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THE CLIMATE CRISIS AND THE GLOCAL DYNAMICS OF MISINFORMATION

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The Climate Crisis and the Glocal Dynamics of Disinformation

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Introduction: Despite the urgency of the climate change issue, global efforts to address and mitigate its impacts have been systematically undermined by the spread of misinformation. **Methodology:** In this context, based on the misinformation content that generated the most engagement on social media – published in English, Spanish, and Portuguese during 2023 – we sought to identify trends, approaches, and divergences in order to reflect on global flows of climate misinformation. To do so, we collected data using the BuzzSumo tool and also adapted and applied an analytical protocol for analyzing this type of misinformation on digital platforms. We explored three categories – senders, sources, and types of misinformation – which allowed us to identify the glocal nature of climate misinformation. **Results:** The main findings point to the predominance of traditional and alternative media in the dissemination of climate change misinformation across different national contexts. These media present themselves as supposed discursive authorities on the subject, while exploiting the credibility of scientists, researchers, and academic institutions to legitimize misinformation narratives. Furthermore, significant variations in misinformation patterns were identified depending on the cultural and linguistic context analyzed. **Discussion and conclusions:** The data suggest that, while this phenomenon maintains common discursive strategies on a global scale, it is also influenced by local sociocultural specificities.

Keywords: climate change, scientific misinformation, social media, scientific authority, global flows of misinformation.

1. INTRODUCTION

The influence of human activities on climate change is widely recognized by the international scientific community. The Sixth Assessment Report (AR6) of the

Intergovernmental Panel on Climate Change (IPCC) notes that the average global temperature increase of 1.1 °C has already caused unprecedented changes in the Earth's climate system (Core Writing Team *et al.*, 2023). The Copernicus Climate Change Service (C3S), affiliated with the European Commission, corroborates this conclusion and indicates that, in 2024, the average global temperature exceeded 1.5 °C above pre-industrial levels (Copernicus Climate Change Service, 2024). This jeopardizes the primary goal of the Paris Agreement, signed in 2015 to curb global warming (Oberghassel *et al.*, 2015).

Despite the urgency of the climate crisis, global efforts to intervene and mitigate its impacts have been systematically undermined by the spread of misinformation. In general, the literature on the subject has defined misinformation as the deliberate dissemination of falsehoods, motivated by political, ideological, and/or economic, social, or cultural interests (Bennett and Livingston, 2018; Freelon and Wells, 2020), which is particularly amplified by social media (Treen *et al.*, 2020). This influences not only the public's perception of the climate crisis but also environmental policies and trust in science (Gundersen *et al.*, 2022; Romanello *et al.*, 2022; Thapa Magar *et al.*, 2024).

Thus, climate disinformation is part of a broader framework of denialist strategies, understood as the tactical and systematic use of rhetoric to create the appearance of a legitimate and open debate where, in reality, an established scientific consensus already exists (Diethelm and McKee, 2009). According to the authors, these strategies include the dissemination of conspiracy theories, the promotion of fake experts, the biased selection of evidence, and other tactics aimed at undermining established science. In this regard, Gundersen *et al.* (2022) emphasize that this erosion of trust in science should not be underestimated. Historically, corporations and conservative groups have used disinformation strategies to hinder regulatory progress.

Scientific evidence suggests that the climate crisis requires transnational efforts, and that disinformation and denialism exacerbate this situation by undermining certain segments of the population's adherence to mitigation measures (Cook *et al.*, 2018; Michaelowa and Michaelowa, 2017). Therefore, it is essential to investigate how disinformation also constitutes a global phenomenon. In this regard, authors such as Santini and Barros (2022) highlight the need for studies that examine the specific ways in which climate denial manifests itself in different regional and cultural contexts, with a particular focus on the Global South.

This study is based on the hypothesis that disinformation operates as a transnational flow that transcends national borders but manifests itself rooted in local disputes, tensions, and sociocultural dynamics—that is, from a glocal perspective. The latter implies a broad analytical framework of global phenomena that undergo modifications or reconfigurations based on specific local circumstances and contexts; in other words, as a nexus in the interactive relationship between global processes and what distinguishes local identities (Ismail *et al.*, 2024).

In this sense, scientific disinformation—and in particular, disinformation about climate change—is understood as a phenomenon that, while sharing common features globally, may also exhibit distinctive patterns mediated by specific sociocultural contexts that we consider relevant for the purposes of this study.

To address this complexity and the importance of better understanding the spread of misinformation (Treen *et al.*, 2020)—especially in the fields of science and climate change—this study seeks to identify the trends, similarities, and differences in the content that has generated the most engagement on social media. In this article, we define the concept of “content” as the meanings encoded in texts, images, videos, and other forms of communication circulating on digital platforms. Emerging at the beginning of the 21st century with the consolidation of “Web 2.0,” this concept has become fundamental to understanding communication flows, the attention economy, and modes of participation and interaction in digital spaces (Jenkins *et al.*, 2013).

Thus, we analyze three fundamental aspects: the main sources of disinformation, to understand the social actors with whom the public has interacted most frequently; the sources mobilized in this content (whether real or distorted) to construct an appearance of legitimacy and discursive authority; and the typologies present and the discursive strategies employed. As a methodological choice, we adopted a linguistic approach focused on English, Spanish, and Portuguese. This choice is justified because we are not seeking research restricted to specific national contexts, but rather an approach that prioritizes transnational flows and takes into account languages widely spoken by diverse populations.

The time period under consideration is the year 2023, which, at the time of data collection for this study, was considered the hottest year since the beginning of the historical record (Copernicus Climate Change Service, 2024). To operationalize the research, we drew inspiration from a protocol (Cruz *et al.*, 2025) that proved to be a fruitful tool for systematizing climate change disinformation extracted from digital platforms, and we adapted it. Thus, this study aims to contribute to the public debates on scientific disinformation that have taken place in different parts of the world (Maia, 2024; Thapa Magar *et al.*, 2024; Lewandowsky, 2021; Nguyen and Catalan-Matamoros, 2020).

1.1. Climate Disinformation and Scientific Authority

Disinformation is a complex global phenomenon characterized by the dissemination of incomplete, inaccurate, or deliberately misleading information in the public sphere (Thapa Magar *et al.*, 2024). In the fields of science and health, the public debate on climate change has emerged as one of the main areas affected by disinformation (Nguyen and Catalan-Matamoros, 2020), especially in a context marked by growing political polarization and an epistemic crisis (Oliveira, 2022). The current scientific consensus emphasizes that climate change poses a global risk but disproportionately affects emerging countries, whose development prospects are more fragile (Barbieri *et al.*, 2018).

In this context, disinformation constitutes an aggravating factor that has been integrated into a political and economic strategy (Hassan *et al.*, 2024). This “ ” of disinformation has been driven by multiple factors, ranging from denial or skepticism regarding climate change to alarmist practices and political and ideological polarization (Treen *et al.*, 2020). Furthermore, economic interests play a key role, with the deliberate sowing of doubt in public opinion by actors linked, for example, to the fossil fuel industry (Franta, 2021; Santini and Barros, 2022; and Thapa Magar *et al.*, 2024). This strategy, often associated with public relations campaigns and lobbying groups, seeks to undermine the credibility of scientific evidence and delay the adoption of public policies aimed at mitigating the effects of climate change (Franta, 2021).

Among the main actors involved in this process, Treen *et al.* (2020) identify governments that promote scientific uncertainty, political and religious organizations, industries across various sectors, climate-denying scientists, the media—especially those aligned with right-wing ideologies—as well as segments of the population, particularly white men with conservative political views. These factors have been identified for several decades, especially since the 1980s (Franta, 2021), but they have been particularly amplified by the media transformations brought about by new digital environments.

This scenario, characterized by self-communication and mediated interactive processes, reconfigures power dynamics and allows a greater number of social actors to make their voices heard (Castells, 2007). The massive presence of user-generated interaction and content is reshaping the criteria for attributing credibility and the ways in which knowledge is socialized—including those that deviate from the current scientific consensus (Kata, 2012). Added to this is the laxity of platforms in curbing the circulation of this type of content, as moderation practices are constantly under pressure from the political and economic strategies of the companies that control them (Emergente Loiola, 2022).

Therefore, in light of global climate change and the challenges posed by the current media ecosystem, scientific research on environmental and climate disinformation has grown steadily, although it is still considered a field in its early stages of development (Urbano *et al.*, 2024). A major milestone in this field occurred in 2020 with the onset of the COVID-19 pandemic, which intensified debates about scientific disinformation and its implications (Urbano *et al.*, 2024). Given the transnational nature and urgency of these issues, some research has adopted a comparative approach from different perspectives.

This is the case with the analysis that identified environmental disinformation in Latin America and the Caribbean based on 51 scientific articles found in the *Scopus*, *Web of Science*, *Dimensions*, and *SciELO* databases (Urbano *et al.*, 2024). The study revealed that the predominant languages in these publications are Portuguese (23 articles) and English (22 articles), while Spanish appears in a smaller proportion (6 articles). Among the topics addressed, disinformation related to the climate crisis

stood out as one of the most recurring themes. According to the authors, this problem has gained global prominence, generating widespread repercussions in political and social circles (Urbano *et al.*, 2024).

To understand disinformation strategies, it is also necessary to examine how the discursive authority historically associated with the scientific community is instrumentalized in the construction of narratives that distort or discredit established knowledge. This authority can be understood as part of symbolic capital—a set of tangible and intangible resources that confer recognition and legitimacy on individuals or groups within a field (Bourdieu, 1989, 2001)—which underpins public trust in science.

With the rapid advance of technological and industrial development, especially beginning in the nineteenth century, scientific knowledge acquired legitimate status as a source of truth (Oliveira, 2020). As Gundersen *et al.* (2022) point out, public trust in science is not limited to scientists' performance, technical training, and critical engagement, but is also intrinsically linked to public and democratic values. Furthermore, current media practices contribute to a shift in the recognition of this authority, which is granted to scientists with greater access to the media, rather than to the quality of the research itself (Oliveira, 2020). In other words, trust in science is linked not only to epistemic criteria but also to institutional and social criteria.

Currently, this symbolic capital has been exploited by actors interested in challenging existing knowledge. In a context of polarization and discursive disputes, the reliability of climate scientists has been called into question by some experts with skeptical views—often from outside this field—whose views have found an audience among conservative movements and fossil fuel corporations (Gundersen *et al.*, 2022). This strategy, therefore, combines the use of academic credentials with economic and political interests. Rather than a simple denial of science, this involves drawing on the symbolic capital of science to validate narratives that challenge the established consensus (Oliveira, 2020). In this reconfiguration of scientific authority, conservative discourses seek to legitimize scientists who share their values, appropriating scientific output in a way that aligns with their narratives and corroborates their arguments (Oliveira, 2021).

Studies have indicated that this “scientific authority” used by denialist groups to delegitimize science is based on tactics such as the biased reinterpretation of research according to ideologies or political alignments (Abellán López, 2021) and the drawing of epistemological boundaries between so-called “illegitimate science” and “legitimate science,” the latter, for example, linked to the defense of former President Jair Bolsonaro's approach to managing the COVID-19 pandemic in Brazil (Fonseca *et al.*, 2022). Also in the context of the pandemic, Duarte and Benetti (2022) analyze former President Jair Bolsonaro's discourse and point out that he did not deny science, but rather reified it and appropriated its symbols and controversies based on what, from the then-president's perspective, would be the distinction between “good science” or pure science versus supposedly ideological and politicized science.

In this regard, misinformation about climate change generates doubts and misunderstandings among the public, undermining the credibility of the scientific consensus and often invalidating climate communication strategies and efforts (Lewandowsky, 2021). By sowing doubt, misinformation affects the perception of urgency surrounding the implementation of public intervention policies. While Hassan *et al.* (2024) note mitigation efforts among activists, media professionals, and governments, the effects of climate disinformation can pose risks to democracy, such as distrust of facts, erosion of trust in science, and the delegitimization of epistemic institutions (Blake-Turner, 2020; Oliveira, 2022; Treen *et al.*, 2020).

In the context of global disinformation flows, digital platforms act as facilitators or propagators (Hassan *et al.*, 2024), which is why they have been considered relevant environments for conducting studies and research on the topic (Treen *et al.*, 2020). Therefore, considering the specific characteristics of climate change disinformation and its transnational aspects, as well as the discursive elements used to construct a purported scientific authority that justifies and supports such disinformation, it is important to investigate how these issues intersect with different national, cultural, and social contexts in order to understand how a global phenomenon relates to local tensions and particularities.

In this regard, the relationships between the local, the global, and the glocal have become theoretically significant and are shaping various fields based on the understanding that the glocal does not imply a replacement of the local by the global or a unidirectional impact of globalization, but rather an interconnection, overlap, fusion, or mutual influence of different levels and interdependencies, as exemplified by the role that digital technologies play in social connectivity (Ismail *et al.*, 2024).

If disinformation circulates in streams across digital spaces, it is worth asking to what extent it is governed by similar discursive strategies in different parts of the world and to what extent it takes on specific contextual characteristics. One possible approach would be to adopt a linguistic perspective rather than a national framework, which would allow us to identify transnational patterns and understand how disinformation discourses are articulated in different linguistic contexts. Building on this issue, in the following section we present our methodological approach for analyzing the characteristics, trends, and differences of the most widespread disinformation about climate change on digital platforms in English, Spanish, and Portuguese during 2023.

2. OBJECTIVES

The objective of this study is to analyze how disinformation about climate change—a problem of global dimensions—spreads in different contexts, examining whether it adapts to local particularities without losing its connection to broader transnational flows. In this way, we seek to contribute to the debates and research taking place around the world on this topic.

3. METHODOLOGY

Based on the hypothesis that disinformation operates as a global flow that traverses different national and regional realities and manifests itself in a way that is intrinsically linked to local disputes and tensions, we seek to develop a methodological framework aimed at the critical analysis of climate change disinformation content that circulated in English, Spanish, and Portuguese during 2023. To this end, we used the online tool BuzzSumo , which allows us to identify, through quantitative metrics, the URLs that generated the most engagement on social media. This tool has already been widely used in research on disinformation in the fields of science and health (Biancovilli *et al.*, 2021; Massarani *et al.*, 2024; Zaila *et al.*, 2020), as it offers the ability to identify and monitor the most popular content based on keyword filtering.

In the first stage, the most relevant content is collected in the three languages mentioned above: English, Spanish, and Portuguese. These languages were chosen because they are spoken by the researchers participating in the international cooperation project on climate disinformation, within which this research is conducted. To this end, the keywords “*climate change*,” “*cambio climático*,” and “*mudanças climáticas*” are used to generate three distinct *corpora*, each consisting of 100 links published between January 1 and December 31, 2023.

As noted above, the rationale for the chosen time period is that 2023 was, at the time of data collection, the hottest year on record since the beginning of the historical series (Copernicus Climate Change Service, 2024). This finding highlights not only the urgency of climate debates but also the ways in which this debate unfolds on social media. Furthermore, a series of extreme weather events, exacerbated by climate change (floods in southern Brazil, wildfires in Chile, and cyclones in Peru), have fueled the spread of various false narratives on the topic (Cruz *et al.*, 2025). Therefore, this time period allows for an analysis that transcends specific national contexts, prioritizing transnational flows of disinformation in languages widely spoken by diverse populations and countries around the world.

It is also worth noting that this study defines the concept of “*content*” as meanings expressed in various digital formats (text, images, sound, audiovisual media, among others) that circulate and are engaged with by audiences on online platforms. This definition allowed us to conduct an analysis based on a highly diverse *corpus* of content that generated the most interaction on social media. BuzzSumo uses as a metric of interaction the total number of times a link is shared, along with the comments, “likes,” and reactions it receives on Facebook, Twitter, Pinterest, and Reddit. We recognize that the concept of interaction goes beyond the possibilities for interaction previously established by the interfaces of digital platforms. However, the interaction data provided by BuzzSumo offers a methodologically viable way to identify the content that most captured audiences’ attention in online public debates about science and its social and political intersections (Massarani *et al.*, 2021; 2024; Medeiros *et al.*, 2023). On digital platforms, meanings are negotiated and shared

among users, which implies that trust in content depends not only on the quality of the information but also on processes of socialization (Tandoc *et al.*, 2017). Furthermore, content with higher engagement tends to be algorithmically promoted, which increases its visibility (Kischinhevsky and Fraga, 2020).

In a second stage, a new selection process is carried out to identify disinformation materials based on the premise that they consist of inaccurate or misleading content, often deliberately disseminated to influence public opinion (Thapa Magar *et al.*, 2024). To this end, all content was evaluated by two reviewers proficient in the languages analyzed. Using the ReCal tool (Freelon, 2010), we conducted statistical tests to calculate the inter-rater reliability coefficient for the *corpora*. The results for the percentage of agreement indicate 100% in English, 100% in Spanish, and 98% in Portuguese.

The verification was conducted qualitatively, and the materials were compared with data from scientific articles, official sources, and news reports. This process resulted in a new *corpus* consisting of 50 pieces of content: 25 in English, 13 in Spanish, and 12 in Portuguese. This figure represents 16.7% of the initial *corpus*. While the absolute number may seem small, its significance is underscored by the fact that BuzzSumo collects the content with the highest engagement across various social media platforms. This highlights the significant presence of disinformation among the most-engaged materials. It is important to emphasize that the tool only collects public content on social media, which means that the spread of disinformation may be even greater in private spaces, such as closed Facebook groups or messaging apps like WhatsApp and Telegram. This limitation suggests the need for future complementary research that takes these environments into account.

The final *corpus* was analyzed using a pre-existing analytical protocol (Cruz *et al.*, 2025). Based on this protocol, Table 1 systematizes the categories used in this study to investigate global flows of disinformation about climate change. After applying the protocol, we also chose to conduct a more qualitative analysis of the category that includes types of disinformation, thereby addressing the frames and lines of argumentation.

Table 1

Codebook used in the study

Category	Explanation	Coding
Sources	Identify the actors responsible for producing and disseminating links containing misinformation.	a. Traditional media; b. Alternative media; c. Journalist/commentator; d. Politicians; e. Research institute/university; f. Science communicator; g. Science professional;

		h. Education professional; i. Celebrity; j. Public bodies/institutions (Executive, Legislative, Judicial); k. Private companies/NGOs/foundations; l. Activist; m. Religious/spiritual leader; n. Others.
Sources Cited	Analysis of the voices mentioned or referenced in the disinformation content—even if falsely or distortedly—with the aim of establishing supposed credibility or discursive authority.	a. Traditional media; b. Alternative media; c. Journalist/commentator; d. Politician; e. Research institutes/universities; f. Scientific publications; g. Science communicator; h. Science professional; i. Education professional; j. Celebrities; k. Public bodies/institutions (Executive, Legislative, Judicial); l. Private company/NGO/foundation; m. Activist; n. Religious/spiritual leader; o. Others.
Types of Disinformation	Classification of the forms in which disinformation manifests itself, including its discursive strategies and the engagement mechanisms used to mobilize the audience.	a. It mimics a journalistic text or a scientific publication; b. Elevates ordinary people to the status of representatives or experts in a given field; c. It questions scientific evidence, which lacks a scientific basis; d. Contains false connections and contexts, or fabricated, contradictory, and untenable content; e. Reinforces prejudices or amplifies conspiracy theories; f. Expresses disbelief in epistemological institutions; g. Contributes to the creation of uncertainty or the emergence of controversies; h. Suggests major breakthroughs, makes shocking or surprising claims, stirs up emotions (fear, surprise, disgust), or significantly influences emotional discourse with a catastrophic narrative; i. Aligns with fanaticism (religious, political, or otherwise); j. Others.

Source: Author's own work, based on the existing protocol developed by Cruz *et al.* (2025).

As detailed in Table 1, the “*senders*” category refers to the social actors responsible for disseminating messages. For analytical purposes, the codes in this category include both individual senders—such as the social media profiles of politicians, religious leaders, activists, celebrities, and science communicators—and institutional senders, such as public agencies and research institutes. The categories “*traditional media*” and “*alternative media*” are also included, acknowledging that the contemporary media ecosystem is complex, hybrid, and dynamic (Canavilhas, 2012), and that this dichotomy does not exhaust the diversity of possible configurations. Nevertheless, this distinction was operationalized schematically based on criteria of origin and production structure.

“*Alternative media*” refers to initiatives that, regardless of their support, platforms, or profiles, are represented by organized social groups—such as collectives, unions, and NGOs—without necessarily being tied to a specific community (Peruzzo, 2009). These media contrast with “*traditional media*”—established outlets with a more robust corporate or institutional structure, operated for commercial or public purposes, such as radio and television stations, widely circulated print newspapers, and corporate news portals. Thus, digital pages or profiles maintained by established news organizations were classified as “*traditional media*,” while specialized media or those linked to social organizations were classified as “*alternative media*.”

In the case of the “*cited sources*” category, these were identified based on the subjects and entities used as references in the analyzed content. By “*source*,” we mean individuals, institutions, or documentary materials invoked or mentioned in the process of discourse production (Wolf, 1999). Since our analytical focus is on disinformation, we do not seek to verify whether the sources were cited correctly, nor whether there were distortions or falsifications, but rather to understand which “*sources*” were used in the content to confer authority and legitimacy on the message among the public.

The coding of sources followed parameters similar to those used in the “*senders*” category, with the addition of a new subcategory: “*scientific publication*.” The distinction between “*traditional media*” and “*alternative media*” was also maintained, in a purely operational sense, in accordance with the same terms defined previously.

Regarding the “*typology of disinformation*,” the focus is on the ways in which this content seeks to influence public debate. Based on the systematization proposed in a preexisting protocol (Cruz *et al.*, 2025), the dynamics used to engage audiences are analyzed. This approach allows for an understanding of the discursive resources that underpin disinformation. Thus, this study enables a critical analysis of the mechanisms through which climate disinformation operates and contributes to an understanding of glocal dynamics. The following section presents the results of the analysis based on each of the categories mentioned above.

4. RESULTS

The analysis of *the corpus* identified significant trends in climate change disinformation content, particularly regarding its origin. In the English-language corpus, content originating from the United States predominates (20 in total), followed by the United Kingdom (2), Bulgaria (2), Singapore (1), and Germany (1). In the Spanish-language *corpus*, the analyzed materials come primarily from Spain (5), followed by Colombia (2), the United States (2), Mexico (2, including the Mexican edition of the Spanish newspaper *El País*), and Argentina (1), in addition to one item with an unidentified origin. In the case of the Portuguese *corpus*, there is less diversity in countries of origin, with the majority of content coming from Brazil (10) and a smaller presence of materials from Portugal (2).

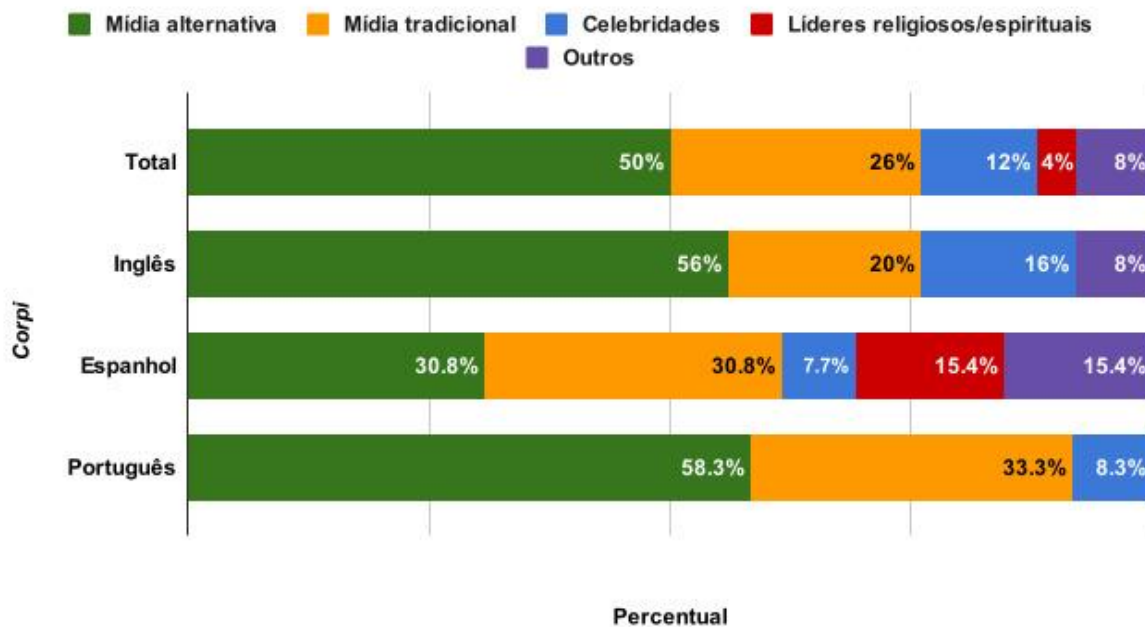
These initial findings already highlight a first transnational aspect of disinformation, particularly noticeable in English-language content, which does not necessarily originate from countries where English is the official language. In the following subsections, we present the results of the analysis conducted based on the adopted protocol and explore data related to the sources, originators, and types of disinformation.

4.1. Disseminators of Climate Disinformation

An exploratory review of the research *corpus* revealed a predominance of traditional and alternative media among the disseminators of climate change disinformation. Of the total 50 items analyzed, 25 (50%) originated from alternative media, while 13 (26%) were linked to traditional media. Furthermore, in this sample, six (12%) of the cases were also identified as having been disseminated by celebrities, two (4%) by religious or spiritual leaders, and four (8%) by other types of sources. The other categories of disseminators included in the codebook were not identified. Although the study does not propose a direct comparison between the different *corpora*, it is possible to identify points of convergence regarding the disseminators of climate change disinformation in the three languages analyzed, as described in Figure 1 below.

Figure 1

Distribution of Climate Misinformation Sources



Source: Compiled by the author.

Of the 25 English-language materials analyzed, 14 (56%) were classified as coming from alternative media, while five (20%) came from traditional media. In this *corpus*, alternative media includes platforms with nationalist, conservative, libertarian/neoliberal, and far-right ideological orientations, including websites that produce or disseminate fake news. Additionally, four (16%) pieces of content were produced by celebrities/influencers, while two (8%) of the disinformation pieces were published by other media outlets—in this case, humor websites.

The Spanish-language *corpus*, consisting of 13 pieces of disinformation, is distributed as follows: four (30.8%) from traditional media; four (30.8%) from alternative media; two (15.4%) produced by religious/spiritual leaders; and one (7.7%) linked to a celebrity. Among the alternative media sources, we identified a partisan newspaper with a right-wing ideology and a website/blog that functions as a non-traditional media outlet. Two pieces (15.4%) in Spanish were produced by other sources, including a profile on a digital platform (not necessarily that of an influencer or celebrity) and a satirical media outlet.

Finally, in Portuguese, seven (58.3%) of the twelve cases of climate change disinformation came from alternative media. Four (33.3%) cases were also identified in traditional media, and one (8.3%) was produced by a celebrity—in this case, a female influencer via a YouTube channel.

4.2. Sources Cited or Mentioned in Disinformation Materials

In addition to mapping the different sources, we also analyzed the prevalence of voices and social actors who are featured or cited in this disinformation content. Based on the data collected from the three *corpora*, 119 occurrences of sources were recorded, taking into account that some materials refer to more than one. Of this total, 20 sources correspond to science professionals; 14 to traditional media; 13 to alternative media; 13 to public agencies and institutions; 12 to scientific publications or studies; nine to journalists and commentators; nine to politicians; four to activists; four to celebrities; three to private entities, such as companies, NGOs, or foundations; three to research institutes; two to religious and spiritual leaders; one to science communicators; one to education professionals; and 11 to others. Figure 2 shows this same data distribution as a percentage.

Figure 2

Incidence of Triggers/Cited Sources



Source: Author's own work.

Regarding the sources and voices cited, each *corpus* presented a distinct profile. In the English *corpus*, of the 72 occurrences identified, the following stand out: science professionals (n=14; 19.4%), alternative media (n=11; 15.3%), organizations and institutions (n=9; 12.5%), traditional media (n=8; 11.1%), and scientific publications or studies (n=8; 11.1%). In addition, politicians (n=6; 8.3%), celebrities (n=3; 4.2%), private companies, NGOs, and foundations (n=3; 4.2%), journalists and commentators (n=3; 4.2%), and activists (n=2; 2.8%) were cited. Other types of sources (n=5; 6.9%) included testimonies from residents of the regions covered in the reports, profile posts on X (not always by climate change experts), and the use of ChatGPT as a reference.

In the Spanish-language *corpus*, of the 20 occurrences identified, the most frequently cited sources were journalists and commentators (n=3; 15%), science professionals (n=3; 15%), and scientific publications or studies (n=3; 15%). In addition, activists (n=2; 10%), religious or spiritual leaders (n=1; 5%), organizations and institutions (n=1; 5%), celebrities (n=1; 5%), and politicians (n=1; 5%) were also identified. Other types of sources (n=5; 25%) included denialist videos and documentaries, biblical references, and citizens interviewed in a television report.

In turn, in the Portuguese-language *corpus*, of the 27 source occurrences identified, there is a greater presence of traditional media (n=6; 22.2%), followed by research institutes (n=3; 11.1%), journalists and commentators (n=3; 11.1%), organizations and institutions (n=3; 11.1%), and science professionals (n=3; 11.1%). Other sources identified included alternative media (n=2; 7.4%), politicians (n=2; 7.4%), science communicators (n=1; 3.7%), religious or spiritual leaders (n=1; 3.7%), education professionals (n=1; 3.7%), scientific publications or studies (n=1; 3.7%), and others (n=1; 3.7%).

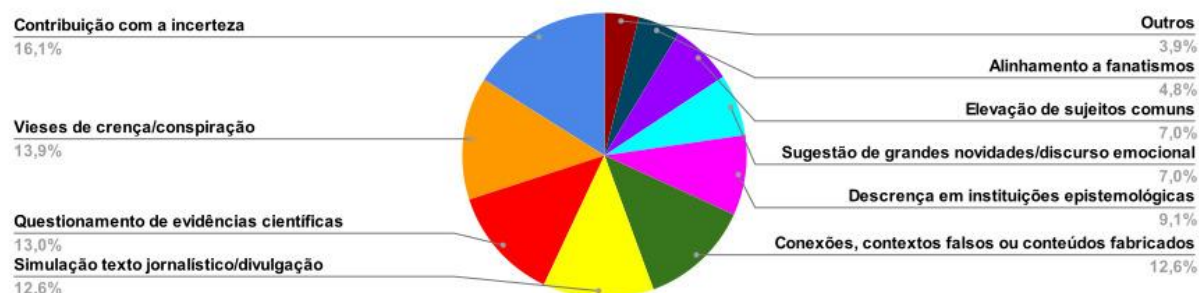
4.3. Types of Climate Disinformation

Regarding the types of disinformation, we adopted the proposals from a preexisting protocol (Cruz *et al.*, 2025) to analyze the discursive construction processes present in the *corpus* content. In this analysis, ten distinct types were identified, with a total of 230 instances (since some materials employed multiple strategies simultaneously). Among the most relevant are: contributing to the creation of uncertainty or the generation of controversy (n=37; 16.1%); the reinforcement of belief biases or the promotion of conspiracy theories (n=32; 13.9%); and the questioning of scientific evidence without a sound scientific basis (n=30; 13%). Also recurring were the creation of false connections and contexts or fabricated, contradictory, and/or untenable content (n=29; 12.6%); the simulation of journalistic or scientific texts (n=29; 12.6%); and the expression of disbelief in epistemological institutions (n=21; 9.1%).

Added to this is the elevation of ordinary people to the status of spokespersons or experts in a field (n=16; 7%); the suggestion of important news, shocking and/or surprising statements, the incitement of emotions (fear, surprise, revulsion), or the emphasis on emotional discourse with catastrophic narratives (n=16; 7%); and alignment with religious, political, and other forms of fanaticism (n=11; 4.8%). Finally, other forms of disinformation that do not directly fit into these categories accounted for nine occurrences (3.9%). Without breaking down the data by language, Figure 3 shows the distribution of these strategies across the 50 materials examined.

Figure 3

Incidence of Types of Climate Disinformation



Source: Author's own work.

After analyzing the data by language, out of a total of 113 instances in the English *corpus*, 21 (18.6%) approaches were identified that contribute to the fabrication of uncertainty or the creation of controversies; 18 (15.9%) approaches that reinforce belief biases or fuel conspiracy theories; 15 (13.3%) that question scientific evidence, lacking scientific basis; 14 (12.4%) that present false connections and contexts or fabricated, contradictory, and/or unsustainable content; 13 (11.5%) that mimic journalistic or scientific writing; 11 (9.7%) that express disbelief in epistemological institutions; 10 (8.8%) that elevate ordinary individuals to the status of representatives or experts in a field; six (5.3%) that suggest major news stories, include shocking or surprising statements, or stir up emotions (fear, surprise, disgust), emphasizing emotional rhetoric with catastrophic narratives; four (3.5%) that align with fanaticism (religious, political, or other); and, finally, one (0.9%) regarding another type of identified disinformation, which, in this case, involves an exaggerated presentation of the facts.

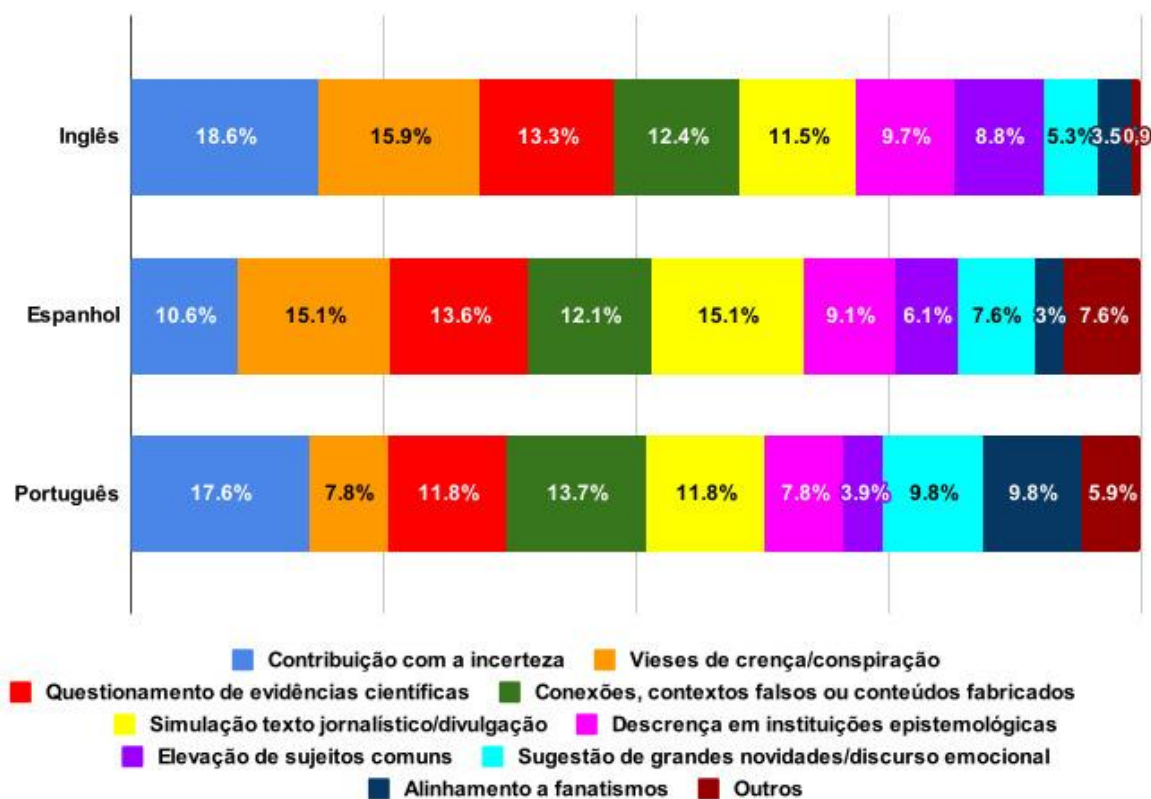
In the Spanish *corpus*, meanwhile, 66 instances were counted, with 10 (15.1%) approaches that reinforce belief biases or fuel conspiracy theories; 10 (15.1%) that mimic journalistic or scientific popularization texts; nine (13.6%) that question scientific evidence but lack scientific basis; eight (12.1%) with false connections and contexts or fabricated, contradictory, and/or untenable content; seven (10.6%) approaches that contribute to the creation of uncertainty or the generation of controversy; six (9.1%) that express distrust in epistemological institutions; five (7.6%) that suggest major breakthroughs, make shocking or surprising claims, incite emotions (fear, surprise, disgust), or emphasize emotional discourse with a catastrophic narrative; four (6.1%) that elevate ordinary individuals to the status of spokespersons or experts in a field; and two (3%) that align with various forms of fanaticism. Other types of disinformation were also identified on five occasions (7.6%), including: the use of pseudoscience to explain climate change; the misquoting of studies; the incitement to ridicule global warming; the mixing of scientific evidence with biblical arguments to explain global warming; and articles that give voice to climate change deniers.

Finally, the 51 instances in the Portuguese *corpus* were classified into nine (17.6%) approaches involving the fabrication of uncertainty or the creation of controversy; seven (13.7%) with false connections and contexts or fabricated, contradictory, and/or unsustainable content; six (11.8%) that question scientific evidence, lacking scientific basis; six (11.8%) that mimic journalistic or popular science writing; five (9.8%) aligned with forms of fanaticism (religious, political, and others); five (9.8%) that suggest major breakthroughs, shocking or surprising statements, or that incite emotions (fear, surprise, disgust) or emphasize emotional discourse with a catastrophic narrative; four (7.8%) that express disbelief in epistemological institutions; four (7.8%) that reinforce belief biases or promote conspiracy theories; two (3.9%) that elevate ordinary individuals to the status of spokespersons or experts in a field; and three (5.9%) containing other types of disinformation, one of which is a poorly written text that contributes to disinformation; a second that uses information that is difficult to understand or access to mimic scientific data; and another that starts with a verified news story but reinterprets what was said to lead to misinformation.

In summary, all 10 types of disinformation were recorded at least once across the three *corpora*. Contributing to the creation of uncertainty or the generation of controversy is the most frequent type of disinformation regarding climate change, especially in the Portuguese and English *corpora*, as shown in Figure 4.

Figure 4

Incidence of Types of Climate Disinformation by Language



Source: Author's own work.

4.4. Structure and Lines of Argumentation

Building on the category that addresses the typologies of disinformation, this final stage examines—using a more qualitative approach—the frames and lines of argumentation present in disinformation content about the climate crisis. In the case of the English-language *corpus*, a variety of discursive strategies can be observed. Some content resorted to spreading conspiracy theories about the alleged “deception,” “lie,” “fraud,” or “massive fraud” surrounding the climate crisis as part of the “globalist” agenda of governments and institutions—fabricated by political elites or “corrupt” and “hypocritical” officials seeking to “instill fear in the population.” According to this view, the climate crisis is a fabrication, and the “green agenda” is something contrary to “sovereign nations,” “Western success,” and “taxpayers’ interests.” Some materials even characterize climate change as “pseudoscience.” Furthermore, they raise questions about the established scientific consensus on climate change or its anthropogenic cause; and they adopt a satirical or ironic tone in order to ridicule global warming.

The content of the Spanish-language *corpus*, however, draws on devices such as the idea of a supposed “*revelation*” of the truth hidden behind the “*fabricated lies*” about global warming, which are frequently associated with conspiracy theories. Furthermore, an appropriation of religious discourse is observed, whether through the mixing of scientific information with biblical foundations or through the use of oracles to predict climate change. It even goes so far as to discredit or refute experts, whom it brands as a “*cult*” of “*false prophets of global warming*.”

The attempt to delegitimize the scientific community and other social actors is also a central theme in Spanish-language content. Denialist narratives from scientific professionals are repeated, scientific studies are distorted for commercial purposes, and the actions of journalists and politicians on the issue are discredited, with the argument that they lack expertise or are aligned with hidden interests. The conspiratorial tone manifests itself on several fronts: the denouncement of global warming as a “*fraud*” invented by technocrats, the preconception of a supposed “*anti-climate change consensus*,” and the questioning of the anthropogenic causes of the phenomenon. Furthermore, strategies to ridicule the issue are recurrent, whether through satire or the downplaying of environmental impacts.

In the case of the Portuguese *corpus*, the framing and treatment involve lines of argumentation stemming from denialist discourses produced by renowned scientific professionals; apocalyptic or fatalistic discourses (such as the disappearance of cities); unfounded or unsourced claims; ironic and denialist coverage; sensationalist headlines; manipulation of images; discourses positioning vaccines as a solution to combat the effects of climate change; accusations of fraud in climate change investments across various countries; the portrayal of global warming as a fallacy; linking the issue of climate change to the political agenda; and erroneous data.

5. DISCUSSION

The results of our study indicate a predominant role played by both alternative and traditional media in the dissemination of misinformation about climate change. Across all *corpora*, these sources collectively account for at least 61.6% of the actors, reaching over 90% in the case of the Portuguese *corpus*. These same results prompt reflection on the presence – more or less pronounced, depending on the language – of other sources. Celebrities and digital influencers presented themselves as authoritative voices on climate change in the Spanish and English *corpora*, as did religious and spiritual leaders in the Spanish *corpus*. It is important to note that these actors are not necessarily linked to the journalistic or scientific fields, but rather leverage their media presence to attempt to establish a purported authoritative voice in the climate change debate.

These actors employ various strategies to establish legitimacy, generally based on cultivating an image of leadership or that of a recognized media celebrity. In some cases, they rely on newspaper headlines, comments from public figures, or excerpts from books to support conspiracy theories and promote a supposed divide between

the general public and political elites, institutions, or climate change experts. In other cases, particularly in the Spanish-language sample, those who present themselves as religious or spiritual leaders rely on “oracles” or biblical interpretations to support their explanations.

These data reveal the diversification of those who have currently been legitimized and, therefore, authorized to disseminate erroneous scientific information. The logic of digital platforms, by fragmenting the source of information, allows for the diversification of the actors who occupy this position in the communication circuit (Castells, 2007). In a scenario of epistemic crisis within the scientific community, these new actors are accumulating increasing amounts of symbolic capital (Bourdieu, 1989/2001), which facilitates the transmission—with little resistance—of what they assert (Oliveira, 2020), even when it is erroneous information. This is because, as they accumulate a certain degree of authority among their audiences, the content of the message tends to lose importance, while the person delivering it gains greater relevance (Oliveira, 2020; Tandoc *et al.*, 2017). This is a trend that transcends geographical and cultural barriers and can help explain the presence of different sources of climate disinformation in the three *corpora* examined.

Regarding the prevalence of sources in the *corpora*, it is possible to identify some contrasting patterns. In general, scientific authority is widely invoked across all languages, whether through researchers, academic studies, or government institutions. Furthermore, journalism and public agencies and institutions also predominate, although with variations in their prominence and in the way they are utilized in each *corpus*. In this regard, parallels can be drawn with the instrumentalization of epistemic authority in social spheres such as science or journalism. This instrumentalization of science in opposition to the scientific consensus has also been observed in other studies, in the context of climate change denial (Abellán López, 2021; Santini and Barros, 2022), anti-vaccine activism (Kata, 2012; Maia, 2024), and the promotion of chloroquine for the treatment of COVID-19 (Oliveira *et al.*, 2021), indicating that this is a phenomenon that transcends sociocultural barriers and manifests itself in global disinformation flows.

In the materials analyzed, we also observed, for example, the citation and endorsement of Nobel laureates who deny climate change (John Clauser and Ivan Giaever) to reinforce misleading narratives on the subject. In this regard, it is pertinent to draw a parallel between the role of renowned scientists in spreading disinformation about climate change and the findings of Emergente Loiola (2022), who also identified climate change denial videos featuring researchers from major institutions interviewed by widely circulated media outlets.

This process already had precedents, such as the citation of renowned scientists like Carl Sagan of the American Petroleum Institute in the United States to justify the downplaying of global warming for the benefit of the fossil fuel industry (Franta, 2021). Therefore, it is also possible to establish links between scientific disinformation on climate change and alignment with the roles of the various actors and interests

involved in the dissemination and propagation of such disinformation (Santini and Barros, 2022).

The results obtained regarding the typologies of climate disinformation deviate from a single pattern and point to specific characteristics related to each of the three languages examined. Even so, it is worth noting that certain formats stood out in at least two concurrent *corpora*—such as the contribution to the creation of uncertainty in English and Portuguese, or even belief biases and the amplification of conspiracy theories in English and Spanish—which points to the existence of certain flows and trends, albeit not strictly standardized (European Digital Media Observatory [EDMO], 2022).

Therefore, it is worth noting that, while disinformation is a phenomenon that spreads through global flows, sociocultural contexts also influence the specific ways in which it manifests. This suggests that, depending on the specific issues within each sociocultural context, scientific disinformation not only takes different forms but also has a greater or lesser potential for circulation and, consequently, for contributing to the generation of controversies (Santini and Barros, 2022), the division of public opinion, and the sowing of doubt among the population (Thapa Magar *et al.*, 2024). Once influenced by local characteristics, the circulation of this type of content can also contribute to polarization on the issue and to the creation of artificial controversies that have the potential to shape behaviors and, consequently, delay climate change mitigation policies (EDMO, 2024; Santini and Barros, 2022; Treen *et al.*, 2020).

In general, the findings in this analytical category also reflect the ways in which climate change disinformation is presented, whether through denial and skepticism regarding the climate consensus or through alarmist rhetoric, as observed by Treen *et al.* (2020). Furthermore, the data obtained correlate with the type of disinformation identified in the study by Hassan *et al.* (2024), in which misleading or fabricated content—based on the manipulation of facts—played a significant role in generating skepticism, particularly through its dissemination on social media.

Finally, by analyzing the framing, strategies, and lines of argumentation in each of the 50 cases examined in this study, it becomes evident how local specificities permeate and reshape global issues within disinformation flows. This finding corroborates previous research that already indicated that disinformation adapts to issues and tensions within specific political, social, cultural, and media- y contexts (Massarani *et al.*, 2022). With regard to climate change—a phenomenon of transnational scope and relevance—this study reinforces the idea that local intersections do not act as a barrier to the circulation of disinformation but rather facilitate adaptations and adjustments. Therefore, it is a “glocal” phenomenon, combining local elements—whose diversity is evident even within a single language—with discursive structures and strategies of global reach. Thus, based on the analyzed excerpt, it can be asserted that climate disinformation is not homogeneous throughout the world, although it maintains common discursive

strategies on a global scale, such as the delegitimization of science and the parasitic exploitation of its discursive authority.

6. CONCLUSIONS

The results of the study presented highlight the complexity of the spread of disinformation about climate change, revealing how this phenomenon manifests itself in transnational flows and, in turn, adapts to specific sociocultural contexts. The predominant presence of both alternative and traditional media in the dissemination of disinformation narratives, as well as the growing influence of celebrities, digital influencers, and religious leaders, suggests constant reconfigurations of discursive authorities amid disputes over spaces of enunciation, communicational transformations, and an epistemic crisis in science.

This occurs in a context where the logic of digital platforms—by fragmenting the centers of information dissemination—allows for the expansion of actors who are legitimized in the dissemination of scientific information (or disinformation), resulting in the circulation of content that is not always grounded in technical or academic evidence. This phenomenon not only contributes to the spread of disinformation but also to the erosion of scientific authority, which undermines public trust in science and hinders the implementation of climate change mitigation policies.

The exploitation of the epistemic authority of scientists, researchers, and academic institutions for the spread of disinformation has also proven to be a significant factor, consistent with strategies observed in other contexts of scientific denialism, and thus indicates the existence of a global trend. This practice not only reinforces misleading narratives but also contributes to sowing doubt and dividing public opinion, thereby fueling a certain degree of polarization in the climate debate.

When specifically examining the relationships between the English and Portuguese *corpora*, common elements linked to fatalism or apocalyptic views on the effects of climate change can be observed. Furthermore, based on converging elements across the three *corpora*, it is possible to identify some common lines of argument, such as: the exposure of alleged fraud, deception, or lies regarding climate change; use of irony, satire, ridicule, or exaggeration regarding the topic; and the instrumentalization of scientific authority—especially that of renowned scientists, including Nobel laureates—to legitimize denialist positions on climate change or global warming.

In an attempt to summarize the distinctive features present in each of the *corpora*, it is observed that in English, narratives—especially those from alternative media—were influenced by a right-wing populist ideology opposed to the alleged political elites, from a conservative nationalist and neoliberal perspective. In the case of the Spanish *corpus*, what stands out is the prevalence of beliefs and pseudoscience, or the blending of scientific sources with religious (biblical) foundations, as well as the

creation or fabrication of interests or consensus contrary to the belief in climate change. Finally, with regard to *the Portuguese corpus*, an excessive politicization of climate change is observed.

As demonstrated throughout the presentation of the results, while there is diversity in terms of approach, types of senders, and sources used, the data reveal a certain similarity among the *corpora*. These findings show that, although there are patterns common to all three languages, there are also distinctive features specific to each sociocultural context. Driven by facilitating factors such as transnational media networks, digital platform algorithms, and various economic interests, the intersection between global disinformation flows and local dynamics highlights the glocal nature of climate disinformation, which adapts to the specific characteristics of each society without losing its connection to internationally shared narratives and discursive strategies.

It is also important to consider how transnational flows and local adaptations of disinformation reflect different aspects of the contemporary digital ecosystem. Platform-specific recommendation algorithms rely on sets of rules that operate globally, while also utilizing locally produced data and content. In this way, recommendation systems, engagement filters, and moderation policies work together to create information bubbles, with the potential to reinforce biases and accelerate the spread of misleading narratives. This integrated approach, which brings together sociocultural and technical factors, can offer valuable insights for the development of more effective public policies and moderation strategies, helping to mitigate the spread of disinformation in an increasingly complex digital environment.

It is worth noting that this intersection between the global and the local reinforces the need for region-specific strategies to combat disinformation, taking into account the cultural and political particularities of each context. In light of these findings, future studies could explore in greater depth the mechanisms and dynamics of how this content is received, as well as the implications of its dissemination for the formation of public opinion and political decision-making.

Finally, another relevant aspect to consider concerns the ethical implications of the effects of scientific disinformation—particularly climate disinformation—in the public sphere. The disinformation ecosystem is not limited to “alternative media,” leaders, or celebrities who target niche audiences or align with specific ideological orientations. It also includes actors with established symbolic capital, such as traditional journalism and scientific and institutional authorities. This indicates that climate disinformation circulates through various actors operating within the ecosystem that shapes public opinion, and digital platforms play a fundamental role in this disinformation dynamic.

Furthermore, the ethical, political, and environmental implications of disinformation not only call scientific evidence into question—thereby undermining the historically established authority of science—but also generate uncertainty and exacerbate

polarization surrounding climate change, despite its broad and well-established scientific recognition. This scenario hinders the adoption of collective action and the formulation of public policies aimed at both addressing the effects of the climate crisis and holding the main actors responsible for causing it accountable.

7. REFERENCES

- Abellán López, M. Á. (2021). Climate Change: Denial, Skepticism, and Misinformation. *Tabula Rasa*, 37, 283–301. <https://doi.org/10.25058/20112742.n37.13>
- Barbieri, M. D., Ferreira, L. C., & Barbi, F. (2018). Governing Climate Change: The Political Strategies of Brazil and China. *Ideias*, 9(2), 71–98. <https://doi.org/10.20396/ideias.v9i2.8655192>
- Bennett, W. L., and Livingston, S. (2018). The disinformation order: Disruptive communication and the decline of democratic institutions. *European Journal of Communication*, 33(2), 122–139. <https://doi.org/10.1177/0267323118760317>
- Biancovilli, P., Makszin, L., and Csongor, A. (2021). Breast cancer on social media: a quali-quantitative study on the credibility and content type of the most shared news stories. *BMC Women's Health*, 21(202), 1–11. <https://doi.org/10.1186/s12905-021-01352-y>
- Blake-Turner, C. (2020). Fake news, relevant alternatives, and the degradation of our epistemic environment. *Inquiry*, 68(10), 3148–3168. <https://doi.org/10.1080/0020174x.2020.1725623>
- Bourdieu, P. (2001). *Symbolic Power* (F. Tomaz, Trans.). Bertrand Brasil. (Original work published 1989)
- Canavilhas, J. (2012). *The New Media Ecosystem*. Covilhã.
- Castells, M. (2007). “Communication, Power, and Counter-power in the Network Society.” *International Journal of Communication*, 1(1), 238–266. <https://ijoc.org/index.php/ijoc/article/view/46>
- Cook, J., Ellerton, P., and Kinkead, D. (2018). Deconstructing climate misinformation to identify reasoning errors. *Environmental Research Letters*, 13(2), 1–8. <https://doi.org/10.1088/1748-9326/aaa49f>
- Copernicus Climate Change Service (January 9, 2024). *The 2023 Annual Climate Summary: Global Climate Highlights 2023*. Earth Observation Program of the European Union. <https://climate.copernicus.eu/global-climate-highlights-2023>

Medeiros, Amanda; Waltz, Igor; Bolzán, Ricardo; Bulhões, Juliana; Massarani, Luisa; Moreno, Carolina; Mena Young, Margoth; Quevedo Camargo, Chico; Fernandes Neves, Luiz Felipe; and Oliveira, Thaiane

The Climate Crisis and the Glocal Dynamics of Disinformation

- Core Writing Team, Lee, H., and Romero, J. (Eds.). (2023). *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II, and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Intergovernmental Panel on Climate Change. <https://doi.org/10.59327/IPCC/AR6-9789291691647>
- Cruz, L., Fagundes, V., Massarani, L., and Oliveira, T. (2025). *Dynamics of climate disinformation in Facebook and Instagram posts in Brazil*. In press.
- Diethelm, P., & McKee, M. (2009). Denialism: What Is It and How Should Scientists Respond? *European Journal of Public Health*, 19(1), 2–4. <https://doi.org/10.1093/eurpub/ckn139>
- Duarte, D. E. and Benetti, P. R. (2022). For Science, Against Scientists? Denialism and Disputes Surrounding Health Policies During the Pandemic. *Sociologias*, 24(60), 98–138. <https://doi.org/10.1590/18070337-120336>
- Emergente Loiola, D. F. (2022). Global Warming Denialism on YouTube: An Exploratory Analysis. *Revista Ciências Humanas*, 15(3), 49–58. <https://doi.org/10.32813/2179-1120.2022.v15.n3.a928>
- European Digital Media Observatory (July 21, 2022). *Disinformation about climate change: Main narratives in June at the European level*. <https://encurtador.com.br/3k3pq>
- European Digital Media Observatory (January 25, 2024). *Wind Turbines and Poisoned Animals: A “New Denial”’s Popular Disinformation Narrative Against Renewable Energy*. <https://encurtador.com.br/q3KdH>
- Fonseca, P. F. C., Ribeiro, B. E., and Nascimento, L. F. (2022). Demarcating Patriotic Science on Digital Platforms: Covid-19, Chloroquine, and the Institutionalization of Ignorance in Brazil. *Science as Culture*, 31(4), 530–554. <https://doi.org/10.1080/09505431.2022.2105691>
- Franta, B. (2021). Early oil industry disinformation on global warming. *Environmental Politics*, 30(4), 663–668. <https://doi.org/10.1080/09644016.2020.1863703>
- Freelon, D. G. (2010). ReCal: Intercoder reliability calculation as a web service. *International Journal of Internet Science*, 5(1), 20–33. <https://www.oalib.com/research/2190235>
- Freelon, D., & Wells, C. (2020). Disinformation as Political Communication. *Political Communication*, 37(2), 145–156. <https://doi.org/10.1080/10584609.2020.1723755>
- Gundersen, T., Alinejad, D., Branch, T. Y., Duffy, B., Hewlett, K., Holst, C., Owens, S., Panizza, F., Tellmann, S. M., van Dijck, J., and Baghrmian, M. (2022). A New

Medeiros, Amanda; Waltz, Igor; Bolzán, Ricardo; Bulhões, Juliana; Massarani, Luisa; Moreno, Carolina; Mena Young, Margoth; Quevedo Camargo, Chico; Fernandes Neves, Luiz Felipe; and Oliveira, Thaiane

The Climate Crisis and the Glocal Dynamics of Disinformation

- Dark Age? Truth, Trust, and Environmental Science. *Annual Review of Environment and Resources*, 47(1), 5–29. <https://doi.org/10.1146/annurev-environ-120920-015909>
- Hassan, I., Musa, R. M., Azmi, M. N. L., Abdullah, M. R., and Yusoff, S. Z. (2024). Analysis of climate change disinformation across types, agents, and media platforms. *Information Development*, 40(3), 504–516. <https://doi.org/10.1177/026666669221148693>
- Ismail, A., Munsu, H., and Yusuf, A. M. (2024). A Bibliometric Analysis of the Scope of Local, Global, and Glocal Studies. *Glocal Society Journal*, 1(1), 1–13. <https://doi.org/10.31947/gs.v1i1.36119>
- Jenkins, H., Green, J., and Ford, S. (2013). *The Culture of Connection: Creating Value and Meaning Through Spreadable Media*. Aleph.
- Kata, A. (2012). Anti-vaccine activists, Web 2.0, and the postmodern paradigm – An overview of tactics and tropes used online by the anti-vaccination movement. *Vaccine*, 30(25), 3778–3789. <https://doi.org/10.1016/j.vaccine.2011.11.112>
- Kischinhevsky, M. and Fraga, R. (2020). Journalism Held Hostage by Facebook's Algorithm: Regulatory Challenges for the Circulation of News in a Platform Society. *Fronteiras - estudos midiáticos*, 22(2), 126–136. <https://doi.org/10.4013/fem.2020.222.11>
- Lewandowsky, S. (2021). Climate change disinformation and how to combat it. *Annual Review of Public Health*, 42(1), 1–21. <https://doi.org/10.1146/annurev-publhealth-090419-102409>
- Maia, L. R. H., Massarani, L., Santos, M. A. D., & Oliveira, T. (2024). Communities of belonging, disinformation, and antagonism: Interactional processes in anti-vaccine groups on Telegram in Brazil. *GALÁxia. Interdisciplinary Journal of Communication and Culture*, 49(1), 1–24. <https://revistas.pucsp.br/index.php/galaxia/article/view/64635>
- Massarani, L., Leal, T., Waltz, I., & Medeiros, A. (2021). Infodemic, disinformation, and vaccines: the circulation of content on social media before and after COVID-19. *Liinc em Revista*, 17(1), 1–23. <https://doi.org/10.18617/liinc.v17i1.5689>
- Massarani, L., Medeiros, A., Waltz, I., & Leal, T. (2022). Misinformation about COVID-19 in Ibero-America: An analysis of fact-checkers. *TSN Transatlantic Studies Network*, 7(14), 67–79. <https://doi.org/10.24310/TSN.2022.v7i14.17651>
- Massarani, L., Waltz, I., and Medeiros, A. (2024). Risk Perception and Social Media Engagement: The Public Debate on Vaccination During the Second Year of the

Medeiros, Amanda; Waltz, Igor; Bolzán, Ricardo; Bulhões, Juliana; Massarani, Luisa; Moreno, Carolina; Mena Young, Margoth; Quevedo Camargo, Chico; Fernandes Neves, Luiz Felipe; and Oliveira, Thaiane

The Climate Crisis and the Glocal Dynamics of Disinformation

- COVID-19 Pandemic. *Revista Famecos*, 31(1), 1–18.
<https://doi.org/10.15448/1980-3729.2024.1.44004>
- Medeiros, A., Waltz, I., and Massarani, L. (2023). From Engagement to Demobilization: Dynamics of Online Debates on Vaccines During the COVID-19 Pandemic. *E-Compós*, 26, 1–24. <https://doi.org/10.30962/ec.2772>
- Michaelowa, K., & Michaelowa, A. (2017). Transnational climate governance initiatives: Designed for effective climate change mitigation? *International Interactions*, 43(1), 129–155. <https://doi.org/10.1080/03050629.2017.1256110>
- Nguyen, A., & Catalan-Matamoros, D. (2020). Digital Mis/Disinformation and Public Engagement with Health and Science Controversies: Fresh Perspectives from COVID-19. *Media and Communication*, 8(2), 323–328. <https://doi.org/10.17645/mac.v8i2.3352>
- Obergassel, W., Arens, C., Hermwille, L., Kreibich, N., Mersmann, F., Ott, H. E., and Wang-Helmreich, H. (2015). Phoenix from the ashes: an analysis of the Paris Agreement to the United Nations Framework Convention on Climate Change; part 1. *Environmental Law and Management*, 27(6), 243–262. <https://epub.wupperinst.org/frontdoor/index/index/docId/6373>
- Oliveira, T. (2020). Scientific disinformation in times of epistemic crisis: the circulation of conspiracy theories on social media platforms. *Fronteiras – Estudos Midiáticos*, 22(1), 21–35. <https://doi.org/10.4013/fem.2020.221.03>
- Oliveira, T., Evangelista, S., Alves, M., & Quinan, R. (2021). “Those on the right take chloroquine”: The illiberal instrumentalization of scientific debates during the COVID-19 pandemic in Brazil. *Javnost-The Public*, 28(2), 165–184. <https://doi.org/10.1080/13183222.2021.1921521>
- Oliveira, T., Wang, Z., and Xu, J. (2022). Scientific disinformation in times of epistemic crisis: circulation of conspiracy theories on social media platforms. *Online Media and Global Communication*, 1(1), 164–186. <https://doi.org/10.1515/omgc-2022-0005>
- Peruzzo, C. M. K. (2009). Convergence between popular and community-based communication and the alternative press in Brazil in the age of cyberspace. *Galáxia. Interdisciplinary Journal of Communication and Culture*, 17, 131–146. <https://revistas.pucsp.br/index.php/galaxia/article/view/2108>
- Romanello, M., Di Napoli, C., Drummond, P., Green, C., Kennard, H., Lampard, P., Scamman, D., Arnell, N., Ayeb-Karlsson, S., Berrang Ford, L., Belesova, K., Bowen, K., Cai, W., Callaghan, M., Campbell-Lendrum, D., Chambers, J., van Daalen, K. R., Dalin, C., Dasandi, N., ... Costello, A. (2022). The 2022 report of the Lancet Countdown on health and climate change: Health at the mercy of

Medeiros, Amanda; Waltz, Igor; Bolzán, Ricardo; Bulhões, Juliana; Massarani, Luisa; Moreno, Carolina; Mena Young, Margoth; Quevedo Camargo, Chico; Fernandes Neves, Luiz Felipe; and Oliveira, Thaiane

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fossil fuels. *The Lancet*, 400(10363), 1619–1654. [https://doi.org/10.1016/S0140-6736\(22\)01540-9](https://doi.org/10.1016/S0140-6736(22)01540-9)

Santini, R. M., & Barros, C. E. (2022). Climate denial and online disinformation: A scoping review. *Liinc em revista*, 18(1), 1–27. <https://doi.org/10.18617/liinc.v18i1.5948>

Tandoc, E. C., Lim, Z. W., and Ling, R. (2017). Defining “Fake News”: A typology of scholarly definitions. *Digital Journalism*, 6(2), 137–153. <https://doi.org/10.1080/21670811.2017.1360143>

Thapa Magar, N., Thapa, B. J., and Li, Y. (2024). Climate Change Misinformation in the United States: An Actor–Network Analysis. *Journalism and Media*, 5(2), 595–613. <https://doi.org/10.3390/journalmedia5020040>

Treen, K. M. D. I., Williams, H. T., and O’Neill, S. J. (2020). Online misinformation about climate change. *WIREs Clim Change*, 11(5), 1–20. <https://doi.org/10.1002/wcc.665>

Urbano, K., Oliveira, T., Evangelista, S., and Massarani, L. (2024). Mapping environmental misinformation in Latin America and the Caribbean: a bibliometric analysis of an emerging field of research. *JCOMAL*, 7(1), 1–21. <https://doi.org/10.22323/3.07010202>

Wolf, M. (1999). *Theories of Communication* (5th ed.). Presença.

Zaila, K. E., Osadchiy, V., Shahinyan, R. H., Mills, J. N., and Eleswarapu, S. V. (2020). Social Media Sensationalism in the Male Infertility Space: A Mixed-Methods Analysis. *World Journal of Men's Health*, 38(4), 591–598. <https://doi.org/10.5534/wjmh.200009>

Medeiros, Amanda; Waltz, Igor; Bolzán, Ricardo; Bulhões, Juliana; Massarani, Luisa; Moreno, Carolina; Mena Young, Margoth; Quevedo Camargo, Chico; Fernandes Neves, Luiz Felipe; and Oliveira, Thaiane

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- Quian, A. (2023). (Des)infodemia: lecciones de la crisis de la covid-19. *Revista de Ciencias de la Comunicación e Información*, 28, 1-23. <https://doi.org/10.35742/rcci.2023.28.e274>
- Sádaba, C. y Salaverría, R. (2023). Combatir la desinformación con alfabetización mediática: análisis de las tendencias en la Unión Europea. *Revista Latina de Comunicación Social*, 81, 1-17. <https://doi.org/10.4185/RLCS-2023-1552>
- Torrigo, D. V. (2025). Comunicación y crisis climática: lecciones aprendidas y nuevos desafíos ante un reto ineludible. *Yachana Revista Científica*, 14(1), 126-140. <https://doi.org/10.62325/10.62325/yachana.v14.n1.2025.956>
- Vicente Torrico, D., Hernando Lera, M. y González Puente, V. (2024). El obstruccionismo climático en redes sociales: desinformación y ataques contra las voces de la ciencia. *ZER. Revista De Estudios De Comunicación*, 29(56), 173-199. <https://doi.org/10.1387/zer.25929>

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