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Climate Disinformation on TikTok in Brazil: Science and Epistemic Authorities in Conflict

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Abstract

Record highs in the Earth's average temperature and the recurrent occurrence of extreme events have made climate change a central focus of international organisations' and governments' agendas worldwide. The epistemic crisis in science, together with the rise of individual belief systems, raises concerns about the spread of climate disinformation, particularly in a context where social networking platforms increasingly mediate everyday life. This article analyses the meanings conveyed in disinformation-based content about climate change published on TikTok to identify which actors, technical resources, and discursive strategies are mobilised to reinforce narratives on the topic. To this end, methodological procedures drawn from content analysis are employed to examine disinformation-based material randomly selected on TikTok using the keywords "climate change", "climate changes" and "global warming". A total of 207 videos were analysed. The results indicate a high percentage (71%) of cropped or decontextualised materials on TikTok that rely on scientific or journalistic arguments to disseminate factoids about climate change. Paradoxically, the main vectors of disinformation are science professionals or journalists (34%), whose scientific capital is mobilised in videos to disinform, whether intentionally or unintentionally, by the protagonist. These results thus suggest that science is being instrumentalised and scientists are being

mobilised to promote an informational disorder based on exaggerations about climate change and its consequences, requiring equally complex collective actions to mitigate these effects.

Keywords
climate disinformation, platforms, social networks, TikTok

Desinformação Climática no TikTok no Brasil: Ciência e Autoridades Epistêmicas em Disputa

Resumo

Os recordes na temperatura média da Terra e a reincidência de eventos extremos tornaram as mudanças climáticas agenda central de organizações internacionais e governos de todo o mundo. A crise epistêmica da ciência, em paralelo com o avanço de sistemas de crenças individuais, acende um alerta sobre a propagação de desinformação climática, sobretudo com a midiatização do cotidiano em plataformas de redes sociais. Neste artigo, analisamos os sentidos circulados em conteúdos desinformativos sobre mudanças climáticas publicados no TikTok, para identificar quais atores, recursos técnicos e estratégias discursivas foram mobilizados para reforçar narrativas acerca do tema. Com esta finalidade, recorremos a procedimentos metodológicos vindos da análise de conteúdo para examinar materiais desinformativos selecionados randomicamente no TikTok a partir das palavras-chave "mudança climática", "mudanças climáticas" e "aquecimento global". Foram analisados 207 vídeos. Nossos resultados evidenciam um percentual alto (71%) de materiais recortados ou descontextualizados no TikTok que recorrem a argumentos científicos ou jornalísticos para propagar factoides sobre as mudanças climáticas. Contraditoriamente, os principais vetores da desinformação são profissionais da ciência ou jornalistas (34%), cujo capital científico é mobilizado em vídeos para desinformar, com ou sem intencionalidade do protagonista. Assim, os resultados apontam que há instrumentalização da ciência e mobilização de cientistas para promover uma desordem informacional baseada em exageros quanto às mudanças climáticas e seus desdobramentos, demandando ações coletivas igualmente complexas para mitigar tais efeitos.

Palavras-chave
desinformação climática, plataformas, redes sociais, TikTok

1. Introduction

In June 2023, the United Nations (UN) secretary-general, António Guterres, stated that record temperatures had brought the world into the "era of global boiling" (Organização das Nações Unidas, 2023). In 2024, a report released by the organisation recorded, for the first time, an average temperature 1.55 °C above pre-industrial levels, jeopardising the main target of the Paris Agreement[1] (Organização das Nações Unidas, 2025). That year marked the second consecutive year of record temperatures in the historical series (Organização das Nações Unidas, 2024).

[1] A treaty signed in 2015 by the world's major economies to combat the progression of climate change. Among the primary targets set is to keep the increase in the global average temperature to no more than 1.5 °C by the end of the century.

The mitigation of the climate crisis mobilises the efforts of social actors and international organisations. In 2024, the topic was identified as a central agenda of the annual G20 summit, which brings together the world's 20 largest economies, held in Brazil ("Declaração Final do G20 Aborda Mudanças Climáticas, Guerras e Taxação de Super-Ricos", 2024). Months before the meeting, the country experienced one of the worst extreme climate events of 2024, comparable to earthquakes that struck the United States coast and storms that devastated the city of Valencia, Spain (Bett, 2024). Between April and May of that year, the Brazilian state of Rio Grande do Sul recorded, in a single week, the amount of rainfall expected for the entire semester. The event caused 187 deaths and reignited Brazilian authorities' concern with the issue. By becoming the centre of narrative and political disputes, the topic also demands analysis through transversal lenses.

In recent years, narratives contesting the anthropogenic influence on the climate have gained strength, supported by politicians and right-wing media outlets (Capstick et al., 2015). This movement is situated within a disinformation spectrum, which decontextualises and delegitimises information by deploying rhetoric that makes such narratives credible to the public (Evangelista & Garcia, 2024; Gounaridis & Newell, 2024; Lewandowsky, 2021; Santini & Barros, 2022; Wardle & Derakhshan, 2017). In Brazil, the advance of anti-science discourse led the Government, in 2024, to establish a partnership with the UN and the United Nations Educational, Scientific and Cultural Organization (UNESCO) to implement measures to combat the sharing of false information on the topic, particularly on social media (Organização das Nações Unidas, 2024).

The lack of theoretical and scientific grounding, combined with the appropriation of tools characteristic of digital spaces by different actors, makes information quality less relevant than the technical resources deployed on platforms such as TikTok (Jordan, 2024; Junqueira, 2022; McKenzie, 2022). Users' interaction with platform affordances accentuates this — when they appropriate elements of the social network's architecture for particular purposes (Burlamaqui & Dong, 2015) — which enables the creation of disinformation. Acquired by the Chinese company ByteDance in 2017, TikTok gained global prominence during the COVID-19 pandemic and reached 1.58 billion active accounts in 2024, with Brazil ranking third among adult consumer audiences worldwide (Kemp, 2024; Statista, n.d.).

In 2022, research by the online disinformation-tracking tool NewsGuard showed that almost 20% of content returned when searching TikTok for relevant news topics contained some degree of falsification (Brewster et al., 2022). When addressing issues such as the Russia–Ukraine war and COVID-19 vaccines, the searches were conducted using key terms — "COVID vaccine truths" and "is global warming real" — and on separate accounts to avoid search bias.

This study aims to map the meanings circulated about climate change in disinformation-based material shared on TikTok, analysing which actors, technical resources and discursive strategies are privileged in these publications. The investigation was conducted by randomly selecting videos using the expressions "climate change", "climate changes" and "global warming", and categorising and analysing them using methodological procedures drawn from content analysis (Bardin, 1977/2016; Sampaio & Lycarião, 2021). The specific

objectives include examining how these materials mobilise scientific knowledge, under which arguments, and what affective impressions sustain them.

At a time when the climate crisis is raising global alarm, mapping false narratives about the topic may encourage countermeasures on social media platforms. Against this backdrop, this article seeks to broaden perspectives on the particular dynamics of climate disinformation on TikTok, a topic still underexplored in the literature. Thus, "disinformation" is conceptualised, and the roles of actors and the resources deployed are discussed to contextualise climate denial through the lens of scientific capital (Bourdieu, 1997/2004), which is challenged in the current context of epistemic crisis (T. Oliveira, 2020b; Santini & Barros, 2022). Affordances and dynamics of TikTok that make it a vector for sharing climate disinformation are also analysed, based on reflections on platform society (van Dijck et al., 2018) and algorithmic partiality (Gillespie, 2018).

2. Disinformation and Climate Change

In public health crises, an infodemic refers to the rapid, widespread dissemination of incorrect or false information (Massarani et al., 2021). Its virality depends mainly on the adaptation of content to platform affordances, which complicates the mapping of disinformation-based material (F. Soares et al., 2021) by inserting notions of truth into the sphere of informational disorder (Wardle & Derakhshan, 2017). This phenomenon takes on another dimension on social media, where the formation of echo chambers encourages the politicisation of health and science issues by mobilising affective responses to topics such as climate change (Junqueira, 2022; Massarani et al., 2021).

Disinformation is understood as a cultural phenomenon that exacerbates political polarisation on networks, rather than just a monopoly of truth (T. Oliveira, 2020a; Santini & Barros, 2022). On these platforms, virality stems more from content confirming biases or beliefs in conspiracy theories than from the circulation of accurate information (Lazer et al., 2018; Loiola, 2022; Salaverría et al., 2020).

Such materials are less readily refuted by scientific authorities because they appeal to personal beliefs. This indicates that conviction in factoids has little direct relation to users' level of education or access to scientifically supported information (Cook, 2020; Santini & Barros, 2022; Szabados, 2019). Public debates on climate change generate greater social media engagement when they evoke social, economic, and political issues (Capoano et al., 2024). This context facilitates the circulation of climate disinformation during extreme climate events, amplifying conspiratorial and denialist narratives (Salles & Santini, 2024).

In content related to science and health, when endorsed by purported scientists or individuals claiming affiliation with scientific institutions, disinformation acquires a scientific veneer that validates false recommendations for health management (Salaverría et al., 2020). The boundaries between falsification and overt disinformation also become increasingly blurred in discussions about the climate (Cook, 2020; Urbano et al., 2024).

In parallel, an epistemic crisis emerges, in which scientific spheres and informational authorities are widely contested (Braga, 2012; T. Oliveira, 2020b).

The reorganisation of communication circuits downplays the specialist's position and grants legitimacy to direct informers (Braga, 2012). This process accelerates in the current context of internet mediatisation (Mintz, 2019), in which the proliferation of platforms that can mediate access to consumption, social interactions, and economic dynamics reconfigures society. On social media, any interlocutor can become an authority on a given subject (T. Oliveira, 2020b). Therefore, it is pertinent to consider that the mediatisation of climate denial discourse is permeated by a proliferation of recognised "experts".

The model that enables the reproduction of logical fallacies — constructed from apparently coherent associations (Gounaridis & Newell, 2024) — is anchored in the appropriation of scientific capital, a type of symbolic capital that involves the recognition accorded to an authority within the scientific field (Bourdieu, 1997/2004). This confers legitimacy among peers and society at large. Thus, by transforming false specialists into credible messengers, the mediatisation of the internet (Mintz, 2019) and the dilution of sender and receiver roles (Braga, 2012) contribute to the contestation within the scientific field in a context of epistemic crisis (T. Oliveira, 2020b).

Practices of decontextualisation and the dissemination of conspiracy theories are prominent in discourses denying climate change (Biddlestone et al., 2022; Douglas & Sutton, 2015; Lewandowsky, 2021). This movement has grown over recent decades, in parallel with scientific advances on the impacts of anthropogenic actions on ecosystems (Capstick et al., 2015). However, only from 2016 onwards did Latin American research networks begin to discuss the topic's relations with political and social circles (Urbano et al., 2024).

This issue carries a political dimension supported by the scientific field, in which actors resort to data distortion and a false symmetry between opposing and supporting positions on the topic (Cook, 2020). These actors uphold logical fallacies (Santini & Barros, 2022), a common disinformation practice (Tsang, 2024). Such strategies induce contestation of scientific consensuses — such as anthropogenic interference in the climate — and minimise the chances of reversing the current state of calamity.

Conservative leaders, such as former United States President Donald Trump, reproduce climate disinformation. Since his first term, he has denied the existence of climate change and, on two occasions, withdrew the country from the Paris Agreement (Gounaridis & Newell, 2024; Szabados, 2019; *Trump Assina Decreto Para Saída dos EUA do Acordo de Paris; Veja Impactos Para o Meio Ambiente*, 2025). In doing so, political leaders mobilise collective affects to confer specific meanings to the subject (Papacharissi, 2016).

Foucault (1971/2014) argues that discourses are produced according to specific orderings, privileging some narratives over others. Statements legitimise and are legitimised by agents capable of conferring an effect of truth on a given topic. Thus, in the context of climate change, discourses reinforce scientific consensuses by validating certain specialists in constructing "truth", putting into dispute what would constitute a true narrative on

climate change. This logic is supported by the legitimacy granted to false specialists and conspiratorial scientists, which enables climate denial to be treated as unquestionable truth (Loiola, 2022).

Under this legitimacy, emotions such as fear are mobilised to spread panic generated by false or exaggerated premises (Salaverría et al., 2020). Containing this state leads to a projection of its effects into the future (Ahmed, 2014), enabling catastrophic scenarios about the end of the world to generate a constant sense of fear. Emotion is also activated by climate specialists to refute false content by inducing a collective state of alert (Chen & Tang, 2023) and to intentionally emphasise false content online (Scannell et al., 2021).

Fear was the principal emotion articulated in anti-vaccine content with the highest engagement during the second year of the COVID-19 pandemic (Massarani et al., 2024), as well as in content about vaccination shared on Twitter (Scannell et al., 2021), questioning immunisation and its consequences. The strategy is replicated in materials on climate due to networks' capacity to build communities based on collective affects (Papacharissi, 2016). Cruz et al. (2025) demonstrated the predominance of a catastrophic tone in disinformation about climate change on Facebook and Instagram in Brazil. Exaggerated fear of extreme climate events, the propagation of factoids by purported scientific authorities, and the contestation of specialist positions (Gounaridis & Newell, 2024; T. Oliveira, 2020b) are pillars of climate disinformation. These narratives are structured on social media through the use and appropriation of platform functionalities, facilitating the circulation of disinformation by anonymous interlocutors (Campbell & Farrell, 2020).

3. Mechanisms of Climate Disinformation Circulation on TikTok

With the mediatisation of the internet (Mintz, 2019), political and communication structures are reorganised around new information systems (d'Andrea, 2020; van Dijck et al., 2018). Architectures such as TikTok's influence how we understand social dynamics, as they operate as agents by moderating the content delivered to users, producing informational bubbles (d'Andrea, 2020; Evangelista & Garcia, 2024; Massarani et al., 2021). The format amplifies informational disorder (Wardle & Derakhshan, 2017) concerning climate on the network.

In a platform society (van Dijck et al., 2018), governed by an algorithmic logic (Gillespie, 2018), the economic and political significance of TikTok (Jordan, 2024) imposes new challenges for combating disinformation. These infrastructural platforms (van Dijck et al., 2018) "filter" content according to macropolitical interests, while their algorithms operate as new instances of informational power (Gillespie, 2018). Consequently, it is understood that there is no neutrality in the selection of videos returned in TikTok searches for climate change, with some content privileged through a sophisticated structure designed to capture attention. In this way, the platform reinforces its social function of guiding behaviour.

As Jordan (2024) explains, platforms such as TikTok — which, after two years of activity, reached 1 billion active accounts — operate according to a logic distinct from other platforms, prioritising the user profile rather than the network of connections, thereby facilitating the dissemination of anti-science knowledge (Ervitti et al., 2020; G. Oliveira et al., 2023; Santini & Barros, 2022). The recirculation of disinformation within algorithmically created bubbles increases the competition for validation in the production of truths about climate change.

The space granted to self-proclaimed "scientific authorities" expands as the climate debate gains centrality in the public sphere, amplifying the "tyranny of balance" (Szabados, 2019). Traditional media outlets and social networking platforms such as TikTok and YouTube provide space to pseudoscientists or false experts under the pretext of presenting "both sides" of the issue, thereby ensuring the so-called balance. In parallel, some platforms boost the circulation of climate disinformation intended to provoke fear, relying on exaggeration and falsification (Evangelista & Garcia, 2024; Salaverría et al., 2020). According to McKenzie (2022), the contestation of scientific consensus on climate change still depends on user loyalty and appeals to specific emotions.

On TikTok, each user's experience is shaped by platform affordances and usage profile, rendering the platform an unprecedented "attention factory" (Jordan, 2024). On the "For You Page", the main interface of the network, the algorithm delivers videos to users based on their interests, amplifying the reverberation of disinformation-based material produced directly on the platform (Baghdadi et al., 2023; Dias et al., 2024; Jordan, 2024; Schellewald, 2023; F. Soares et al., 2021).

Some platform affordances are commonly exploited, such as boosting videos with music (Feng et al., 2019). Trends featuring audio elements, for instance, have previously been used in anti-vaccine posts to evoke fear or humour (Lundy, 2023). These elements are applied to generate extremely high engagement with climate disinformation (Basch et al., 2022). The ease of editing on TikTok also makes it easier to share clips originally published on other channels. This culture transforms them into new media products through these clips, endowing them with meanings different from the original intention (Leal et al., 2024) and facilitating the decontextualisation of facts — one of the criteria described by Salaverría et al. (2020) for situating a news item within a spectrum of falsification.

4. Methodology

This article aims to map the meanings circulating about climate change in disinformation-based material shared on TikTok, along with the corresponding actors, technical resources and discursive strategies. The platform was chosen due to a combination of factors, including its relevance in Brazil, the country with the third-largest audience on the platform (Kemp, 2024). In recent years, several cases of TikTok being used for disinformation-based purposes have also been reported. A 2024 report by the international organisation Climate Action Against Disinformation indicates that, although TikTok is

one of the platforms that removes the most false content in European Union countries, it scores less than five points on an 18-point scale measuring the effectiveness of disinformation mitigation (Climate Action Against Disinformation, 2024).

This classification resonates in the Brazilian context. In 2024, TikTok was notified for hosting disinformation-based videos about the environmental disaster that struck the Brazilian state of Rio Grande do Sul in May of that year (Richter, 2024). At the international level, the growing exposure of young people to disinformation on health and science on the platform prompted the World Health Organization to establish a partnership with TikTok to expand access to fact-checked information on well-being (World Health Organization, 2024).

In this research, the descriptors "climate change", "climate changes", and "global warming" were used to identify posts for analysis. The terms were entered directly into the platform's search tool, as access to TikTok's application programming interface, which could facilitate data collection, is unavailable in Brazil (M. Soares, 2024). Using a Python data-scraping programme, all resulting videos and metadata from each search were collected. A convenience sample was selected based on the results returned by TikTok. The period of the returned posts, mainly from 2023 onwards, is situated within a broader context of discussion on the climate crisis as part of a larger project, entitled *Desinformação Científica no Brasil: Análise de Controvérsias e Estratégias Para o Enfrentamento à Desinformação em Plataformas Digitais*, recognising record global average temperatures (Organização das Nações Unidas, 2024) and the alarming scenario of "global boiling" (Organização das Nações Unidas, 2023).

The extraction yielded 2,967 videos, along with metadata including publication date, description, associated hashtags, and any accompanying music and/or sound effects. As TikTok does not disclose the criteria used in its searches beyond the keywords, it is not possible to determine how representative the *corpus* is of the total content on the topic on the platform. TikTok appears to prioritise recent content, as the data collection was conducted in April 2024, and the majority of returned videos were published in 2023 and 2024. It should be noted that the search also returned posts published between 2019 and 2022, which were included in the listing of materials to be examined.

For refinement, duplicates and videos outside the climate change theme, as well as content not in Brazilian Portuguese, were removed, reducing the *corpus* to 776 videos. In a second stage, only disinformation-based posts were selected. In this phase, we drew on the concepts of "disinformation", "climate denial", and "informational disorder" to retain only content containing false news, conspiracy theories, and falsified information (Cook, 2020; Lewandowsky, 2021; T. Oliveira, 2020a; Salaverría et al., 2020; Wardle & Derakhshan, 2017). A thorough analysis of each video — through the reading of comments and examination of the publisher profile — resulted in a final *corpus* of 207 videos shared by 181 profiles. In this sample, identical videos were considered separately if posted by different users, as the circulation of the statements reaches distinct audiences.

The analysis of materials was conducted using a codebook initially developed to map climate disinformation on social networks such as Instagram and Facebook (Cruz et

al., 2025). The codebook comprises 12 categories that enable analysis of materials across multiple frameworks, such as disinformation attributes, language, and the construction of disinformation-based content. After adapting the material, six categories were selected to map the meanings circulated about climate change in disinformation-based content on the platform: social actor, type of disinformation, purpose, scientific argument, expressive form, and theme.

Regarding the identification of social actors, the category was expanded to encompass the object's specificities. Thus, the definitions proposed by Campbell and Farrell (2020) regarding the relevance of profiles within the network were adopted. According to these authors, enunciators can be classified as nano-influencers, micro-influencers, macro-influencers, mega-influencers, or celebrities, depending on the number of followers and the impact exerted beyond the platform.

Additionally, other features observed during exploratory engagement with the *corpus* led to the creation and incorporation of four new analytical categories: protagonist, use of clip, use of music, and music type. For the latter two categories, we examined the articulation of sound effects to produce meaning, following the work of Lundy (2023) and Geboers and Pilipets (2024).

Through this approach, we aimed to provide an overview of climate disinformation circulating on TikTok, its actors, the technical resources employed, and the discursive strategies deployed. Simultaneously, we sought to identify how scientific capital is mobilised in these materials and through which rhetorical strategies. By analysing expressive forms and video themes, we traced the arguments and contexts constructed to circulate meanings associated with climate disinformation.

These analytical entries were facilitated by methodological procedures drawn from content analysis (Bardin, 1977/2016). This technique does not aim to exhaust the meanings of the "text" but instead directs attention to specific elements. Content analysis is a research technique based on systematic procedures "intersubjectively validated and public to create valid inferences about particular verbal, visual, or written content, aiming to describe, quantify or interpret a given phenomenon in terms of its meanings, intentions, consequences, or contexts" (Sampaio & Lycarião, 2021, p. 7).

Neuendorf (2019) argues that categories initially proposed in a codebook remain open to adaptation in response to the demands identified during engagement with the *corpus*. Through these methodological choices, we combine the definition of categories established *a priori*, based on the literature, with the flexibility to adapt or create categories according to the *corpus*'s specificities — in the case of TikTok, the use of musical elements and visual effects.

5. Results

The analysis of content circulating on TikTok about climate disinformation reveals trends that exploit the platform's affordances. Results are presented and discussed according to the categories in the codebook selected for this study, in the order shown in Table 1.

Category	Coding
1. Social actors	Traditional media; alternative media; journalist/commentator; politicians; research institutes/universities; science communicators; science professionals; education professionals; celebrity; Government bodies/institutions (executive, legislative, judicial); private company; non-governmental organisation/foundation; activist; religious/spiritual leader; mega-influencer; macro-influencer; micro-influencer; nano-influencer; others.
2. Protagonist	The social actors themselves; journalist/commentator; politicians; science professional; education professional; activist; traditional media; alternative media; celebrity; Government bodies/institutions; private company; non-governmental organisation/foundation; religious/spiritual leader; voice-over narration; other; no protagonist.
3. Types of disinformation	Simulates journalistic text or scientific dissemination; elevates ordinary people to a source of representation or experts in a field; questions* scientific evidence, lacking a scientific foundation; has false connections, contexts, or fabricated, contradictory, unsustainable content; reinforces belief biases or amplifies conspiracy theories; manifests distrust in epistemic institutions; contributes to the manufacture of uncertainty or forms controversies; suggests big news, makes shocking/surprising statements, incites emotions (fear, surprise, disgust), or weighs in on emotional discourse with a catastrophic narrative; aligns with fanaticisms (religious, political, and others); other.
4. Purpose	To make aware (to inform); to make feel (attract, seduce to believe); to incite/induce (recommend or induce behavioural change); other.
5. Scientific argument	Yes; no.
6. Expressive form	Humour; protest; educational; scientific; catastrophic; emotional; informative; everyday.
7. Theme	Fears of climate change; denial of climate change; extreme weather events; environmental activism; critique of environmental activism; politicisation of climate change; climate event/conference; mitigation actions and solutions; consequences of climate change; marketing; religion/spirituality; blame; others.
8. Use of music	Yes; no.
9. Musical tone	Epic; suspense/horror; drama; melodic; other; does not interfere.
10. Use of clips	Yes; no.

Table 1. *Analysis categories of the* corpus

Note. *Questioning itself does not constitute disinformation, as it is an inherent part of scientific inquiry. The issue arises from the specific context in which it occurs.

In the "social actors" category, most videos (156) were produced by users who do not identify as celebrities, religious figures, or members of traditional and/or alternative media. These include nano-influencers (81 — 51.9%), micro-influencers (52 — 33.3%), macro-influencers (21 — 13.4%), and mega-influencers (two — 1.2%). On TikTok, the circulation of such material is amplified by the platform's viral nature (Jordan, 2024). The ease with which this type of content spreads, as evidenced in the *corpus*, is situated within the current epistemic crisis in science (T. Oliveira, 2020b). Contestation of a specialist system contributes to dispersing access to scientific capital (Bourdieu, 1997/2004), allowing any user to become an authority on climate change. This often relies on personal experience or falsifications, a factor reflected in the results for the "protagonist" category.

Analysis shows that more than half of the mapped materials (139) feature a protagonist, that is, a figure who appears in the videos as a messenger of the topic. Key actors appearing in these videos include science professionals (52 — 37.4%), the channel creators themselves (41— 29.5%), and journalists and/or commentators (20 — 14.4%).

Most of these videos were shared by nano-influencers (42), micro-influencers (31), macro-influencers (13), and mega-influencers (two) — that is, profiles operated by individuals who did not have prior celebrity status before becoming popular on TikTok.

Among science professionals, three figures stand out: geophysicist Sérgio Sacani (32), creator of the science communication profile Space Today; former Geography professor at the University of São Paulo, Ricardo Felício (15); and TV Record journalist Patrícia Nielsen (13). In May 2021, a single account shared eight excerpts from an interview given in 2012 by the former University of São Paulo[2] professor on the TV Globo programme *Programa do Jô*. In the interview, he denied the existence of global warming and claimed that the planet was experiencing a period of "global cooling" (https://www.tiktok.com/@nelsonfausto/video/6958334893097028869). In another excerpt from the same interview, shared by a different profile in June 2022, Felício describes the greenhouse effect as "the greatest fallacy in history" (https://www.tiktok.com/@sagat.lt/video/7109634047554374917). Given his scientific capital, the climatologist possesses authority to speak on the topic, producing effects of truth regarding climate change (Bourdieu, 1997/2004; Foucault, 1971/2014; Loiola, 2022). This effect is reinforced when almost half of the videos with false contexts are led by science professionals (30).

The most frequently shared Sacani cut is an excerpt from a September 2023 *Ticaracati* podcast interview, in which he explains the causes and consequences of extreme weather events recorded in the country at that time. The original 2-hour 30-minute YouTube video is condensed into one- to three-minute TikTok excerpts, with decontextualised statements. In one alarmist segment, Sacani comments: "do you think this heat is unbearable? We've been, what? For a week [like this]. Imagine in a few years, man, living like this all year round".

The sample shows a prevalence of posts made by ordinary users, with a low recurrence of videos published by social actors such as traditional or alternative media outlets. Only 17 posts came from alternative media profiles and just one from conventional media. This does not mean such materials were not decontextualised on TikTok, as in the case of a report by journalist Patrícia Nielsen for *Jornal da Record* aired in October 2023. The then London correspondent presented a study from the University of Bristol, United Kingdom, claiming that the world would not withstand climate change and that extreme weather events would make life on Earth impossible.

Original videos featuring Sacani and Nielsen do not intentionally spread false information, but the way TikTok users edited them led to decontextualisation. The *Ticaracati* and Record excerpts construct alternative meanings, supported by platform affordances such as the use of music.

In the "types of disinformation" category, most materials create false connections and contexts or feature fabricated, contradictory, unsustainable content (61 — 29.5%), suggest major novelty, make shocking or surprising statements or incite emotions (53 — 25.6%), reinforce belief biases or promote conspiracy theories (28 — 13.5%), or elevate ordinary people to sources of representation or specialists in a field (18 — 8.7%),

[2] In 2023, the University of São Paulo dismissed the meteorologist for refusing to teach remotely during the COVID-19 pandemic. At the time, he already identified himself as a "global warming denier" on online lecture platforms, although this was not the reason for his dismissal (Guenther, 2023).

as shown in Figure 1. This indicates a tendency to use disinformation-based typologies based on exaggeration and decontextualisation (Salaverría et al., 2020; Santini & Barros, 2022) to establish false correlations.

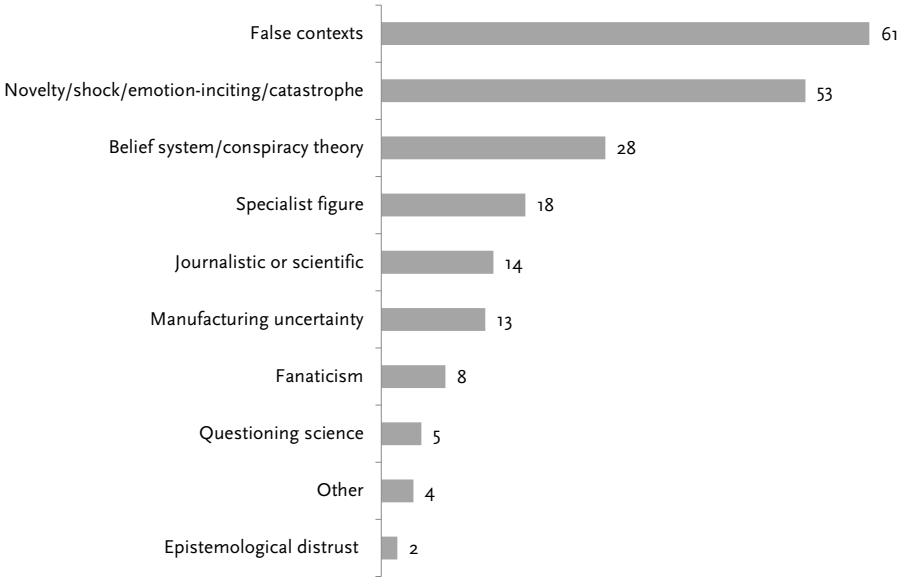

Figure 1. *Types of disinformation on TikTok*

Given the influence of protagonists in disinformation-based climate change videos, we observe that there is a connection between scientific capital and climate denial on platforms, as previously described by Loiola (2022). Cross-referencing the categories "protagonist" and "types of disinformation" shows that, in most content featuring scientists and/or journalists, disinformation-based typologies that draw on journalistic or scientific characteristics (10), incite uncertainty about climatic events (four), and question scientific knowledge (two) are employed. This indicates that the figure of the specialist is used to legitimise factoids.

Informational disorder (Wardle & Derakhshan, 2017) on TikTok operates within the context of a platform society (van Dijck et al., 2018) and a mediatised environment (Braga, 2012), in which new communication tools are used for various purposes, including the circulation of disinformation. This appropriation is amplified when interactions between individuals occur primarily through platform affordances. Examining the category "purpose" shows that most disinformation-based content aims to convey knowledge about climate (139 — 67,1%), while only 42 (20,3%) aim to evoke feelings. This points to a form of infodemic (Massarani et al., 2021) around climate issues, in a scenario in which TikTok's functions are appropriated to create a field of narrative contestation (Braga, 2012; Evangelista & Garcia, 2024).

In the "scientific argument" category, most videos (148 — 71.5%) rely on science to support rejection, suspicion, or exaggeration of the topic. In this group, the most recurrent purpose is to convey knowledge (139), showing an intention to transmit knowledge to viewers. There is an interest in instrumentalising distorted, decontextualised, or

entirely false information (T. Oliveira, 2020b; Wardle & Derakhshan, 2017). Conversely, only 59 (28.5%) videos did not employ this argument, suggesting the mobilisation of the scientific field to produce effects of truth while reproducing disinformation-based content.

A multifactorial model drives the falsification of causes and consequences of climate change. Analysis of the category "expressive form" (Figure 2) shows that most materials on TikTok adopt catastrophic (60 — 29%), scientific (50 — 24.2%), or informative (48 — 23.2%) tones — generally intended to evoke fear of catastrophes eliminating life on Earth, whether through religious intervention or the scenario of "global boiling" (Organização das Nações Unidas, 2023). Scientific arguments and informative videos, although not necessarily aligned with this fear, may create false contexts or foster uncertainty about climate change by presenting exaggerated scenarios (Salaverría et al., 2020) and propagating conspiracy theories under the guise of informing the public (Douglas & Sutton, 2015).

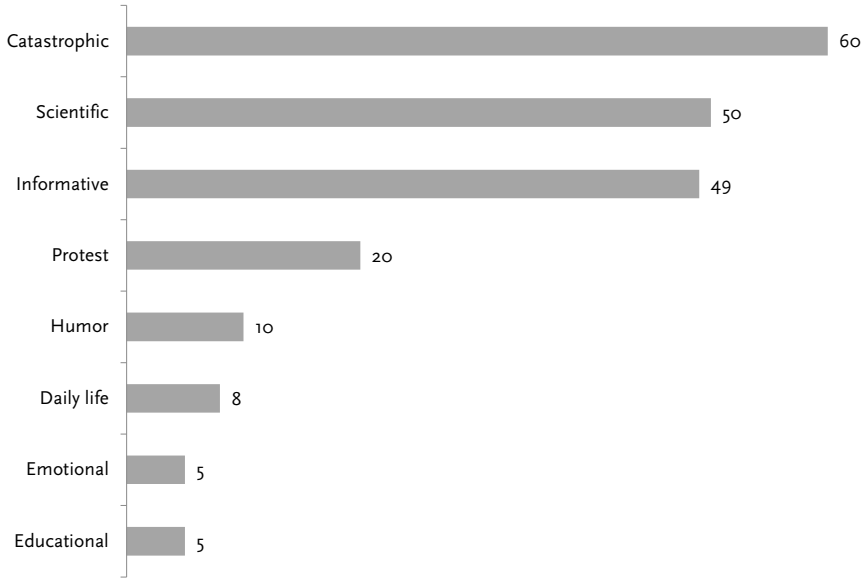

Figure 2. *Expressive forms on TikTok*

Examining the category "theme" shows that over half of the *corpus* covers extreme climatic events (66 — 31.9%) and fear of climate change (53 — 25.6%), as shown in Figure 3. Cross-referencing the categories "theme" and "types of disinformation" reveals that materials addressing extreme climatic events propagate disinformation through false connections or contexts, or fabricated, contradictory, unsustainable content (37), as in the statement by UN Secretary-General António Guterres declaring the world in a period of "global boiling". Conversely, over half of the videos promoting fear (30) rely on exaggeration and apocalyptic tone. The strategy of fear articulation has been identified in other crises, such as during the COVID-19 pandemic (Massarani et al., 2024; Scannell et al., 2021), indicating the centrality of emotion mobilisation in disinformation-based climate narratives.

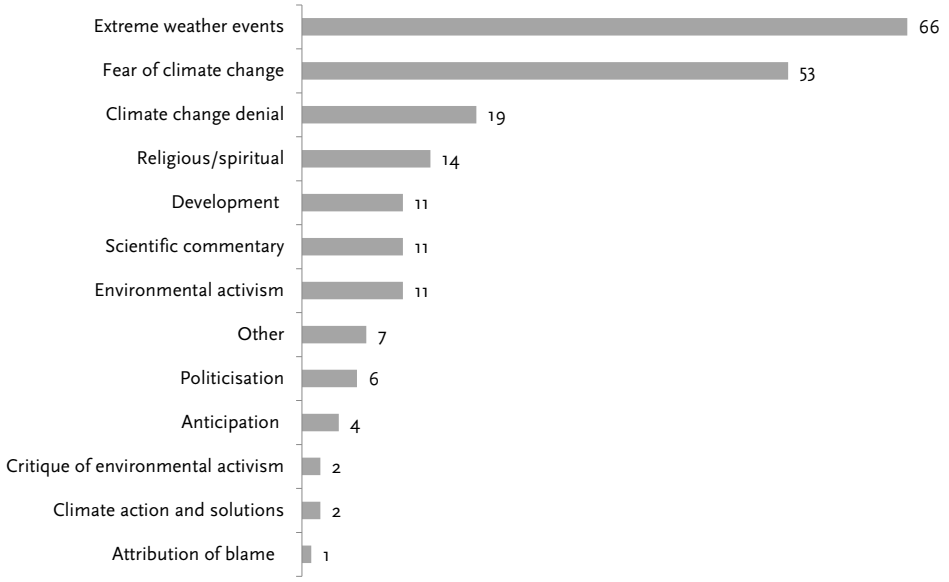

Figure 3. *Theme on TikTok*

In the "use of clips" category, emphasis is placed on extracts from interviews and reports originally published in other media. Clips were central to 87 (42%) of the 207 videos analysed, suggesting the format's relevance within the TikTok interface. This structure establishes a new communication model that does not depend on the full video to convey meaning about the excerpt (Leal et al., 2024). On TikTok, the (re)production of disinformation-based content occurs primarily through clips from scientists (51) and journalists or commentators (18).

The rhetoric of exaggeration is related to decontextualisation, aiming to provoke fear in viewers (Scannell et al., 2021). Intention is evident in eliciting fear of climate change and its consequences (Chen & Tang, 2023). This is illustrated in the video of geophysicist Sérgio Sacani described above, which highlights the "unbearable heat" and extreme temperatures as routine in the coming years. The video's recirculation, appearing more than 25 times across different profiles, reiterates the importance of the clip culture in propagating disinformation and the centrality of scientific appropriation by false climate materials (Santini & Barros, 2022). It should be noted that the fear conveyed by Sacani in this clip is validated by the scientific capital conferred in the *Ticaracaticast* programme.

The category "musical tone" shows that the soundtrack is central on TikTok for giving content on climate disinformation gravity, dramatising or frightening with suspense/terror melodies (48 — 23.2%), drama (34 — 16.4%), or epic (30 — 14.5%). Cross-referencing "musical tone" and "types of disinformation" reveals that materials with music prioritise disinformation-based typologies that suggest major novelties, make shocking/surprising statements, or incite emotions (46), present false connections or contexts, or fabricated, contradictory, unsustainable content (43), and reinforce belief biases or promote conspiracy theories (21). These findings align with other research on sound elements on TikTok (Geboers & Pilipets, 2024; Lundy, 2023), indicating the association between resources

and theme. The effect is reinforced by platform affordances, such as ease of video editing (Jordan, 2024; Schellewald, 2023).

6. Final Considerations

The mapping of climate disinformation circulating on TikTok revealed predominant characteristics in these materials, identifying the actors, technical resources, and discursive strategies mobilised, as well as their relation to the platform's affordances. Narratives grounded in a scientific veneer, aiming to convey knowledge about climate change from false contexts or to provoke exaggeration or shock among viewers, summarise the prevailing discursive patterns in the *corpus*. This indicates that, in the context of an epistemic crisis in science, climate disinformation paradoxically circulates through structures and validations inherent to the scientific field.

Of particular note are the repeated references to the 2023 statement by UN Secretary-General António Guterres on the era of "global boiling". Under the guise of scientific authority regarding the consequences of climate change, the materials anchor themselves in catastrophic scenarios of the end of life on Earth, not only decontextualising Guterres' statement but also resorting to scientism to promote fear through exaggeration and catastrophism (Chen & Tang, 2023; Cruz et al., 2025; Salaverría et al., 2020).

This narrative is reinforced in videos through the frequent use of catastrophic, informative, and scientific tones. The imminent end of life on Earth, recurrent in the analysed *corpus*, is further emphasised through music that creates epic, suspenseful, or dramatic atmospheres, inducing fear tied to the future. Although these disinformation-based materials present an irreversible framework of destruction, the causes or aggravating factors of the climate crisis are scarcely mentioned.

Scientists and journalists are the primary actors who disseminate false or decontextualised climate content on TikTok. Typically, the selection of clips from videos originally published on other platforms or traditional media outlets reshapes the information, producing disinformation-based effects without the original content creator's intent — as observed in the cases of Sérgio Sacani and Patrícia Nielsen. In contrast, Ricardo Felício deliberately shared false claims about global warming and the greenhouse effect.

The mapping of climate disinformation, still scarcely explored in Brazil (Santini & Barros, 2022; Urbano et al., 2024), demonstrates the appropriation of technical resources from platforms like TikTok and the instrumentalisation of specialists' scientific capital. On this channel, ordinary users circulate decontextualised and falsified claims, propagating statements from authorities or supposed authorities on the topic. Therefore, in a complex landscape of informational disorder about climate, the particularities of sharing across different social media platforms must be considered, as this can enhance efforts to counter scientific denialism on platforms such as TikTok.

The analysis indicates that climate disinformation in Brazil exhibits specificities, including the contestation over scientific capital and the appropriation of platform affordances. However, denialism manifests differently across social networks. Furthermore, it

is crucial to conduct comparative studies between Brazil and other countries, as well as to investigate how false climate content circulates in different contexts, cultures, and realities.

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