

## Original Article



10.1590/1809-58442026114en



Open access

**Disinformation network on YouTube: The 2019 Amazon Wildfires***Rede de desinformação no YouTube: as queimadas na Amazônia em 2019**Red de desinformación en YouTube: los incendios en la Amazonía en 2019*

Aldemir Aparecido de Oliveira Junior

Leda Maria Caira Gitahy

Aleix Altimiras-Martin

Gabriela Villen Malta Scutari

State University of Campinas (UNICAMP), Department of Scientific and Technological Politics, Campinas (SP) – Brazil.

**Editorial Details**

Double blind review system

**Article History:**

Received: 09/20/2025

Accepted: 02/08/2026

Available online: 03/30/2026

Article ID: e2026114

**Editors in Chief:**

Dr. Marialva Barbosa – Federal University of Rio de Janeiro (UFRJ)

Dr. Sonia Virginia Moreira – Rio de Janeiro State University (UERJ)

**Editors Responsible for Reception, Desk Review, and Evaluation:**

Ana Paula Goulart de Andrade (UFRRJ) and Jorge Carlos Felz Ferreira (UFJF)

**Executive Editors:**

Dr. Jorge C. Felz Ferreira – Federal University of Juiz de Fora (UFJF)

Dr. Ana Paula Goulart de Andrade – Federal Rural University of Rio de Janeiro (UFRRJ)

**Associate Editor:**

Dr. Sandro Torres de Azevedo – Federal University of Rio de Janeiro (UFRJ)

**Reviewers:**

Cristine Gerck (Portuguese)

Felicity Clarke (English)

Federal University of Rio de Janeiro (UFRJ)

**XML Editing and Markup:**

IR Publicações

**Funding:**

CNPq

**How to cite:**OLIVEIRA JR., A. A.; GITAHY, L. M. C.; ALTIMIRAS MARTIN, A.; and SCUTARI, G. V. M. Disinformation network on YouTube: the 2019 Amazon wildfires. São Paulo: INTER-COM – Revista Brasileira de Ciências da Comunicação, v. 49 (2026), e2026114. <https://doi.org/10.1590/1809-58442026114en>**Corresponding author:**Aldemir Aparecido de Oliveira Junior  
a229911@dac.unicamp.br**Abstract**

Between August and October 2019, the Amazon rainforest gained significant prominence in the press and on social media due to the wildfires ravaging the world's largest tropical forest. The release of data by INPE (National Institute for Space Research), which indicated an increase in wildfires and deforestation, damaged the Brazilian federal government's image (Bolsonaro administration) regarding its environmental policies. In response, the government adopted retaliatory measures against INPE and other environmental protection agencies. In this context, *YouTube* played a central role in disseminating (dis) information about environmental crimes in the Amazon and other biomes, becoming a battleground for actors seeking to influence public opinion and establish ideological positions. This study mapped and analyzed the disinformation network concerning the Amazon that formed on *YouTube* between August and October 2019, as well as the strategies employed by its agents. Through Controversy Mapping, this research identified the primary actors involved in the Amazon debate and the arguments they advocated. The results demonstrate that disinformation was used as a rhetorical weapon by far-right channels aligned with the Bolsonaro government to protect the administration's image and undermine environmental protection institutions and legislation. Furthermore, it was found that disinformation predominated among the most-viewed videos. Such a scenario highlights the limitations of *YouTube*'s moderation policies in combating the spread of false information and reinforces the urgent need for digital platform regulation in Brazil.

**Keywords:** Amazon rainforest; Deforestation; Disinformation; Wildfires; *YouTube*.**Resumo**

Entre agosto e outubro de 2019, a Amazônia ocupou posição de destaque na imprensa e nas mídias sociais devido aos incêndios que assolavam a maior floresta tropical do mundo. A divulgação de dados do INPE (Instituto Nacional de Pesquisas Espaciais), que apontavam o aumento das queimadas e do desmatamento, afetou a imagem do governo federal brasileiro (administração Bolsonaro) em relação às políticas ambientais. Em resposta, o governo adotou medidas de retaliação contra o INPE e outros órgãos de proteção ambiental. Nesse contexto, o *YouTube* assumiu um papel central na disseminação de (des) informações sobre os crimes ambientais na Amazônia e em outros biomas, tornando-se palco de disputas entre atores que buscavam influenciar a opinião pública e demarcar posições ideológicas. O presente estudo mapeou e analisou



## CRedit

- Conflict of Interest: The authors certify that they have no commercial or associative interests that could represent a conflict of interest regarding the manuscript.
- Authors' Contribution: Conceptualization, data curation, formal analysis, investigation, methodology, project administration, writing – original draft, writing – review and editing: OLIVEIRA JUNIOR, A. A. Conceptualization, supervision, writing – review and editing: GITAHY, L. Supervision, writing – review and editing: ALTIMIRAS MARTIN, A. Writing – review and editing: VILLEN, G.
- Funding and Support: This study was funded by the National Council for Scientific and Technological Development (CNPq), through the granting of a research scholarship (Process No. 130534/2019-6).

## Data Availability:

The data generated and analyzed are available on Figshare: [https://figshare.com/projects/Rede\\_de\\_desinforma\\_o\\_no\\_YouTube\\_as\\_queimadas\\_na\\_Amaz\\_nia\\_em\\_2019/253004](https://figshare.com/projects/Rede_de_desinforma_o_no_YouTube_as_queimadas_na_Amaz_nia_em_2019/253004).

INTERCOM encourages data sharing; however, in compliance with ethical guidelines, it does not require the disclosure of any means of identifying research participants, thereby preserving their privacy. The practice of open data aims to enable the reproducibility of results and ensure full transparency of published research outcomes, without requiring the identification of research subjects.

## Inclusive Language:

The authors employ inclusive language that acknowledges diversity, demonstrates respect for all individuals, is sensitive to differences, and promotes equal opportunities.

## Plagiarism Check:

Intercom Journal submits all documents approved for publication to plagiarism verification using a dedicated tool.

a rede de desinformação sobre a Amazônia que se formou no *YouTube* entre agosto e outubro de 2019 e as estratégias utilizadas por seus agentes. Por meio da Cartografia de Controvérsias, este estudo mapeou os principais atores envolvidos no debate sobre a Amazônia e os argumentos por eles defendidos. Os resultados demonstraram que a desinformação foi utilizada como arma retórica por canais de extrema-direita alinhados ao governo Bolsonaro, visando proteger a imagem do governo e enfraquecer instituições e legislações de proteção ambiental. Constatou-se também que a desinformação predominou entre os vídeos mais visualizados. Tal cenário evidencia as limitações das políticas de moderação do *YouTube* no combate a disseminação de informações falsas e reforça a urgência de uma regulamentação para as plataformas digitais no Brasil.

**Palavras-chave:** Amazônia; Desinformação; Desmatamento; Queimadas; *YouTube*.

## Resumen

Entre agosto y octubre de 2019, la Amazonia ocupó una posición destacada en la prensa y en las redes sociales debido a los incendios que asolaban la mayor selva tropical del mundo. La difusión de datos del INPE (Instituto Nacional de Investigaciones Espaciales), que señalaban el aumento de las quemadas y de la deforestación, afectó la imagen del gobierno federal brasileño (administración Bolsonaro) en relación con sus políticas ambientales. En respuesta, el gobierno adoptó medidas de represalia contra el INPE y otros organismos de protección ambiental. En este contexto, *YouTube* asumió un papel central en la diseminación de (des)información sobre los crímenes ambientales en la Amazonia y en otros biomas, convirtiéndose en un escenario de disputas entre actores que buscaban influir en la opinión pública y delimitar posiciones ideológicas. El presente estudio mapeó y analizó la red de desinformación sobre la Amazonia que se formó en *YouTube* entre agosto y octubre de 2019 y las estrategias utilizadas por sus agentes. Por medio de la Cartografía de Controversias, este estudio identificó a los principales actores involucrados en el debate sobre la Amazonia y los argumentos que defendían. Los resultados demostraron que la desinformación fue utilizada como arma retórica por canales de extrema derecha alineados con el gobierno de Bolsonaro, con el fin de proteger la imagen del gobierno y debilitar las instituciones y legislaciones de protección ambiental. Se constató también que la desinformación predominó entre los vídeos más vistos. Tal escenario evidencia las limitaciones de las políticas de moderación de *YouTube* para combatir la propagación de información falsa y refuerza la urgencia de una regulación para las plataformas digitales en Brasil.

**Palabras clave:** Amazonia; Desinformación; Deforestación; Incendios forestales; *YouTube*.

This article is published in open access under the Creative Commons Attribution 4.0 International (CC BY 4.0) license. The authors retain all copyright, granting Intercom: Brazilian Journal of Communication Sciences the right to carry out the original publication and to keep it permanently updated.



## Introduction

In August 2019, the Amazon rainforest became a central topic in public debate due to a significant increase in wildfires recorded by the monitoring programs of the National Institute for Space Research (INPE). Although the use of fire in previously deforested areas is common during the dry season, August 2019 stood out as the month with the highest number of fire hotspots since 2010, according to data from the INPE's Wildfire Program (2025). The visibility of the episode was amplified both by the magnitude of the fires and by their symbolic and political impacts, associated with the preservation of the world's largest tropical rainforest, a region central to global agendas on climate change, biodiversity, and indigenous rights.

One of the most emblematic events of this period was the "Day of Fire" in the state of Pará, when farmers coordinated fires in forested areas to pressure the federal government to relax environmental enforcement (G1, 2019). This episode, occurring during the first year of the Bolsonaro administration (2019-2022), highlighted the relationship between the surge in wildfires and a federal administration marked by the dismantling of environmental policies. Among the measures adopted were the institutional weakening of agencies such as IBAMA (Brazilian Institute of the Environment and Renewable Natural Resources) and ICMBio (Chico Mendes Institute for Biodiversity Conservation), attempts to pass less stringent environmental protection legislation, and a systematic discourse delegitimizing science and institutions like INPE (Brant, 2019).

The dissemination of deforestation and wildfire data sparked widespread repercussions in the national and international press (Silva et al., 2023), intensifying polarization around the Amazon. In this context, *YouTube* solidified itself as an arena for the circulation of (dis)information about ongoing environmental crimes. As one of the largest video platforms in the world, with over 2 billion monthly active users (YouTube, 2023), and the second most accessed in Brazil (We Are Social & Hootsuite, 2023), *YouTube* became a strategic space for ideological disputes during the wildfire crisis. Denialist narratives found widespread dissemination on the platform, especially in content associated with far-right views, which used *YouTube* to attack environmental policies, scientific institutions, and international organizations (Dündar et al., 2022; Allgaier, 2019).

While some channels denounced the environmental destruction, another segment sought to minimize the problem and protect the image of the government and allied sectors, such as agribusiness and mining. On one side, scientific actors and environmental organizations denounced the advance of environmental destruction and its global climate risks; on the other, government authorities, parliamentarians, and digital influencers aligned with the government questioned the credibility of scientific data, downplayed the severity of the fires, and accused international press of threatening Brazilian sovereignty.

This narrative dispute reinforced a false dichotomy between environmental preservation and economic development, frequently mobilized to justify the flexibilization of environmental regulations. The protection of the Amazon rainforest began to be presented as an obstacle to economic growth and job creation, disregarding evidence presented by the World Bank (2023) which points to the incompatibility between deforestation, sustainability, and Brazil's competitive integration into global value chains.

Given this scenario, this article analyzes the disinformation network surrounding the Amazon wildfires on *YouTube* in 2019, identifying the main actors and arguments present in the most viewed videos on the topic. For this purpose, we employ the Controversy Mapping method (Venturini, 2012) to map the flows of (dis)information and the rhetorical strategies employed to influence public opinion.

## Different forms of disinformation

According to Wardle (2018), disinformation can be defined as a deliberate lie strategically used to cause harm or obtain political, economic, or social advantage. To understand this phenomenon, we draw upon the studies of Wardle and Derakhshan (2017), which detail various types of disinformation that will be used in this study to analyze the disinformation network about the Amazon rainforest on *YouTube*.

The typology systematized in Table 1 constitutes the analytical basis adopted in this study for identifying the discursive strategies present in the disinformation network about the Amazon rainforest on *YouTube*.

## The role of algorithms in the formation of digital bubbles

Algorithms are one of the central elements for personalized content recommendation on digital platforms. They utilize browsing data and demographic profiles to determine which content is displayed to users, functioning as invisible mediators in the curation of information (Gillespie, 2014b). Although content personalization makes



**Table 1** - Types of disinformation

| TYPES OF DISINFORMATION | DESCRIPTION  | EXAMPLE   |
|-------------------------|--|---|
| Fabricated Content      | Completely false information, intentionally created to deceive.  | A fabricated news story claiming that a person or institution is responsible for a crime.               |
| Manipulated Content     | Alteration of real information or imagery to distort its meaning.  | An edited video to make it appear that someone said something they never stated.                        |
| Imposter Content        | Information that appears to come from a trusted source but is forged.  | A website imitating journalistic aesthetics to publish false news.                                      |
| False Context           | True information presented in a false or misleading context.   | A photo of an old protest being shared as if it were current.   |
| Misleading Content      | Use of true information to induce incorrect conclusions.   | A real graph, but visually manipulated to exaggerate a problem.   |
| Satire or Parody        | Humorous invented content that can be interpreted as real. Or misleading content that uses humorous language to spread disinformation. | Humorous sketches that include misleading narratives in satirical contexts to spread false information. |

Source: Adapted from Wardle and Derakhshan (2017) and Wardle (2018)

the user experience more tailored to their preferences, it also generates significant side effects, such as the “filter bubbles” (Pariser, 2012). This phenomenon is characterized by the isolation of individuals within homogeneous informational environments, reducing exposure to divergent perspectives and undermining the pluralism of ideas. Such a dynamic not only intensifies social polarization (Jamieson; Capella, 2008) but also consolidates mistaken ideas, making users more vulnerable to manipulation and limiting critical capacity.

Furthermore, algorithms, which are essentially computational procedures for problem-solving (Russel; Norvig, 2013), operate on digital platforms under a market logic oriented towards user retention, serving mainly the interests of advertisers (Tufekci, 2019). Thus, platforms prioritize content that generates greater engagement, regardless of its veracity, exposing users to continuous flows of false or distorted information (Gillespie, 2018).

### Actor-Network Theory for the Study of Disinformation

Actor-Network Theory (ANT) introduced new perspectives to the Social Studies of Science and Technology by overcoming the traditional sociological distinction between nature and culture, through the “principle of generalized symmetry” (Callon, 1986), which attributes equal importance to humans and non-humans in explaining social phenomena. According to Callon (2004), the stability of societies depends on both values and technologies, highlighting the fundamental role of non-humans in the organization of socio-technical realities. Over time, ANT has also proven useful for investigating social phenomena in digital environments, where actions are mediated simultaneously by human subjects and technical apparatuses (Lemos, 2013c).

This study, which analyzes disinformation about the Amazon rainforest on *YouTube*, is situated within this environment of networks and flows mediated by digital technologies. To conduct the investigation, we adopted the Controversy Mapping (CM), a methodology associated with ANT that allows for the operationalization of theoretical assumptions for the analysis of social phenomena. CM seeks to map the traces left by the actors (actants) that compose a network, revealing the underlying interests of the different collectives involved in disputes for the hegemony of ideas or technologies (Latour, 2012).

CM proves particularly suitable for mapping socio-technical disputes in digital environments, as it allows for tracking how certain discourses are articulated within complex networks and how actors construct their strategies of action (Venturini, 2010).

### Mapping controversies about the Amazon rainforest on YouTube

For the application of Controversy Mapping (CM), we followed the seven recommendations proposed by Venturini (2012):

1. Listen to the voices of the actors more than one’s own presumptions;



2. Observe the controversy from the most varied points of view;
3. Adjust descriptions and observations recursively;
4. Create adaptable, redundant, and flexible descriptions;
5. Do not restrict observation to a single theory or methodology;
6. Attribute to each actant a visibility proportional to its weight in the network;
7. Simplify complexity respectfully.

To minimize bias in data selection, we adopted quantitative criteria: videos that reached more than 500,000 views were analyzed. The analysis mapped all arguments presented in the videos, considering the various perspectives in the debate about the Amazon wildfires. Descriptions of the actors and their strategies were reviewed with each discovery, allowing for a dynamic representation of the network. The visibility of actors was proportional to their influence in the controversy, with the characteristics and strategies of the most relevant actors being described in greater detail.

## Data Collection

Through the *YouTube Data Tools*, it was possible to reconstruct the network formed around the Amazon rainforest on *YouTube*. Developed by Bernhard Rieder (2015) within the scope of the MACOSPOL project (*Mapping Controversies on Science for Politics*), this tool enables the systematic extraction of information about platform videos, facilitating the creation of digital cartographies focused on *YouTube*.

The collection was carried out on 17 December 2020, according to the following parameters:

- **Collection mode:** Video List
- **Search query:** “Amazônia”
- **Language:** Portuguese (PT)
- **Region:** Brazil (BR)
- **Timeframe:** 01 August 2019 to 31 October 2019
- **Sorting criterion:** Number of views

With these search parameters, it was possible to collect data from 923 vídeos<sup>1</sup>, which together totaled 79,996,867 views by the collection date.

## Qualitative Analysis Method

The mapping of arguments present in the videos was guided by the Content Analysis method proposed by Bardin (2011), structured in three stages:

1. **Pre-analysis:** The initial screening involved the initial sample of 923 videos. The first filter considered the reach criterion, selecting videos with over 500,000 views, which reduced the sample to 33 videos. Then, a second thematic filtering was performed, retaining only videos addressing wildfires and deforestation, totaling a final sample of 24 videos (Table 2).
2. **Material Exploration:** Through the analysis of the 24 videos, we mapped 134 arguments<sup>2</sup>, which were later grouped into 34 more comprehensive arguments. Arguments with three or more occurrences were classified as information or disinformation based on fact-checking and information triangulation, using sources such as government documents, journalistic material, and data from scientific institutions (Table 3).
3. **Interpretation:** This stage focused on the strategies adopted by the actors and the role of *YouTube* in disseminating disinformation. This phase corresponds to the final section of this article.

## Analysis Corpus

Table 2 presents the corpus selected during the pre-analysis stage, listing data from the 24 videos, distributed across 21 channels.

<sup>1</sup> The dataset for the 923 videos can be accessed at: <https://figshare.com/s/bb9d47e2eb08843f87ce>

<sup>2</sup> Data regarding the argument mapping process can be accessed at: <https://figshare.com/s/ead3ec002e1aff078d0e>



**Table 2** - Most viewed videos about the Amazon wildfires published on YouTube between August and October 2019

| LABEL | VIDEO TITLE  | CHANNEL                    | DATE       | VIEWS     |
|-------|--|----------------------------|------------|-----------|
| V1    | QUEIMADAS NA AMAZÔNIA e o DIA ESCURO - Entenda o Caso!!  | Você Sabia?                | 21/08/2019 | 3,307,989 |
| V2    | Entenda o Desmatamento na AMAZÔNIA de um jeito SIMPLES   | Canal Nostalgia            | 27/08/2019 | 3,123,812 |
| V3    | E Se a Amazônia for INVADIDA ?   | BRAZIL GRAPHICS            | 28/08/2019 | 2,711,501 |
| V4    | AMAZÔNIA - ANITTA ME ACUDA!!!  | Nando Moura                | 12/09/2019 | 2,338,507 |
| V5    | POR ISSO ESTÃO DE OLHO NA NOSSA AMAZÔNIA Vejam quanto ouro encontrado nessa calha / GOLD BRAZIL      | Garimpeiro Solitário       | 03/09/2019 | 2,050,123 |
| V6    | Veja por que estão de OLHO na Amazônia. Quase QUEIMOU o APARELHO                                     | Adriano - Pedras Preciosas | 04/09/2019 | 1,232,473 |
| V7    | Fábio Rabin - Amazônia / Bolsonaro e os filmes   | Fábio Rabin                | 25/08/2019 | 1,058,402 |
| V8    | Coronel Chrisóstomo diz que quem tentar entrar na Amazônia 'vai levar pau' e perde a paciência com.. | Folha Política             | 03/09/2019 | 978,363   |
| V9    | Pronunciamento do Presidente da República sobre as queimadas na Amazônia                             | Planalto                   | 23/08/2019 | 957,974   |
| V10   | A malandragem de Macron com a Amazônia   | Os Pingos nos Is           | 24/08/2019 | 918,959   |
| V11   | TÃO QUEIMANDO A AMAZÔNIA - Ep.1390   | Cadê a chave?              | 20/08/2019 | 863,232   |
| V12   | Botando fogo na amazônia   | MAIONESE                   | 23/08/2019 | 816,817   |
| V13   | Macron, Bolsonaro, mitos e fatos sobre a Amazônia  | Morning Show               | 23/08/2019 | 765,374   |
| V14   | Live a Amazônia!   | Canal do Tom Cavalcante    | 04/09/2019 | 760,724   |
| V15   | Fogo na Amazônia - DESCONFINADOS (Erros no Final)  | Canal Desconfinados        | 29/08/2019 | 756,550   |
| V16   | A Amazônia Está Pegando Fogo   | Mamaefalei                 | 21/08/2019 | 747,166   |
| V17   | Lula: "Quem está tocando fogo na Amazônia são os milicianos do Bolsonaro"                            | CartaCapital               | 06/09/2019 | 731,381   |
| V18   | FRANÇA foi INVADIR a AMAZÔNIA azul e se LASCOU (Felipe Dideus)                                       | Vamos falar de História ?  | 30/08/2019 | 720,743   |
| V19   | Anitta e os melhores memes da Amazônia   | Daniel Alvarenga           | 23/08/2019 | 693,777   |
| V20   | O QUE NINGUÉM TE CONTOU SOBRE A AMAZÔNIA - Pastor Carlos Cardozo                                     | ADORADORES NA NET          | 29/08/201  | 671,813   |
| V21   | Bolsonaro publica vídeo impressionante de aviões das Forças Armadas na Amazônia e ministro rebate    | Folha Política             | 24/08/2019 | 662,552   |

|     |   |                |            |         |
|-----|---|----------------|------------|---------|
| V22 | ASSISTA: GENERAL MOURÃO CAUSA IMPACTO EM PRONUNCIAMENTO - AMAZÔNIA, CORRUPÇÃO, CHINA, BOLSONARO | Ficha Social   | 28/09/2019 | 586,292 |
| V23 | General Heleno humilha Macron sobre Amazônia, dá lição para a França e defende Bolsonaro        | Folha Política | 27/08/2019 | 516,863 |
| V24 | 11 Gafes Sobre A Amazônia   | Mamaefalei     | 24/08/2019 | 516,578 |

Source: Author. The access links to the videos in this table are available at: <https://figshare.com/s/36996660d2d43d0fd2b7>

Among the channels listed in Table 2, the *Folha Política* channel stands out with three videos, followed by *Mamaefalei* with two. The remaining channels feature only one video each. Together, the 24 videos totaled 28,487,965 views, representing 35.61% of the total views from the initial sample of 923 videos.

### Map of arguments presented in the analyzed videos

From the 24-video sample, 20 arguments concerning the Amazon wildfires with more than three occurrences were identified.

**Table 3** - Frequent arguments about the Amazon wildfires

| ARGUMENT  | OCCURRENCES | CLASS          | TYPE                |
|---|-------------|----------------|---------------------|
| A1 - Wildfires in the Amazon rainforest are common during dry seasons.  | 9           | Information    | -                   |
| A2 - Countries, NGOs, indigenous demarcations, and international institutions threaten Brazil's sovereignty and should not opine on the country's environmental governance. | 8           | Disinformation | Fabricated Content  |
| A3 - National and international mainstream media has a globalist bias and provided poor coverage of the Amazon wildfires.   | 7           | Disinformation | Fabricated Content  |
| A4 - Developed countries cannot criticize Brazil's environmental policy because they destroyed their own forests and carry out activities harmful to the environment.       | 7           | Disinformation | Misleading Content  |
| A5 - Leaders and celebrities shared incorrect images about the Amazon wildfires.  | 7           | Disinformation | Misleading Content  |
| A6 - Wildfires were more denounced in 2019 because the Government cut funding for foreign NGOs and indigenous groups.   | 6           | Disinformation | Fabricated Content  |
| A7 - The Bolsonaro Government's Environmental Policy is detrimental to Brazilian diplomacy and economy.   | 6           | Information    | -                   |
| A8 - There is international interest in the Amazon's wealth.  | 6           | Disinformation | False Context       |
| A9 - In 2019, Amazon wildfires were larger than the average of previous years.  | 5           | Information    | -                   |
| A10 - Developed countries use the environmental agenda to justify the internationalization of the Amazon rainforest and relativize the sovereignty of other countries.      | 4           | Disinformation | Manipulated Content |
| A11 - A predatory culture towards the environment negatively affects Brazil's foreign trade.  | 4           | Information    | -                   |
| A12 - Brazil is an example of environmental preservation and use of renewable energies.   | 4           | Disinformation | False Context       |
| A13 - Young people (mainly) are deceived by environmentalist discourse and do not have sustainable daily practices.   | 4           | Disinformation | Fabricated Content  |



|   |   |                |                    |
|---|---|----------------|--------------------|
| A14 - The 2019 wildfires were not above the average of the last 15 years.   | 4 | Disinformation | Fabricated Content |
| A15 - Amazon humidity plays an important role in regulating global climate, rainfall patterns, and economic activities. | 3 | Information    | -                  |
| A16 - The Bolsonaro Government has a denialist posture towards science and feeds conspiracy theories.                   | 3 | Information    | -                  |
| A17 - The "Day of Fire" was a coordinated action by incendiary farmers.   | 3 | Information    | -                  |
| A18 - Brazil has advanced environmental legislation, but laws are not enforced.   | 3 | Information    | -                  |
| A19 - Macron denounced Amazon wildfires to promote himself.   | 3 | Disinformation | Misleading Content |
| A20 - MST (Landless Workers' Movement) and land grabbers are the main responsible for deforestation and fires.          | 3 | Disinformation | Fabricated Content |

Source: Author

In Table 3, it is observed that the 20 mapped arguments appeared 99 times in the analyzed videos, with 36 occurrences of information and 63 of disinformation. The most recurrent argument is A1, which addresses the frequency of fires in the Amazon rainforest. According to INPE monitoring, controlled burns are common during the annual dry seasons in Northern Brazil. However, in 2019, there was a significant increase compared to previous years: 89,178 fire hotspots were recorded, a growth of approximately 30% compared to the 68,345 hotspots observed in 2018 (INPE, 2025). August 2019 presented the worst monthly fire index since 2010, which drew international community attention to the environmental crisis in the Amazon rainforest (Silva et al., 2023).

The categorization of disinformation types highlights the strategies employed by information manipulators on *YouTube*. In this sense, **fabricated content** predominated (A2, A3, A6, A13, A14, A20), inventing causal relationships, such as the claim that wildfire reports were retaliation for federal funding cuts to NGOs (A6) or attributing responsibility for the fires to the MST (A20). Another frequent strategy is the production of **misleading content** (A4, A5, A19), which distorts facts to create partial narratives, such as selective criticism of developed countries (A4) or the unfounded accusation against Emmanuel Macron (A19). **False context** contents (A8, A12) also stood out, which inserts inaccurate information into seemingly valid contexts, such as the claim that Brazil would be an "example of preservation" (A12) or the supposed threat of Amazon rainforest internationalization (A8).

### Characterization of sample channels

In Table 4, to fill the "Content Type" column, exploratory research was conducted (Gil, 2002), aiming to collect information to profile the investigated channels. Information was obtained from the official channel descriptions and other videos published by them.

**Table 4** - Information about sample channels

| CHANNEL                       | TOTAL VIEWS | DISINFORMATION               | INFORMATION       | CONTENT TYPE                         |
|-------------------------------|-------------|------------------------------|-------------------|--------------------------------------|
| Você Sabia? (V1)              | 3,307,989   | -                            | A1, A11, A16      | Curiosities                          |
| Canal Nostalgia (V2)          | 3,123,812   | A5                           | A7, A11, A16, A17 | Pop Culture & Science Communication  |
| BRAZIL GRAPHICS (V3)          | 2,711,501   | A8, A9                       | -                 | Military / Nationalist               |
| Nando Moura (V4)              | 2,338,507   | A2, A3, A5, A6, A12          | A1                | Political Activism / Satirical Humor |
| Folha Política (V8, V21, V23) | 2,157,778   | A2, A3, A4, A6, A8, A13, A18 | A1, A7            | News / Political Activism            |
| Garimpeiro Solitário (V5)     | 2,050,123   | A8                           | -                 | Artisanal Mining                     |
| Mamaefalei (V16, V24)         | 1,263,744   | A5, A6, A19                  | A7, A11, A15      | Political Activism / Satirical Humor |



|                                 |           |   |                                 |                                      |
|---------------------------------|-----------|---|---------------------------------|--------------------------------------|
| Adriano - Pedras Preciosas (V6) | 1,232,473 | A4                                      | -                               | Artisanal Mining                     |
| Fábio Rabin (V7)                | 1,058,402 | A5                                      | -                               | Humor                                |
| Planalto (V9)                   | 957,974   | A2, A4, A10, A13                        | A1                              | Government                           |
| Os Pingos nos Is (V10)          | 918,959   | A2, A3, A4, A5, A10, A12, A13, A18, A19 | A1, A14                         | Opinion Journalism                   |
| Cadê a chave? (V11)             | 863,232   | A4, A18                                 | A1, A7, A11, A14, A15, A16, A17 | Technology and Pop Culture           |
| MAIONESE (V12)                  | 816,817   | -                                       | A11                             | Humor                                |
| Morning Show (V13)              | 765,374   | A2, A3, A4, A5, A8, A9, A10, A19        | A1, A7, A14, A15                | Opinion Journalism                   |
| Canal do Tom Cavalcante (V14)   | 760,724   | A2, A3, A8                              | -                               | Humor                                |
| Canal Desconfinados (V15)       | 756,550   | A6, A12                                 | A1                              | Political Humor                      |
| CartaCapital (V17)              | 731,381   | A3                                      | A7                              | Journalism                           |
| Vamos falar de História? (V18)  | 720,743   | A9                                      | -                               | Military / Nationalist               |
| Daniel Alvarenga (V19)          | 693,777   | A3, A5, A6, A12, A13                    | -                               | Political Activism / Satirical Humor |
| ADORADORES NA NET (V20)         | 671,813   | A2, A6, A8, A9                          | -                               | Religious                            |
| Ficha Social (V22)              | 586,292   | A2, A4, A10                             | A1, A17                         | News / Political Activism            |

Source: Author. Note: Total views include only the sample videos.

In Table 4, it is evident that humor is a widely used rhetorical strategy by militant right-wing channels, such as *Daniel Alvarenga*, *Desconfinados*, *Nando Moura*, and *Mamaefalei*. These channels used humor as a form of mockery to delegitimize political adversaries and minimize the environmental crisis. This approach suggests that humor can make misleading content more acceptable to the public and more difficult to contest.

The channels *Os Pingos nos Is* and *Morning Show*, from the *Jovem Pan* network, lead in the number of disinformational arguments. These two channels exemplify how traditional media can also disseminate disinformation by adopting an aggressive and highly opinionated tone, as seen in videos V10 and V13. Furthermore, the fact that disinformative narratives are broadcast by traditional outlets increases their legitimacy and expands their reach.

The channels *BRAZIL GRAPHICS* and *Vamos Falar de História?*, which focus on exalting the Brazilian Armed Forces, disseminated the idea that international criticism of deforestation was part of a campaign against national sovereignty, diverting focus from the Amazon wildfires. The religious channel *Adoradores na Net* incorporated conspiracy theories in its video (V20), associating French President Macron's criticisms of the wildfires with the idea of a "new global order" led by the Antichrist. This indicates that disinformation can be amplified by religious beliefs, making it even harder to discredit.

Due to their support for the Bolsonaro government - which is widely recognized as far-right (Duarte, 2023; Löwy, 2020; Piovezani, 2021) - as well as their adoption of aggressive discourse and attacks on human rights, nine channels can be classified as far-right: *Folha Política*, *Planalto* (which, as an institutional channel, conducted the official communication of the Bolsonaro government), *Morning Show*, *Nando Moura*, *Mamaefalei*, *Daniel Alvarenga*, *Desconfinados*, *Os Pingos nos Is* and *Ficha Social*. The channels *Nando Moura* and *Mamaefalei* supported Bolsonaro's election but broke with the former president during his term. These nine channels not only disseminated environmental disinformation during the Amazon rainforest crisis but also promoted systematic attacks on democratic institutions and political opponents (MPF, 2023; Intercept, 2018).

## Final Considerations

The results of this research demonstrate the predominance of disinformative content on *YouTube* regarding Amazon wildfires and deforestation. The 63.63% proportion of disinformative arguments reveals a concerning scenario, given the urgency of climate change and the need for access to reliable information for



public policy formulation. The findings corroborate previous studies highlighting the strategic use of digital platforms to promote political agendas in contexts marked by disinformation and extremism, especially on the right of the political spectrum (Benkler et al., 2018; Ribeiro et al., 2020; Silverman, 2015).

The analysis demonstrated that disinformation was used as a rhetorical strategy by far-right channels aligned with former president Jair Bolsonaro, aiming to protect his government's image, weaken scientific institutions, and undermine environmental legislation. The Amazon rainforest is often represented by these channels as an "underutilized" economic resource, whose preservation is seen as an impediment to national development. This narrative legitimizes the interests of sectors such as mining and agribusiness while discrediting environmental policies and scientific knowledge that point to the socio-environmental risks of this predatory exploitation model (Rajão et al., 2020).

Most of the disinformative arguments mapped share an attempt to shape public opinion through scientific denialism, minimizing the severity of the fires, questioning official data, and downplaying the impact of human actions on the forest. This denialism articulates with the far-right conception of nationalism, which associates the defense of national sovereignty with the unrestrained exploitation of the Amazon rainforest for economic development.

The federal government itself contributed to the dissemination of disinformation and scientific denialism by publicly questioning INPE data (Angelo, 2019) and attributing, without evidence, responsibility for the wildfires to NGOs and indigenous peoples (Maia, 2019). These official statements, amplified by far-right channels on *YouTube*, reinforced narratives that criminalize indigenous peoples, environmentalists, and social movements, presenting them as internal enemies or obstacles to progress.

The data analysis indicated two particularly concerning trends on *YouTube*: the algorithmic favoring of extremist content, which tends to generate greater engagement, and the fragility of the platform's moderation policies, which are unable to contain the circulation of misleading and conspiratorial videos. This combination contributed to the promotion of narratives that denied the severity of the wildfires, spread conspiracy theories about the internationalization of the Amazon rainforest, and reinforced unfounded accusations against indigenous populations and non-governmental organizations.

This dynamic demonstrates how digital platform algorithms also act as agents in the propagation of disinformation, configuring a communication ecosystem in which misleading content achieves broad visibility. Furthermore, the opacity of recommendation algorithms hinders platform auditing and accountability (Amadeu, 2019), while users are exposed to information bubbles that tend to reinforce pre-existing beliefs (Pariser, 2012). Examples such as the COVID-19 pandemic, where digital platforms were widely criticized for favoring anti-scientific discourses (Massarani et al., 2021), demonstrate that this problem transcends environmental issues, revealing a structural pattern with profound impacts on public debate and democracy.

The negligence of digital platforms in content moderation emerges as a central element of the current informational crisis. *YouTube*, for example, not only fails to demonetize channels that disseminate disinformation (Machado, 2020) but also boosts them through its recommendation algorithms (Gillespie, 2018). Given this scenario, advancing regulatory debates that consider platform responsibility in the circulation of denialist and extremist discourses has become urgent. It is suggested that future research deepens the analysis of mechanisms for algorithmic transparency and more effective moderation policies for digital platforms.

## References

- ALLGAIER, J. Science and environmental communication on YouTube: strategically distorted communications in online videos on climate change and climate engineering. **Frontiers in Communication**, v. 4, 2019.
- AMADEU, S. **Democracia e os códigos invisíveis**: como os algoritmos estão modulando comportamentos e escolhas políticas. São Paulo: Edições Sesc SP, 2019.
- ANGELO, C. Cruzada contra o Inpe testa limites do mundo ficcional bolsonarista. **El País Brasil**, 2 ago. 2019. Disponível em: <https://shre.ink/xwPN>. Acesso em: 18 jun. 2025.
- BANCO MUNDIAL. **Um Equilíbrio Delicado para a Amazônia Brasileira**: Um Memorando Econômico Regional. Washington, DC: World Bank, 2023.

- BARDIN, L. **Análise de conteúdo**. São Paulo: Edições 70, 2011.
- BENKLER, Y. et al. **Network propaganda**: Manipulation, disinformation, and radicalization in American politics. 2018.
- BRANT, Danielle. Bolsonaro critica diretor do Inpe por dados sobre desmatamento que ‘prejudicam’ nome do Brasil. **Folha de S.Paulo**, 19 jul. 2019.
- CALLON, M. Por uma abordagem da ciência, da inovação e do mercado. O papel das redes sócio-técnicas. In: PARENTE, A. (Org.). **Tramas da Rede**. Porto Alegre: Ed. Sulina, 2004.
- CALLON, M. Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay. In: LAW, John (ed.). **Power, action and belief: a new sociology of knowledge?** London: Routledge & Kegan Paul, 1986. p. 196-233.
- COSTA, B. et al. O movimento antivacina no YouTube nos tempos de pós-verdade: Educação em saúde ou desinformação? **Mídia e Cotidiano**, v. 14, n. 1, p. 220–239, 2020.
- DUARTE, K. A. Dominação burguesa entre o velho e o novo: a ascensão da extrema-direita no Brasil. **Serviço Social & Sociedade**, São Paulo, v. 146, n. 3, e-6628330, 2023.
- DÜNDAR, P.; RANAIVOSON, H. Science by YouTube: an analysis of YouTube’s recommendations on the climate change issue. **Observatorio (OBS)**, v. 16, n. 4, p. 55–75, 2022.
- G1. ‘Dia do Fogo’ foi combinado em grupos de mensagens, afirma Polícia Federal. **G1**, 26 ago. 2019. Disponível em: [bit.ly/4kPDneZ](https://bit.ly/4kPDneZ). Acesso em: 18 jun. 2025.
- GIL, Antônio Carlos. **Como elaborar projetos de pesquisa**. 4. ed. São Paulo: Atlas, 2002.
- GILLESPIE, Tarleton. The Relevance of Algorithms. In: GILLESPIE, T.; BOCZKOWSKI, P. J.; FOOT, K. A. (Eds.). **Media Technologies: essays on communication, materiality and society**. Cambridge, MA: MIT Press, 2014b. Cap. 9, p. 167-193.
- GILLESPIE, T. **Custodians of the Internet**: Platforms, content moderation, and the hidden decisions that shape social media. 2018.
- INSTITUTO NACIONAL DE PESQUISAS ESPACIAIS (INPE). BDQueimadas: Programa Queimadas. São José dos Campos: **INPE**, 2025. Disponível em: <https://terrabrasilis.dpi.inpe.br/queimadas/bdqueimadas/>. Acesso em: 19 jun. 2025
- INTERCEPT. Partido do pré-candidato general Mourão financiou empresa que mantém site de fake news Folha Política. **Intercept Brasil**, 11 jul. 2018.
- JAMIESON, K. H.; CAPPELLA, J. N. **Echo Chamber**: Rush Limbaugh and the Conservative Media Establishment. New York: Oxford University Press, 2008.
- LATOUR, B. **Reagregando o Social**: uma introdução à teoria do ator-rede. Salvador-Bauru: EDUFBA-EDUSC, 2012.
- LEMOS, A. **A Comunicação das coisas**: teoria ator-rede e cibercultura. São Paulo: Annablume, 2013c. 310 p.
- LÖWY, Michael. Extrema direita e neofascismo: um fenômeno planetário: o caso Bolsonaro. In: FARIA, Fabiano G.; MARQUES, Mauro L. B. (Org.). **Giros à direita**: análises e perspectivas sobre o campo líbero-conservador. Sobral-CE: Editora SertãoCult, 2020, p. 13-19.
- MACHADO, D. F. T.; SIQUEIRA, A. F.; GITAHY, L. Natural Stings: Selling Distrust About Vaccines on Brazilian YouTube. **Frontiers in Communication**, v. 5, p. 577941, 2020.
- MAIA, Guilherme. O que está por trás das queimadas na Amazônia? **El País Brasil**, 21 ago. 2019. Disponível em: <https://bit.ly/44937Mj>. Acesso em: 18 jun. 2025.
- MASSARANI, L. M.; LEAL, T.; WALTZ, I.; MEDEIROS, A. Infodemia, desinformação e vacinas: a circulação de conteúdos em redes sociais antes e depois da COVID-19. **Liinc em Revista**, v. 17, n. 1, e5689, maio 2021.



- MOROZOV, E. **Big Tech: A ascensão dos dados e a morte da política**. São Paulo: Ubu Editora, 2018.
- MPF. MPF instaura inquérito contra Jovem Pan por divulgar fake news e incitar atos antidemocráticos. **Procuradoria da República em São Paulo**, 9 jan. 2023.
- NOBLE, S. U. **Algorithms of Oppression: How search engines reinforce racism**. 2018.
- PARISER, Eli. **The Filter Bubble: How the New Personalized Web Is Changing What We Read and How We Think**. 2012.
- PIOVEZANI, Carlos. Discursos da extrema-direita no Brasil. **RALED**, v. 21, n. 2, p. 85–100, 2021.
- RAJÃO, R. et al. The rotten apples of Brazil's agribusiness. **Science**, v. 369, n. 6501, p. 246-248, 2020.
- RIBEIRO, M. H. et al.. Auditing radicalization pathways on YouTube. **Proceedings of the ACM on Human-Computer Interaction**, v. 4, n. CSCW2, p. 1–22, 2020.
- RIEDER, B. **YouTube Data Tools**. 2019. Disponível em: <https://ytdt.digitalmethods.net/>. Acesso em: 18 jun. 2025.
- RUSSEL, S.; NORVIG, P. **Artificial Intelligence: A Modern Approach**. 3rd ed. Prentice Hall, 2013.
- SILVA, M. A. et al. Jornalismo ambiental e cidadania: apontamentos sobre as queimadas na Amazônia. **Intercom: Revista Brasileira de Ciências da Comunicação**, v. 46, 2023. DOI: <https://doi.org/10.1590/1809-58442023132pt>. Acesso em: 19 jun. 2025.
- SILVERMAN, Craig. **Lies, Damn Lies, and Viral Content: How News Websites Spread (and Debunk) Online Rumors, Unverified Claims, and Misinformation**. Tow Center for Digital Journalism, Columbia University, 2015.
- TUFEKCI, Zeynep. How Recommendation Algorithms Run the World. **Wired**, 22 abr. 2019. Disponível em: <https://shre.ink/xVhu>. Acesso em: 18 jun. 2025.
- VENTURINI, T. Building on faults: how to represent controversies with digital methods. **Public Understanding of Science**, v. 21, n. 7, p. 796-812, 2012.
- VENTURINI, T. Diving in magma: how to explore controversies with actor-network theory. **Public Understanding of Science**, v. 19, n. 3, p. 258-273, 2010.
- WARDLE, Claire; DERAKHSHAN, Hossein. **Information Disorder: Toward an Interdisciplinary Framework for Research and Policy**. Council of Europe, 2017.
- WARDLE, C. **The Age of Information Disorder**. First Draft News, 2018.
- WE ARE SOCIAL; HOOTSUITE. **Digital 2023: Insights on the Current State of Digital in Brazil**. 2023.
- YOUTUBE. **YouTube for Press: statistics and milestones**. 2023.

