

Disinformation in Brazil: The 2019 Amazon Fires on Social Media

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4. Disinformation in Brazil: The 2019 Amazon Fires on Social Media

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In this paper, Lyndon, Tse, Moore, and May-Hobbs examine the online spread of disinformation about the Amazon fires in Brazil in 2019. They outline the tactics used by supporters of Jair Bolsonaro to spread a disinformation narrative across social media platforms about the causes of the Amazon fires. This is used as a case study into the various tactics that actors use to spread disinformation online and the methodologies researchers can utilise to track the spread of disinformation. The authors discuss the methods used to analyse disinformation techniques, emphasising the importance of qualitative research in addition to the use of digital tools, and set out how the process of identification can be used in future studies into the spread of disinformation online.

Introduction

In 2019 the Amazon was on fire (Hughes 2019; Mufson and Freedman 2019). Estimates by the Brazilian National Institute for Space Research (INPE) showed deforestation in the Amazon basin had increased 67 percent from January to May 2019 (Reuters in Brasília 2019), leading wildlife specialists and activists to call upon the Brazilian government to address higher levels of deforestation as a potential cause for the fires (Schipani 2019). The Bolsonaro administration, however, rolled back protections on logging and mining in the Amazon (Boadle and Paraguassu 2019; Gortázar 2019; Human Rights Watch 2020), and instead began a campaign of disinformation, blaming NGOs for the fires. In August 2019, as fires reached their peak, the Bolsonaro administration and its supporters set about cultivating and perpetuating an online narrative in contrast to global media coverage of the fires, reigniting existing anti-Globalist anti-NGO sentiments in Brazil.

This paper examines the spread of disinformation online about the Amazon fires in Brazil in 2019, using it as a case study into the various tactics that actors use to spread disinformation online and the methodologies researchers can utilise to track the spread of disinformation. We begin by identifying the research methods utilised in this case to track disinformation, including a variety of open-source intelligence (OSINT) approaches, such as Twitter data scraping, hashtag tracing, and network analysis. It outlines the tactics used by Bolsonaro supporters to spread a disinformation narrative across social media platforms about the causes of the Amazon fires, which relied on the repurposing of existing networks of conservative social media actors. It discusses the methods used to analyse these techniques, emphasising the importance of qualitative research in addition to the use of artificial intelligence (AI) tools, and sets out how the process of identification can be used in future studies into the spread of disinformation online. It concludes by highlighting the limitations of studies into the spread of disinformation and challenges for future researchers.

Methodology

As this paper looks to understand the spread of disinformation in the case of the Amazon, it is pertinent to understand what disinformation means, and how it is distinct from misinformation. Misinformation is information that, while often untrue or taken out of context, is typically believed by its spreaders. Disinformation, on the other hand, is information that is known by the spreader to be false (Wardle and Derakhshan 2018). Disinformation can be outright false or contain unsubstantiated claims, but it can also involve “creating a false connection between two facts”

(Recuero et al. 2020) for the purposes of creating a misleading narrative and passing it off as truth, which we saw in the case of the fires in the Brazilian Amazon.

Given the apparent spread of disinformation in Brazil by the Bolsonaro government our team of undergraduate and postgraduate researchers at the [University of Cambridge branch of Amnesty International's Digital Verification Corps](#) (DVC) looked to tackle a fundamental question in investigative research in the current age of disinformation: can researchers trace the spread of disinformation online? What tools or research methods can investigators draw upon in order to map these complex networks of information spread?

In previous investigative research projects, we made use of an extensive toolkit of open source investigative tools to document, verify, and monitor human rights abuses globally. In order to trace disinformation narratives, however, we had to re-evaluate these tools to address the questions of how a narrative can spread and how a narrative connects to political discourse. We began, as is usual in our projects, with the process of information gathering and verification. By gathering Twitter data, journal articles, newspaper entries, government statements and speeches, and social media posts, our team was able to analyse and verify the disinformation narrative that was being spread by the Bolsonaro administration and its supporters about the fires in the Amazon. At the same time, we gained a qualitative closeness to the data itself, allowing for a better understanding of the historical development of anti-Globalist anti-NGO narratives within Brazilian politics, and an identification of the key ways in which discourse was utilised by the administration and its supporters to perpetuate its narrative.

After conducting this general data collection, we utilised several Twitter-related tools, such as the advanced search function on Twitter itself, TweetDeck, TweetBeaver, and [foller.me](#)¹ in order to search for key terms and phrases we had identified through our general data collection as well as relevant hashtags related to the fires in the Amazon. This allowed us to parse out key influencers involved in the spread of disinformation, and to create a broader understanding of the different networks of social media actors involved in spreading disinformation about the cause of the Amazon fires. In addition to these free tools, we employed the use of Dataminr and Crimson Hexagon² to analyse and draw connections between large data sets on Twitter. With these paid tools, our investigative research team was able to access the Twitter Firehose³ and quantitative and qualitative metrics about Tweets and Twitter users. We used these tools to track the historical use of hashtags across time, as well as to gain insight into closely related Twitter accounts and the shared media or hashtag use within Tweets, giving a quantitative value of number of shares or uses of specific hashtags which we could later analyse to draw conclusions about reach.

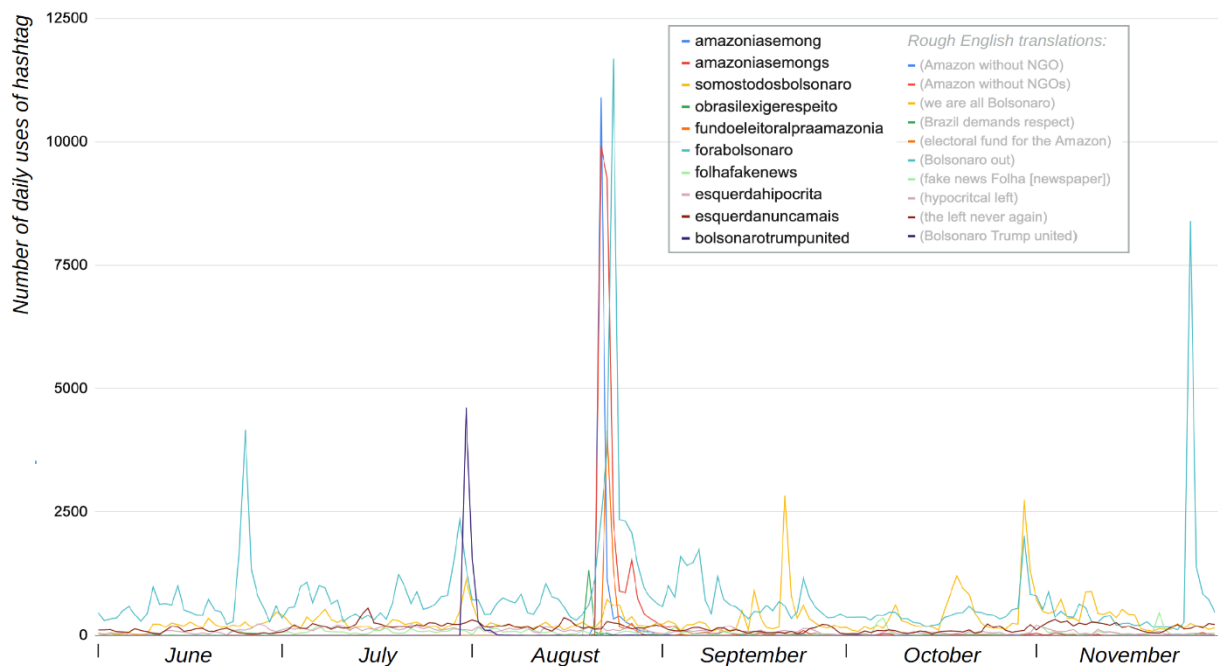
Throughout our Twitter research, there was a clear indication that the disinformation being spread was not randomised, but in fact appeared highly coordinated. We expanded our social media search to include other sites, such as Facebook, Instagram, YouTube, Reddit, WhatsApp, and a pro-Bolsonaro website, Zap Bolsonaro, that brought together both users and pro-Bolsonaro content, including content that linked the fires in the Amazon and the narrative surrounding them to anti-Globalist anti-NGO sentiments, some of which we had already seen widely circulating on social media. We then utilised Gephi, a free data visualization tool, to analyse the networks between and audience interconnectedness for YouTube users whose videos were prevalent in shared media on other sites, such as Zap Bolsonaro, as a way of tracing the spreaders of disinformation.

The nature of our research methods were qualitative and emergent as we tracked the spread of pieces of disinformation online. The following sections outline the use of these tools and methods in practice, and suggest ways in which disinformation might be traced in other contexts using the same tools we used in the case of the Amazon fires.

From Political Statements to Coordinated Tweeting

By the time we began our research, several Brazilian and international media outlets had highlighted anti-NGO comments in relation to the Amazon fires. Yet any relationship between the administration's attitudes and rampant disinformation across social media seemed vaguely asserted, and so we sought to more precisely explore its nature.

Brazilian President Jair Bolsonaro regularly gives press briefings outside his residence, often broadcast live through the President's official Facebook page. On 21 August 2019, he insinuated without evidence that NGOs were responsible for the Amazon fires, allegedly representing foreign interests in a bid to access wealth in the region (Bolsonaro 2019a, 2019b). Using tools including Twitter's Advanced Search and TweetDeck, we searched for Portuguese terms related to the Amazon, adjusting parameters to hone in on the week of Bolsonaro's statements as well as exploring broader time frames. Systematically reading through content allowed us to build lists of hashtags directly referring to the Amazon or used in posts discussing it, as well as develop our understanding of online manifestations of older controversies about NGOs and the Amazon highlighted by our previous political and historical research. We then input each hashtag into the private software Dataminr and exported .csv files for the past daily usage statistics it could render given its access to the Twitter Firehose. The software also lists hashtags most often used in Twitter posts alongside the individually-input hashtag, confirming and expanding our lists. We then brought together the separate exported data for each hashtag and created various spreadsheets and graphs allowing comparison over time and between hashtags, like the graph pictured below.



This historical view was crucial to our understanding of how usage developed on a day-by-day basis – showing a clear correlation between Bolsonaro's anti-NGO rhetoric and the rise of certain hashtags. Some hashtags rose from no or minimal use to high popularity, many of which expressed nationalistic attitudes towards the Amazon or related political stances. We also saw some anti-Bolsonaro messaging and the resurgence of election-era hashtags (see Lyndon et al., forthcoming).

We then returned to our search tools to identify patterns in online behaviour behind the spread of hashtags that promoted an anti-NGO narrative about the Amazon. Not all usage is equal: some merely tweeted the tags; others paired them with exhortations for usage to followers and other users, along the lines of “use this tag.” We found the most effective uses not to be standalone, but in reply to more prominent users with high follower counts, thus gaining more attention for the tweet. Mapping out the central figures and hierarchies within the Bolsonaro administration and then meticulously reading through their public online posts in August 2019 was also crucial. While most politicians did not use hashtags, the comments sections on their posts – specifically those discussing the Amazon in nationalistic terms or criticism of NGO – were tactical spaces for the promotion of key hashtags, associated disinformation, and memes.

All the above indicated that even low-tech, free tools and methods can deliver interesting insights about the coordinated efforts of social media users in raising the profile of specific hashtags and, in turn, perpetuating disinformation narratives and political commentary. We also deduced several techniques used by the Brazilian political right to expand their online networks. On Twitter, these included: the retweeting of lists of self-described conservative and pro-Bolsonaro users; explicit series of instructions for sharing posts to build a chain of right-followers; and the use of hashtags like #direitaseguedireita (“right follows right”), #direitaunida (“the united right”), and #SDV (segue de volta, similar to “follow for follow”). Many of these and related methods existed before the Amazon fires, and tend to be used in tandem with more topical hashtags depending on the partisan issues at hand in a given political moment.

Tracing Connections Across Social Media Channels

Cognizant of the ways that disinformation spreads across interconnected platforms – and the difficulties of measuring this – we next considered how disinformation moved between different sites and what this could tell us, if anything, about coordination behind its spread. While the privacy of the messaging application WhatsApp gave us pause – both ethically and practically – in terms of researching its usage, the explicitly right-wing website Zap Bolsonaro offers some indication as to how elements of Bolsonaro's support base engage with it. Zap Bolsonaro's pages include instructions for joining large centrally-managed WhatsApp subgroups, as well as Google Drive links to hyper-partisan clips and memes for download and forwarding on WhatsApp and elsewhere (Zap Bolsonaro 2020). Amongst other topics, these included decontextualised and false content related to the Amazon (Zap Bolsonaro 2019a, 2019b).

YouTube, meanwhile, presents a rich and accessible source on the spread of mis- and disinformation. Frequently, popular tweets attributing the fires to NGOs, or entirely denying their spread, would point readers towards the same pool of YouTube videos and channels for further explanation, often along partisan or conspiratorial lines. By gathering these videos and visualising the networks of their interrelation – and relation to other major channels – it is possible to identify pathways and actors involved in the transmission of disinformation. In turn, this helps explain the evolution of disinformation from fringe commentators to mainstream political narratives.

The data for our network visualisation was harnessed using the Digital Methods Initiative's “Video Network Module” tool, which uses YouTube's open access “relatedToVideoId” API to map the channels and videos most likely to be recommended to viewers of a given video. By entering the video IDs of aforementioned key videos (primarily identified through Twitter and Reddit) as seeds input to the tool, network files were extracted showing the closest recommendation relations for one or more videos. These networks were then visualised as maps using Gephi. These network maps depict the strength of connection between influencers, news channels, and political figures on YouTube. In short, by visually plotting the channels propagating disinformation surrounding

the Amazon fires – according to the likelihood of their videos being recommended to viewers of specific other channels – we get a glimpse of the mechanisms which drive traffic to these sources. Even with access to the publicly available data used to make these graphs, little of use could be gleaned without visualising the connections between channels, since it is the weight of thousands of connections which highlights statistically significant relations amidst the innumerable less relevant data points and connections. Gephi allows us to see not only the most closely related channels but also chains of shared viewership which might explain the spread of topics and ideas between channels which, at first glance, are less closely connected. In the graph below, dots (or nodes) denote channels – with notable actors highlighted in a larger typeface – while the lines (or edges) between them indicate connections, the strength of which is visualised as the line thickness. The layout of the graph reflects clusters of YouTube channels with common interests or political allegiances. The upper-right cluster around “Leda Nagle” is, for instance, composed of channels primarily producing content related to climate change and skepticism.

unrelated or low-impact data – to be trimmed from the eventual graph, increasing legibility of large data sets. Meanwhile, visualising “weight” (the relative likelihood of a video being suggested on another) as line thickness between channels highlights probable pathways for audience migration and can identify other important channels and videos within the same media ecosystem. Tracing links between popular and influential political figures and smaller channels that propagate disinformation narratives not only indicates that official and apparently fringe political commentators are mutually supportive in spreading disinformation to large numbers of viewers, but also suggests ways in which YouTube’s own mechanisms drive traffic from mainstream political audiences towards these less popular channels and disinformative content.

The Future of Disinformation Research

Disinformation is information that actively seeks to disinform the public by masking falsehoods, including false connections, as truths. As evidenced here, a variety of investigative research methods can be used to trace the tactics utilised by malicious actors who spread disinformation online. However, these methods are not without limits. In practical terms, open source investigative research requires sifting through large amounts of data. Especially without the use of paid tools that allow access to Twitter’s Firehose or use AI for large data crunching, investigative researchers can only collate and analyse a fraction of the available data, which is compounded by the nature of disinformation, which is to mask the information as true. These tools allow for larger data to be processed, but researchers may lose a qualitative closeness to the data, which allowed us in this case to determine which pieces of information were truly disinformation, which actors were particularly influential, and to qualitatively deduce instances where users had sourced content from other online platforms while obscuring the digital footprints that otherwise would allow AI tools to log this connection. Additionally, the tools such as Dataminr often lack transparency about the algorithms behind their platforms, leading to questions about how certain trends or relations between data points were calculated, for example.

In ethical terms, open source intelligence gathering can often be perceived as a form of surveillance, as researchers dive deep into the activities and posts of ordinary citizens, however publicly visible these are. As such, while joining private WhatsApp groups may have allowed this research and that of disinformation research in general to draw better conclusions about the nature of the coordination and networking of individuals spreading disinformation, it would fundamentally change the nature of the research, bringing to light questions of ethics in investigative research. Accordingly, this research did not make use of such methods, as it was deemed inappropriate to falsely portray researchers as pro-Bolsonaro supporters in order to access these private social media spaces.

As disinformation continues to spread online, these considerations will continue to impact future research into disinformation. However, fundamentally, the task of disinformation narratives is to reach as many individuals as possible and to spread the disinformation such that it may become a popularly-believed truth. For that reason, the methodologies outlined in this paper remain salient for future research into the public dissemination of disinformation narratives. By identifying the tactics that disinformation spreaders utilise and the research methods investigative researchers can draw upon to trace and create network maps of individual actors, future researchers may be able not only to track the spread of disinformation, but identify these networks early and stem their spread.

Notes

¹ The Advanced Search function, within Twitter, includes and excludes media from results using Boolean logic (where user queries are mathematically true or false, using AND/OR/NOT operators to allow more specific and complex queries – for instance, searches for posts on Twitter that contain both the word “Amazônia” and “Bolsonaro” but not “Eduardo”). Thoughtful use of this function can allow for fruitful specific searches based on keywords as well as factors including accounts involved, time frame, and number of replies or likes. TweetDeck is an application, independently developed but now acquired by Twitter, that functions on a similar basis but has further options, such as for including and excluding various media types, and allowing for multiple simultaneous searches in a column-view format. Third party sites like foller.me and TweetBeaver can be useful in forming more specific assessments of individual accounts and relationships between them.

² Dataminr and Crimson Hexagon rely on AI to navigate far greater volumes of data than free tools or individuals are able, and offer more chronologically significant and more complex searches functions. Both require a fee and we are grateful to Amnesty International for sharing their access. However, these resources ultimately reminded us of the added value of close analysis and limitations of reliance on software alone. When inputting a given hashtag, Dataminr, for instance, provides the option to display which other hashtags were used alongside it most regularly in a specified period – proving beneficial for our understanding of usage patterns and the relative weighting of these different buzzwords. We initially experimented with Crimson Hexagon’s influencer and image analysis features in an attempt to identify memes relevant to our research; however, while the programme is not transparent about its criteria for these processes, it is clear that its basis lies in market research. It failed to identify politically significant content (notably, from the Global South in a language other than English, in this case) and we found our own filtering techniques more fruitful. With both tools we held deep concerns around data ethics, and a particular growing wariness about parent companies’ collaboration with law enforcement agencies and use of facial recognition technology led us to step back from using the tools. For a more in-depth assessment of these issues and the privatisation of data and data-processing resources, please see Lyndon et al., forthcoming.

³ The key issues here are in terms of volume and sorting historical data. The aforementioned search functions use Twitter’s free-access Search API, while Twitter charges for access to its Firehose API (Application Programming Interface, something most online applications have to allow communication with different apps, servers, and devices). Essentially, the former limits the maximum number of results to 3200, whereas the latter has no such limit and tracks all tweets made since Twitter’s 2006 inception. While the former is excellent for close qualitative analysis and specific searches, it lacks options for downloading or aggregating quantitative data – tools that have paid access to the Firehose and allow for the handling of large data sets offer advantages for wider analysis.

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