CLIMATE CHANGE
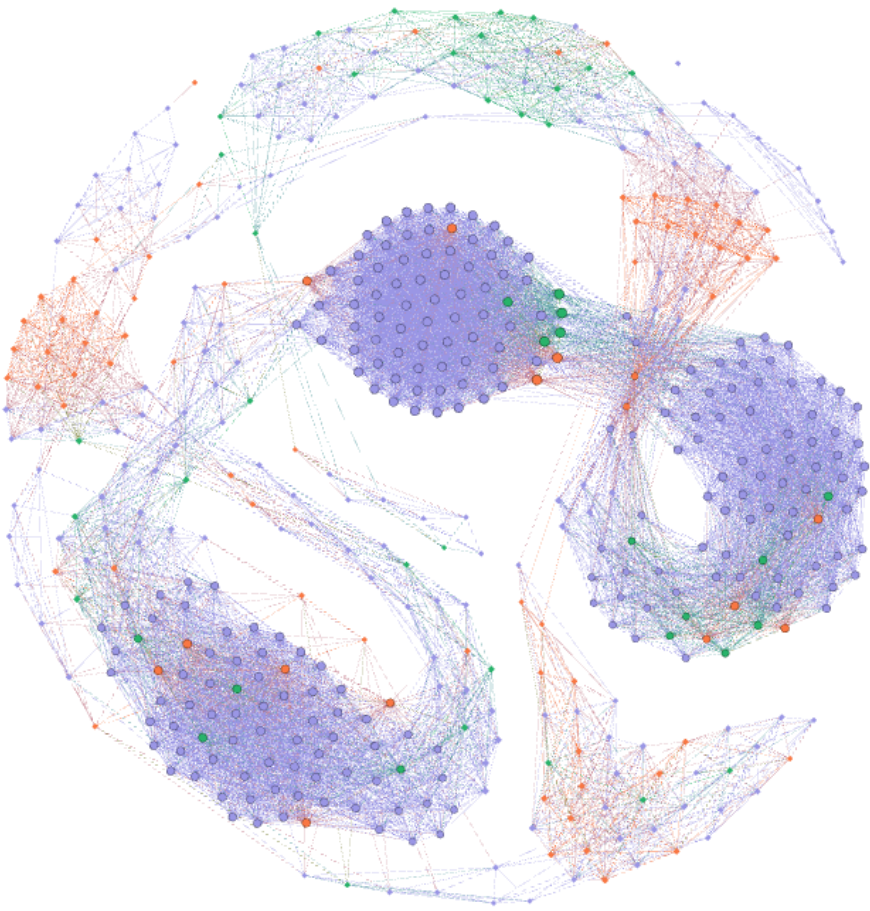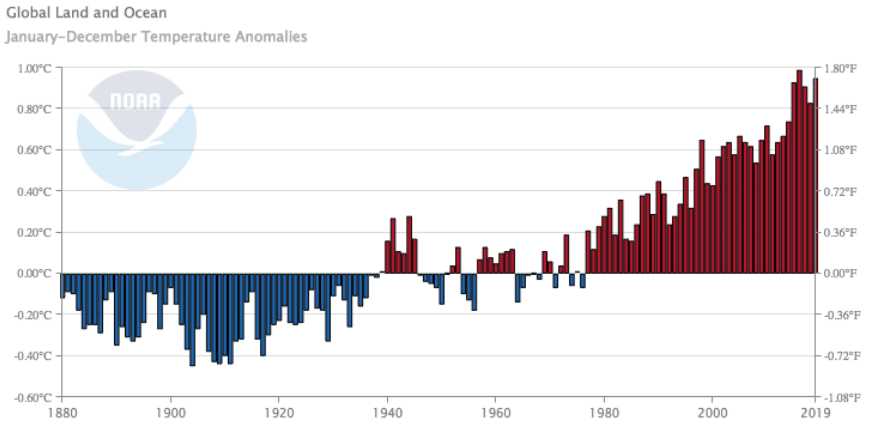## CLIMATE CONVERSATIONS ON TWITTER: ASSESSING THE USEFULNESS OF THE SIMILARITY NETWORK

By Alina Rashid , Amsal Malik, Zain UL Haq

Introduction

Climate change is a critical issue, escalating with rising greenhouse emissions. Amidst increasing natural disasters, social media, especially Twitter, has become a platform for global dialogue. Our study examines Twitter's tweets using similar sentiments on climate change in 2019. A node is a tweet, and its edge is formed with another tweet that has a similar sentiment, with the threshold being 0.05. This will help us understand the communal structure and resilience of this hypothetical network to change-makers in climate change discourse.

Global Land and Ocean
January–December Temperature Anomalies

Objectives

- **Examine Twitter's Influence on Climate Discourse:** What patterns can be identified in sentiment-based networks regarding climate change discussions?

- **Locate tightly-knit Communities:** How are tightly-knit communities formed on Twitter, discussing climate-related topics with their respective stance?

- **Evaluate Network Restructuring Impact:** Assess if restructuring enhances resilience and how it fares against other Online Social Networks (OSNs)
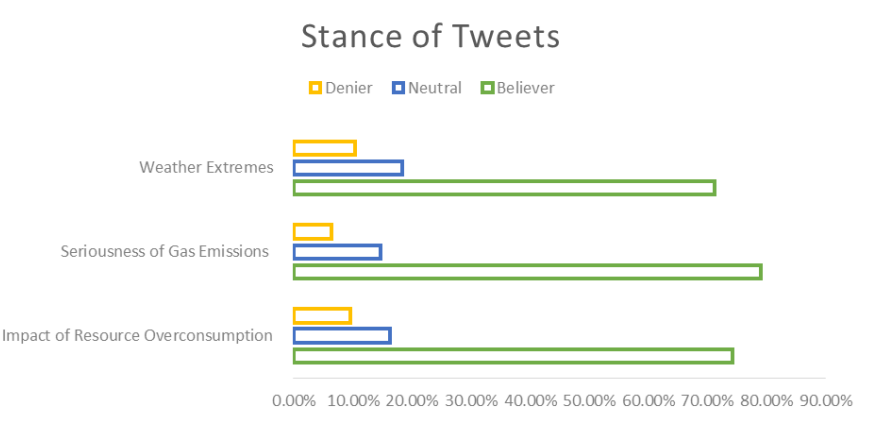
Methodology

The 2019 "Climate Change Twitter Dataset" from Kaggle was used to create networks based on tweet sentiment similarities at threshold= 0.05. Degree Centrality, Density, Average Path Length, Diameter, and Clustering coefficients are the metrics incorporated to asses the overall structure and resilience of the network.

Results

Stance of Tweets

(Network Visualization)

Metrics	Topic 1	Topic 2	Topic 3
Nodes	7,857	26,367	13,197
Edges	2,330,857	25,898.653	6,509,236
Avg. Degree	593	1293	986
CC	0.82	0.82	0.79
Density	0.076	0.081	0.074
A.P.L	10.2	10.3	10.2
Diameter	40	39	38

Analysis

Public Interest and Stance:
Identified "Weather Extremes" as the most discussed topic, indicating public interest and engagement.

Network Resilience and Collaboration:
Evaluated network resilience- local clusters' robustness against attacks.

A Potential Dilemma:
local communities v/s overall collaboration

Comparative Analysis with Facebook:
Twitter's preference for interconnected communities over broader friend-of-a-friend connectivity is seen on Facebook.

Conclusion

Analyzing Climate Change tweets reveals diverse networks with similar topologies, suggesting potential organization benefits for resilience, collaboration, and impact. Unique Twitter features emphasize its efficiency for climate action, urging platform enhancements. Limited topics and visualization constraints highlight research gaps for future exploration, including geographic impact assessment.