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# Drought Awareness

## Exploring the forms of partnerships in the process of publicizing drought in the media

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### ABSTRACT

This poster explores drought awareness partnerships, delving into policies, sociotechnical choices, and stakeholder perspectives in Arizona. Our interdisciplinary approach integrates communication and media studies, environmental geography, and textual corpus analysis to scrutinize media reporting on drought issues. The research aims to understand and improve partnerships between water stakeholders for publicizing drought through media channels, emphasizing visibility and invisibility dynamics within the local context of Southern and Central Arizona.

### OBJECTIVES

- Investigating, on the scale of a territory and through a case study, the process of publicizing the debates around drought
- Examining the forms of social connections, but also of visibility and invisibility :
  - Individuals and groups
  - Observed data: water management policies, modes of regulation (access and uses), choice of technical devices, conflicts of use, initiatives and alternative solutions

### MATERIAL AND METHODS

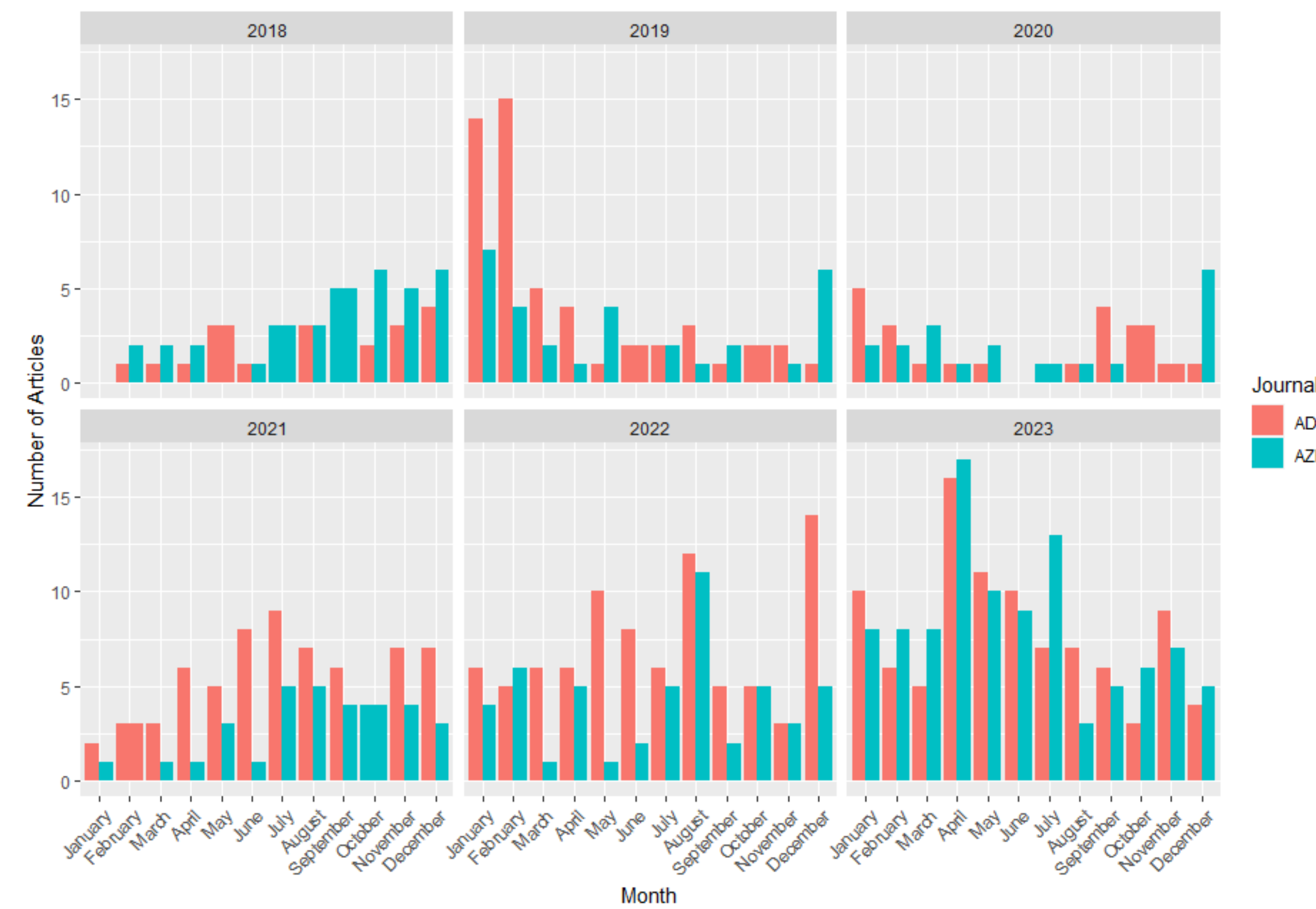
- 601 newspaper articles (January 2018 - December 2023) *Arizona Daily Star* (ADS) & *Arizona Republic* (AZR)
- 58,082 tweets; 41,695 sent by 8,669 Twitter (X) accounts between 2018 - 2022



### Unsupervised Learning by Probabilistic Latent Dirichlet Allocation (LDA)

- Topic Modeling (LDA):** Building a generative probabilistic model to study the variation of topics over time, compare the distribution of topics between different articles or sources
- Stakeholder identification:** NLP tools (Named Entity Classifier), snowball sampling
- Visual representations** as a heuristic method

### ANALYZING TEMPORAL FLOWS

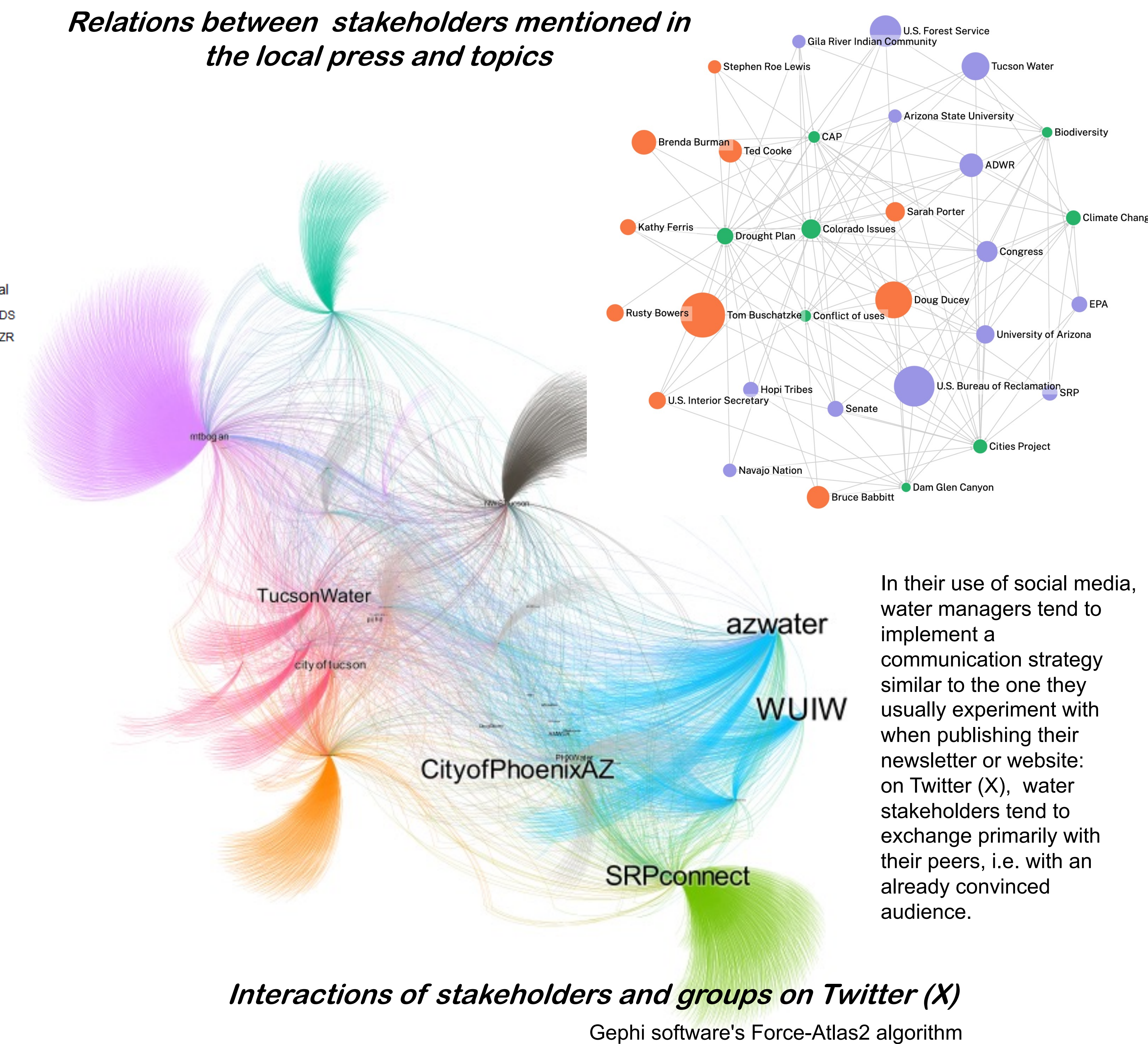


A marked increase in monthly article flows from 2019. The diachronic distribution of annual flows in the press reveals the joint influence of climatic phenomena, political negotiations and social concerns:

- Drought Contingency Plan - 2019
- 2020 electoral deadlines (Governor, Congress and Senate and President of the United States)
- The years 2019, 2021 and 2022 in Arizona are classified as D4 ("Exceptional Drought") by the U.S. Drought Monitor.
- "the U.S. Bureau of Reclamation, which manages the dams and the water, announced that the lakes had fallen to Tier 2A levels, triggering previously agreed-upon cuts to water supplied to states in the lower basin of the Colorado River, beginning on Jan. 1" (AZR, January 4 2023).

### ANALYZING THE STAKEHOLDERS NETWORK IN THE MEDIA

Relations between stakeholders mentioned in the local press and topics

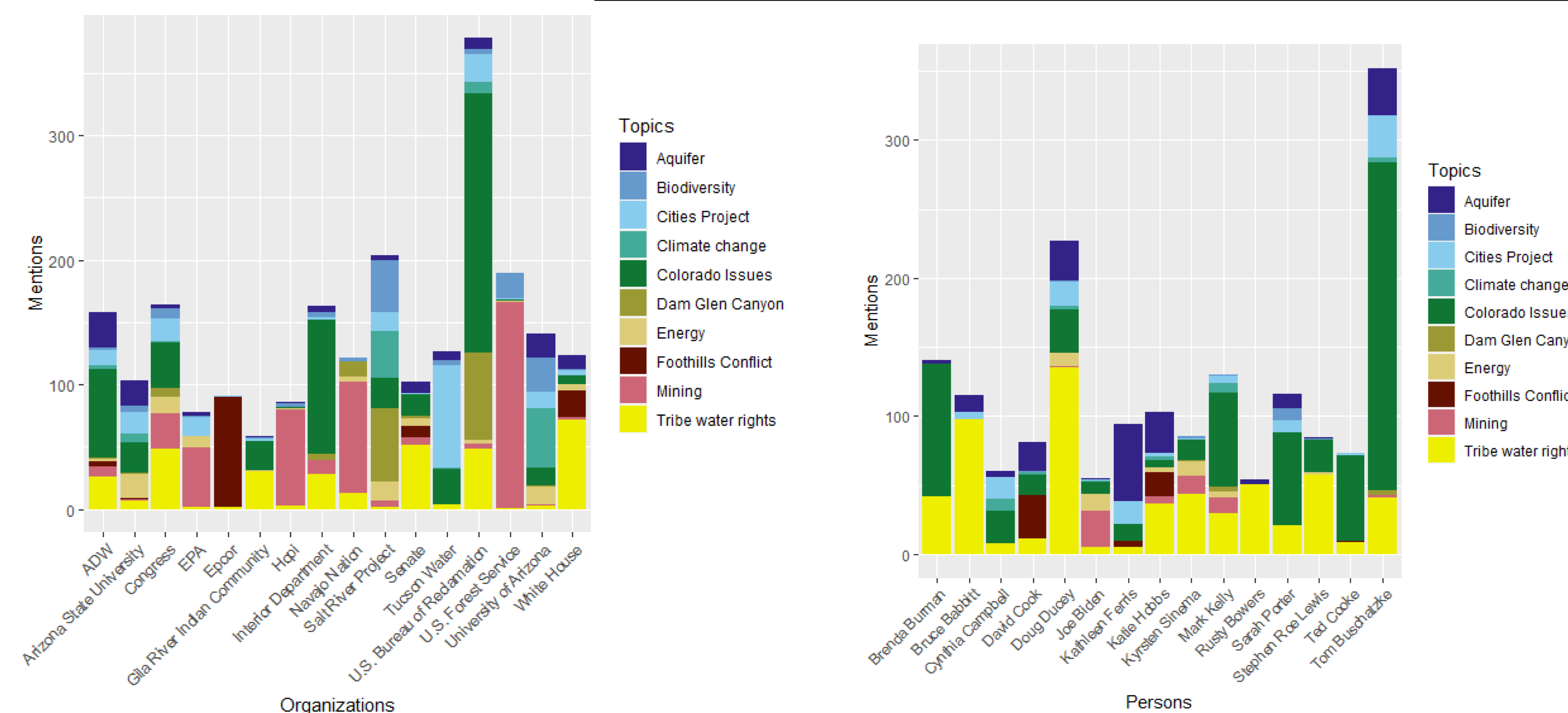


In their use of social media, water managers tend to implement a communication strategy similar to the one they usually experiment with when publishing their newsletter or website: on Twitter (X), water stakeholders tend to exchange primarily with their peers, i.e. with an already convinced audience.

### Interactions of stakeholders and groups on Twitter (X)

Gephi software's Force-Atlas2 algorithm

### IDENTIFYING AND ANALYZING TOPICS DISTRIBUTION



We searched for persons or organizations mentioned in the press by using a classifier (Spacy Suite). We use a SCP score to quantify the importance of a stakeholder in a corpus (Brooks *et al.*, 2022). The figures on the left shows the number of mentions in the press of people and organizations: we kept stakeholders with a score higher than 0.03 over the four years. The most cited organization is the **U.S. Bureau of Reclamation** whose mission is "to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public". We note that the organizations most frequently mentioned in the press are large institutions at the **local** (Tucson Water), **regional** (Salt River Project, State of AZ) or **federal** level (EPA, U.S. Bureau of Reclamation, Interior Department). The people most frequently mentioned fall into three categories: **political figures**, heads of regional or federal **agencies**, and **scientists**.

Brooks, C. F., Juanals, B., & Minel, J. L. (2022). Trends in Media Coverage and Information Diffusion Over Time: The Case of the American Earth Systems Research Centre Biosphere 2. *Journal of Creative Communications*, 17(1), 88-107.