gap” to represent the chasm between public perception of consensus and the 97% consensus. The consensus gap is also found among science teachers (Plutzer et al., 2016) and journalists Wilson (2000). The U.S. public are also deeply polarized on the issue of climate change, with political liberals much more accepting of the reality of global warming relative to political conservatives (Cook and Lewandowsky, 2016; Leiserowitz et al. 2017). This polarization has been increasing over time (Dunlap, McCright, & Yarosh, 2016).

Addressing the issue of public polarization over climate change requires acknowledging and addressing the cause. In this case, a major contributor to polarization over climate change is decades of ideologically-driven misinformation campaigns (McCright & Dunlap, 2010). Misinformation about climate change is found in a variety of outlets including mainstream media (Painter and Gavin, 2015) and social media (Harvey et al., 2017). In order to adequately respond to online misinformation about climate change, theoretical frameworks are required to better understand the impact of climate misinformation, the types of arguments employed, and effective interventions. This chapter will explore the research into the psychological impacts of climate misinformation, the techniques employed in denialist arguments, and the efficacy of various interventions in response.

A growing body of research has explored the negative impacts of misinformation. A relatively small amount of climate misinformation, such as a few misleading statistics, is effective in lowering people’s acceptance of climate change (Ranney & Clark, 2016). Misinformation targeting the scientific consensus significantly decreases perceived consensus, which subsequently lowers other climate attitudes including policy support (Cook, Lewandowsky, & Ecker, 2017; van der Linden, Leiserowitz, Rosenthal, & Maibach, 2017). Misinformation about climate change also has a polarizing effect, disproportionately influencing political conservatives while having little to no effect on political liberals (Cook, Lewandowsky, & Ecker, 2017; van der Linden, Leiserowitz, Feinberg, & Maibach, 2015). This means that climate misinformation serves to exacerbate what is already a politically polarized public debate.

An arguably more pernicious element of misinformation is its ability to cancel out the positive effects of accurate information. Denialist frames have been shown to reduce the positive effect of a number of different climate frames (McCright, Charters, Dentzman, & Dietz, 2016; van der Linden, Leiserowitz, Rosenthal, & Maibach, 2017). This dynamic has significant consequences for mainstream media coverage of climate change. The journalistic norm of providing balanced coverage to both sides of a debate means that contrarian voices are often given equal weight with climate scientists (Painter and Gavin, 2015). However, false-balance media coverage has been shown to decrease public perception of scientific consensus (Cook, Lewandowsky, & Ecker, 2017).

Finally, another overlooked negative impact of misinformation is its potential silencing effect. While most of the U.S. public are concerned or alarmed about climate change, less than half of segment of the population talk about the issue with friends or family (Leiserowitz et al., 2017). The main driver of this self-silencing is the misconception of pluralistic ignorance—the majority of Americans who are concerned about climate change are ignorant of the fact that they’re a plurality (Geiger and Swim, 2016). This misconception is self-reinforcing, resulting in a “spiral of silence” (Maibach et al., 2016).

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