Trust and Trolling of Weather Forecasters

An analysis of Twitter conversations related to climate change during UK Heatwaves in 2020 and 2022

Overview

- Introduction
- Background & content
- Research Question
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- Dataset
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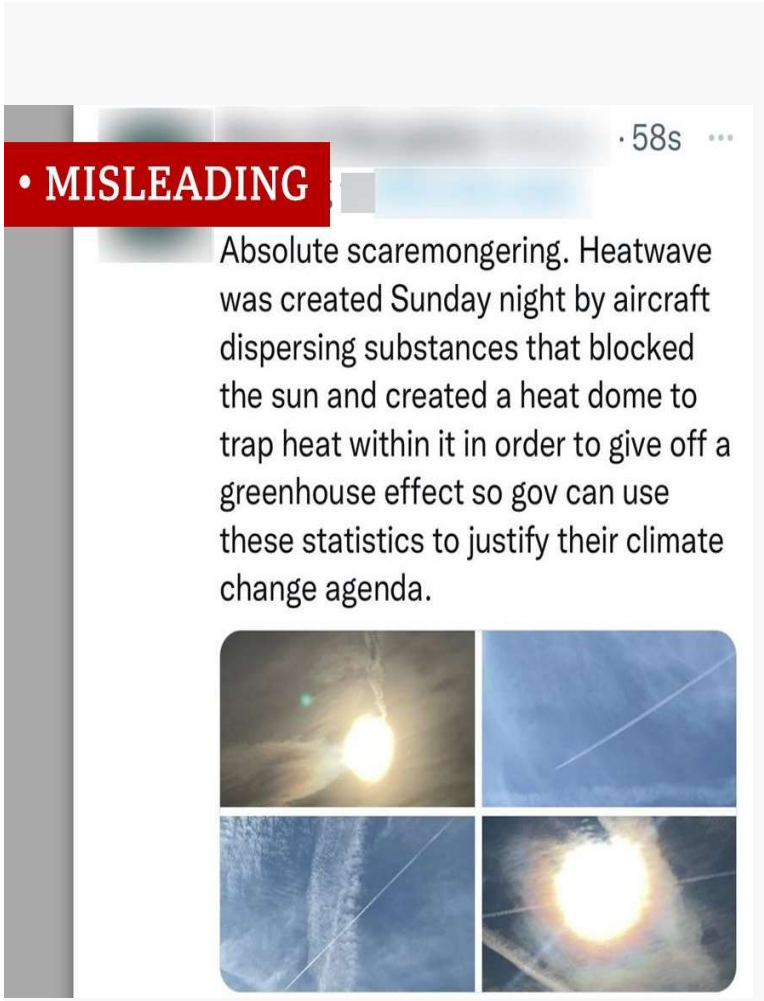
Introduction

- **Climate in Crisis:** Intensified heatwaves demand attention amid climate crisis.
- **Rising Influence of Social Media:** Twitter vital for climate discourse, but also breeds abuse.
- **Forecaster's Dilemma:** Weather forecasters trolled delivering climate information.
- **Unraveling Digital Dynamics:** Analyzing Twitter during 2020/2022 UK heatwaves for insights.
- **Empowering Informed Conversations:** Uncovering online complexities, promoting respectful climate talk.

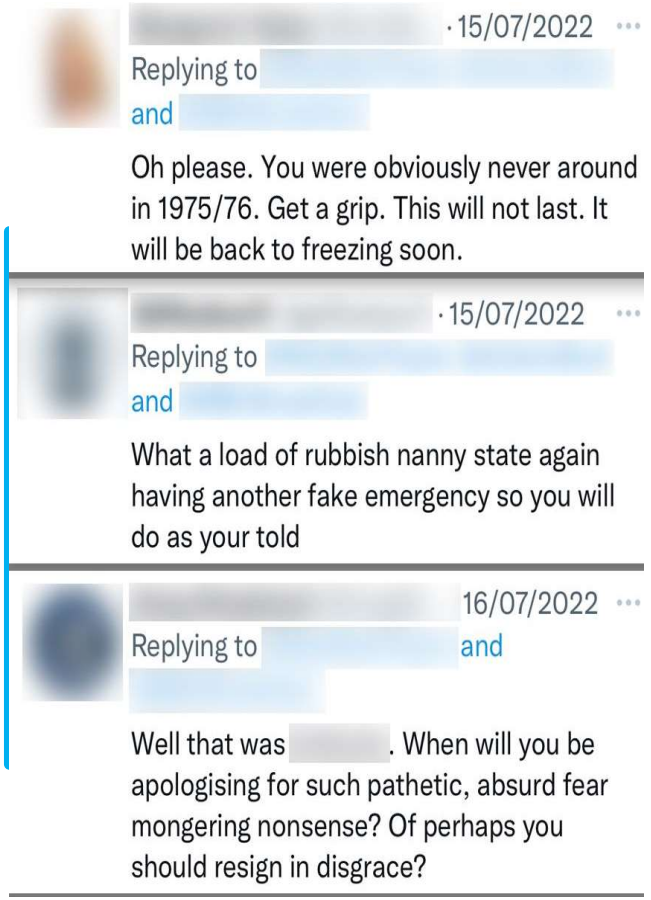
Background & Research Context

- Heightened climate change anxieties challenge effective communication.
- Climate change intensifies heatwaves, demanding better communication strategies.
- Twitter's potential for climate info dissemination and pitfalls of misinformation.
- Forecaster tweets on climate change face unprecedented trolling.
- Anonymity and online communities foster online abuse.
- Linguistic markers reveal abusive content; sentiment analysis gauges attitudes.
- Algorithms aid abuse detection, offering deeper online insights.
- Project combines climate communication, online behavior analysis, and analytics.
- Scrutinizing 2020 and 2022 UK heatwaves for enriched digital climate discourse.



Research Question

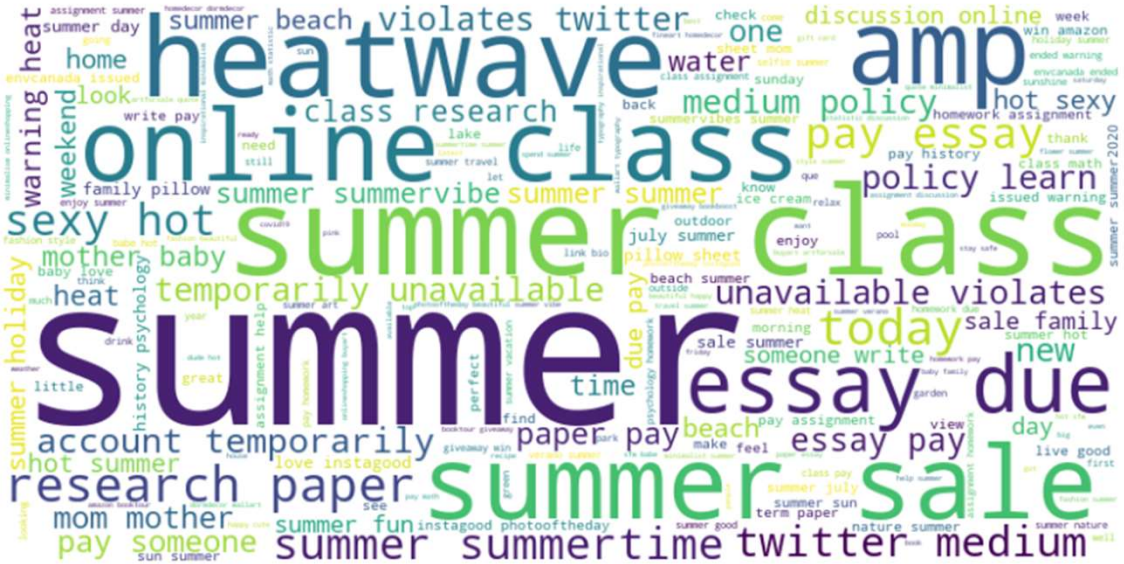
What are the attitudes and behaviours exhibited by Twitter users towards climate change and weather forecasters during heatwaves, and how can the application of automated methods provide invaluable insights into these phenomena?



Aims & Objectives

- **Aim:** To analyze Twitter conversations on climate change during heatwaves and understand user attitudes towards climate change and weather forecasters.

- **Objectives:**
  - Data Collection and Pre-processing
  - Sentiment Analysis (VADER)
  - Topic Modeling (LDA)
  - Abuse Detection Algorithm (Profanity-check Library)
  - Analysis of Patterns and Correlations



Dataset

- Carefully curated Twitter dataset covers July and August 2020 and 2022.
- Total tweets: 2 million
- Dataset aligned with peak UK heatwaves, showcasing record temperatures.
- Condensed timeline: July 15th to 31st for both years, enhancing relevance.
- Refined timeline minimizes noise, ensuring dataset precision.
- Excluded retweets for data purity, reducing redundancy and bias.

	Tweet ID	Created At	Text	Sensitive
0	1565127280233312257	2022-08-31T23:59:56.000Z	Right now 107°F°C in SoCal 🥵#Heatwave	False
1	1565127275519016960	2022-08-31T23:59:55.000Z	RT @Yesilike14: Hot blond wife Ariehn experiences the arduous pleasure of feeling two big cocks rubbing her pussy at the same time.. She li...	False
2	1565127242698862592	2022-08-31T23:59:47.000Z	今日から9月ですな🌕\nSEVENTEENもスタッフさんもcaratちゃんも健康でしあわせでありますように💍\n\nやっと朝ご飯🍛...って座ったらこの景色が飛び込んできて ひとりで\nひゃーん❤️と声がでてしまいました💗\n\n娘、、아주 NICE 👏\n#_WORLD #HOT #민규\n#SEVENTEEN @pledis_17 https://t.co/4sY2U7ILFK	False
3	1565127195303071745	2022-08-31T23:59:36.000Z	@cumslxtty's account is temporarily unavailable because it violates the Twitter Media Policy. Learn more.	True
4	1565127179851243521	2022-08-31T23:59:32.000Z	I don't think it's pumpkin spice season yet...\n\n#pumpkin #pumpkinspice #starbucks #hot #heatwave #summer #melting https://t.co/wvnjGLmZef	False
...	...	...	...	...
2050067	1542659259153924102	2022-07-01T00:00:03.000Z	2022/07/01 09:00\n#Binance 格安コイン\n\n1位 #LUNA 0.00000001 BTC(0.03円)\n2位 #WIN 0.00000001 BTC(0.03円)\n3位 #HOT 0.00000002 BTC(0.05円)\n4位 #COCOS 0.00000003 BTC(0.08円)\n5位 #NPXS 0.00000003 BTC(0.08円)\n\n#仮想通貨 #アルトコイン #草コイン	False
2050068	1542659253399322626	2022-07-01T00:00:01.000Z	Vision is Fashion\n😍😍😍\nPhoto Credit: Gucci\nhttps://t.co/EblxARhRaH\n\n#loveyourglasses #luxury #fashionlovers #Style #VaughanFashion #VaughanStyle #InstaFashion #vaughaneyewear #The6ix #6ix #vaughan #occhialieyewear #June #summer #Occhialieyewear #Occhiali https://t.co/8d7UGLg2aC	False
2050069	1542659251398737921	2022-07-01T00:00:01.000Z	#JuevesdeGanarSeguidores \n\nSíguenos -> @SexyDiablitas1 \n\n#GanarSeguidores #DaFollow #SexyDiablitas #RT #Hot #Sexy https://t.co/Q857no3Sud	True
2050070	1542659248596860929	2022-07-01T00:00:00.000Z	Let's go back to the glory days of Waikīkī. \nhttps://t.co/y6e8ROFY15 #Hawaii #Oahu #Waikiki #Travel #HawaiiTravel #Summer #HawaiiSummer	False
2050071	1542659247816818688	2022-07-01T00:00:00.000Z	¡Locos por comernos este bombón! Es que Ana Paula Saenz, con esa cinturita, nos despierta todas las pasiones. Sigue el enlace y disfruta de mucho más. #sexy #bella #foto #HotSweetHome #Hot #Follow https://t.co/moyNYGWoYd	False

2050072 rows × 4 columns

Experiments and Methods

Data Collection

- Specialized a list of keywords and hashtags.
- Chose the timeframe for heatwave
- Collected tweets from twitter

Data Pre-processing

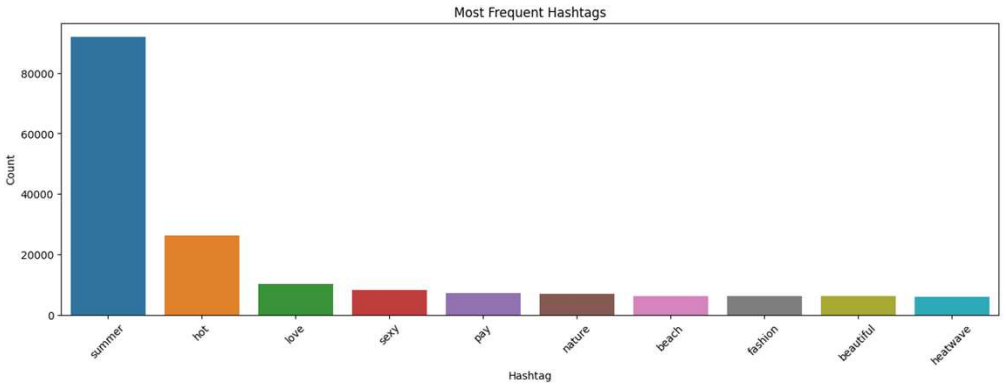
- Removed Retweets
- Removed Hashtags and Mentions
- Removed Stopwords
- Timeline based Dataframe
- Removed Emojis
- Lemmatizing the tweets
- Lowercasing Text
- Removed URL's, Link, Punctuations
- Removed short words from the tweets (<2)

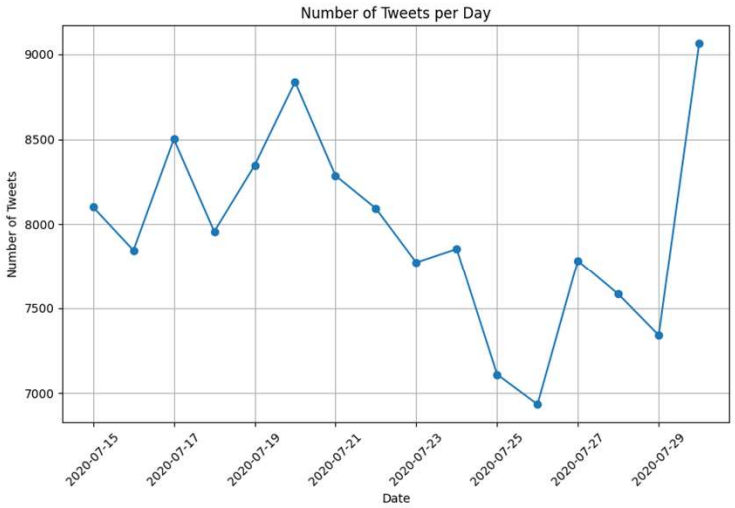
Data Analysis

- Abuse Detection (Profanity-check)
- LDA Topic Modelling
- VADER Sentiment Analysis

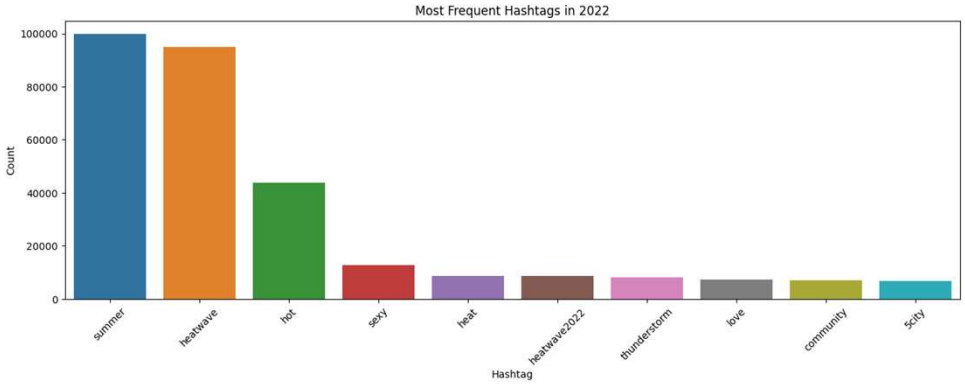
Results/Analysis

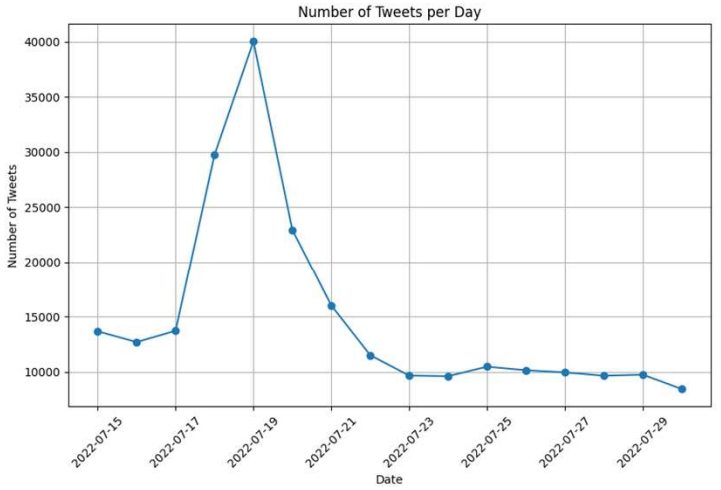
2020





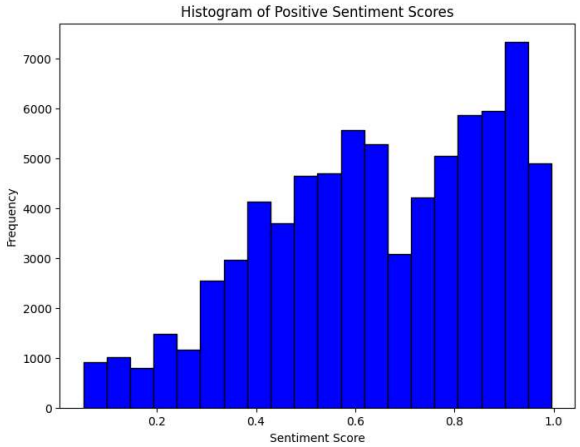
2022

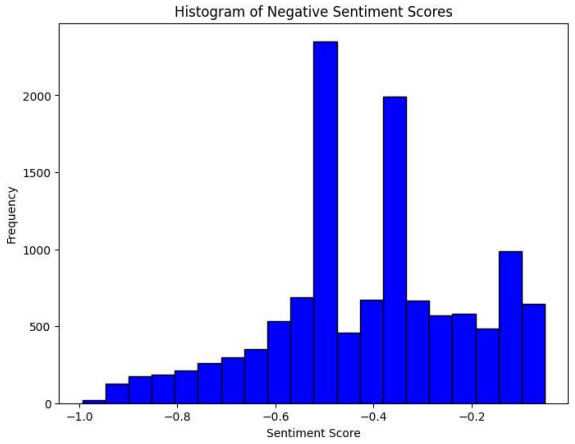


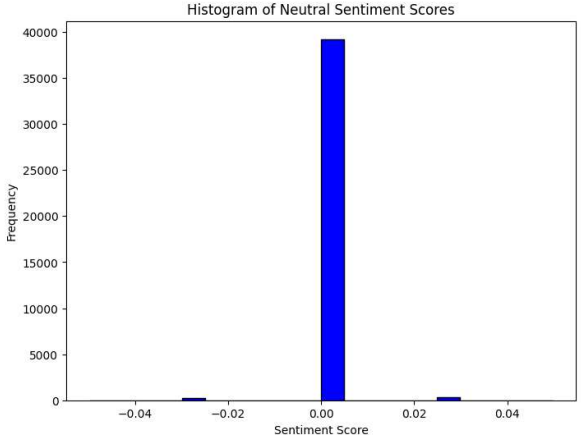


Results/Analysis

The histograms show sentiment distribution in the data analyzed using VADER. Positive sentiment is high (around 7000+), while negative sentiment is lower (around 2000+), indicating optimistic and critical language, respectively.

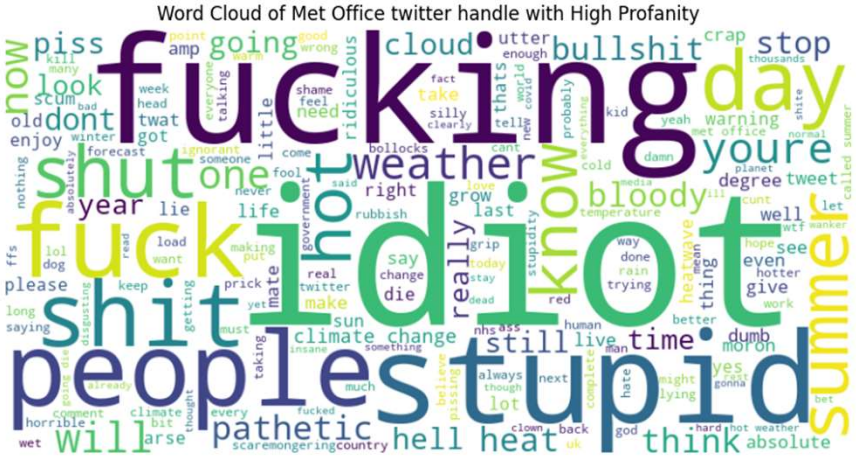




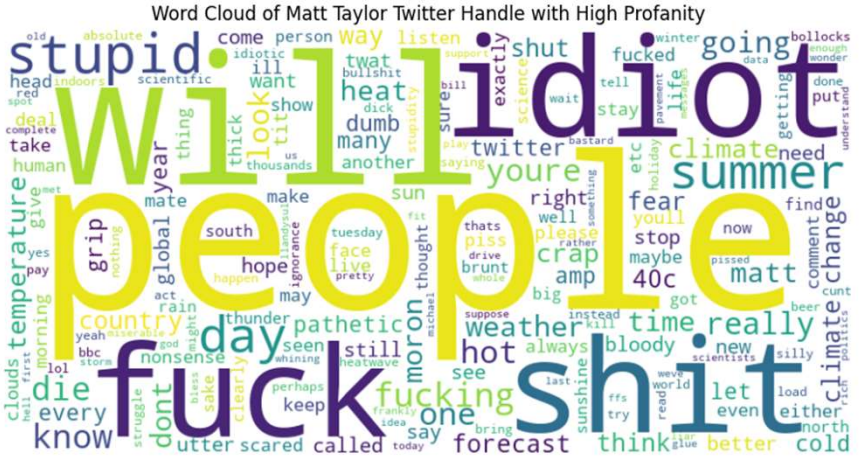


Results/Analysis

Wordcloud of Met Office Twitter Handle



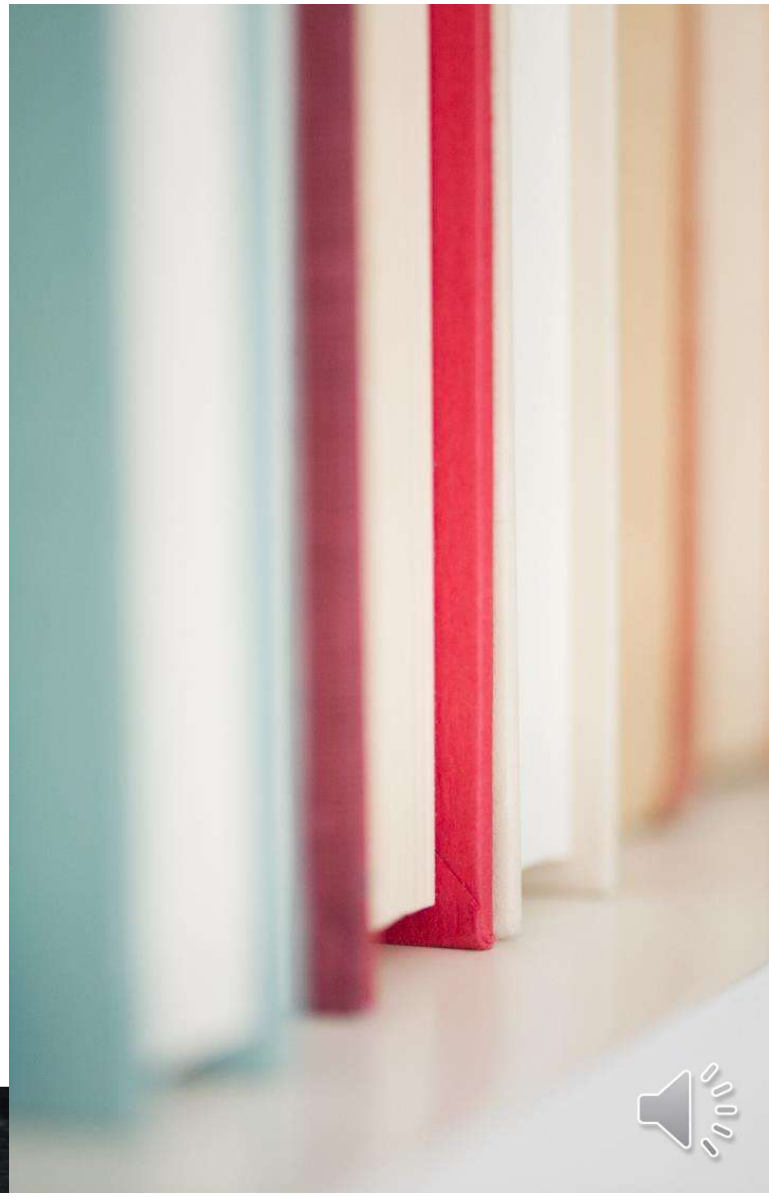
Wordcloud of Matt Taylor Twitter Handle



Upon analyzing the wordclouds, it becomes evident that Twitter users exhibited abusive and disrespectful behavior towards weather forecasters. The presence of profane words such as "fucking“, "idiot“, "shit“, and "stupid" underscores the hostile tone directed at them.

Next Steps…

- Innovative Model Creation: Rather than relying on existing libraries like profanity-check, there's an intriguing prospect of constructing a novel model that can discern distinct types of abuse, such as sexual or general abusive language.
- Expanding Horizons: Beyond its initial revelations, this paper harbors the potential to unlock captivating avenues for further investigation and study.
- Enhanced Dataset Scope: Considering the entire dataset, as opposed to a 15-day timeframe, could offer a more comprehensive understanding of the UK public's sentiment towards heatwaves and their attitudes towards weather forecasters.
- Geospatial Insight: Exploring geospatial patterns by plotting the areas with the highest heatwave-related tweet activity could provide valuable insights into regional engagement and its correlation with local temperatures.



Thank You

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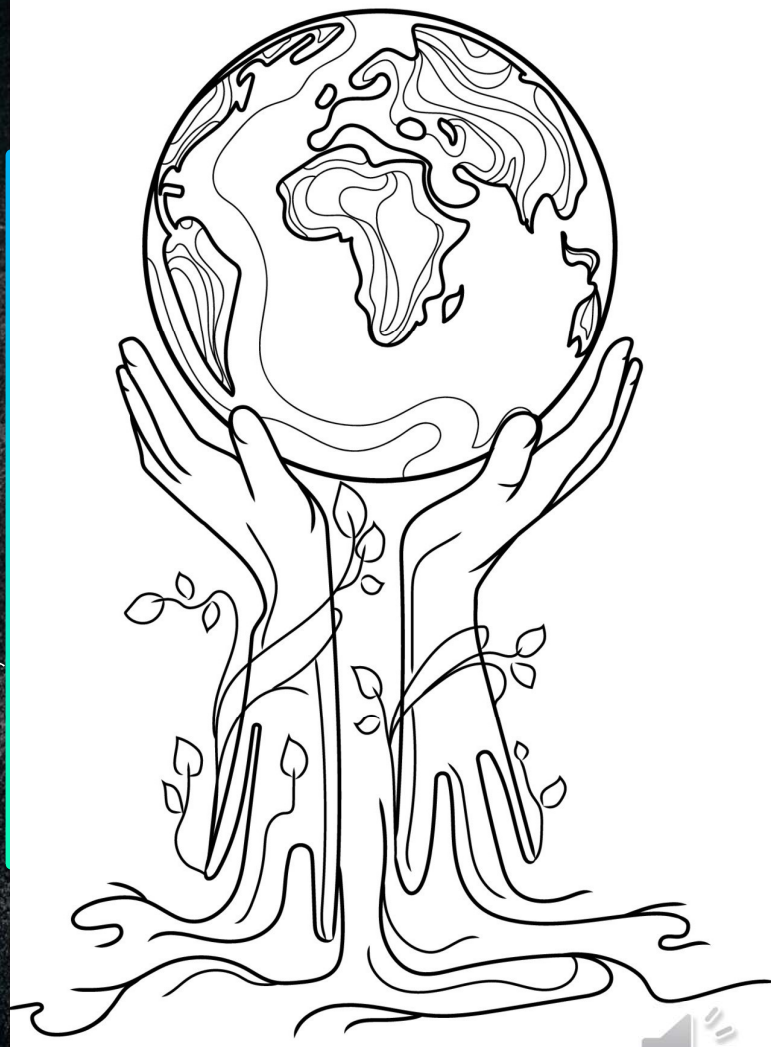

Video Link

YouTube: https://youtu.be/IAw0Cz5k930

OneDrive:
https://universityofexeteruk-my.sharepoint.com/:v:/g/personal/aa1308_exeter_ac_uk/EUAKNO5w3lVOmBpX1gwuJmUBcrYobwNYK7RbekjB5dqhmQ?e=XYXUFK