

## A content analysis of climate change maps in the United States news media

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Maps offer many ways to communicate climate change effects, impacts, and mitigation strategies, because climate change is intrinsically geographic in nature. Additionally, climate change has been remade into a politically contested issue in the United States, and climate scientists feel pressure to convey their research in compelling ways to a public audience (Weingart et al. 2000). With this, news media have become a means by which scientists can convey their research to a broader audience and have been using maps to do so. However the political contention surrounding climate change has allowed news media to become a powerful actor in the discourse on climate change. The stories and graphics developed by and for news media drive much of the discourse on climate change. Toward the goal of evaluating “maps that matter” (Robinson et al., in review) for both the environment and society, this research evaluated *what* design choices are made in maps by news media in stories about climate change to further understand *why* design choices are made by cartographers, graphic designers, and data visualization experts in news media. This research aimed to answer questions about the role of maps in news media stories about climate change, design differences between liberal and conservative media sources, and the use of maps to grab attention for these stories.

Using content analysis, I assessed themes across 210 maps of climate change from a variety of media sources as well as those produced by government agencies for scientific communication to the public. Content analysis is a systematic method to examine and compare symbols of communication through a set of theme codes (Krippendorff 2013, Rose 2012). It is often used for text and has been expanded to maps to develop map taxonomies and derive best cartographic practices (Fish and Calvert 2016, Muehlenhaus 2010, Roth et al. 2015). The goal of this content analysis was to characterize climate change news media maps and evaluate themes across maps and media source styles.

Preliminary findings indicate variability in the use of maps across different media sources. Additionally there is a general lack of maps used in stories about climate change in strictly conservative U.S. print and online media. Even in liberal media, the majority of maps are simply used to draw readers into a story. At select media outlets, maps become central to the story about climate change. These are often media sources that have a long history in designing maps by expert in-house cartographers and are often considered liberal, although maybe not explicitly. Additionally, maps are often reproduced from government agencies public communication materials. Finally, maps differ in their illustration of different aspects of climate change. Some media sources focus on the causes of climate change, such as carbon emissions, and first order effects such as increased temperature across the globe. Other news media focus on maps that illustrate second order impacts such as sea level rise and increases in vector-borne diseases. Finally, these maps often do not work in isolation—they are part of the story the writer is trying to tell and provide context and additional content to the readers, inviting them to engage with the issue.