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Thematic Analysis of Climate Change News across Political Orientations

1 Research Context

- This research argues that climate change is not only a scientific issue but a discourse issue: how it's talked about shapes what audiences perceive as urgent, credible, and solvable.
- This paper investigates whether political orientations correlate with different narrative priorities, potentially leading to systematic differences in keywords and themes across left-, center-, and right-leaning outlets. This matters because the way climate change is framed in language can hinder climate action, while corporate greenwashing misleads the public about environmental practices (Penz & Fill, 2022).

Positioning: The project is grounded in Ecolinguistics / Ecological Discourse Analysis (EDA), which examines how linguistic choices (lexis, framing, evaluation, narratives) can support or undermine ecological wellbeing, making climate news a key site for analysis (Penz & Fill, 2022).

2 Research Question

"How does language differ in global media coverage of climate change across news outlets with different political orientations?"

Sub-questions:

1. *How do vocabulary and lexical emphasis vary between left, center, and right media outlets?*
2. *How do framing devices (e.g., "crisis") differ across political orientations?*

3 Data

Our dataset consists of news outlets classified using Ground News' Media Bias Breakdown, and grouped into three broad categories: Left, Center, and Right.

- **Sampling:** 100 climate-related articles per category, total of 300 articles;
- **Time window:** 5th of January - 29th of January, 2026;
- **Collection method:** manually collected from the original outlet websites, then cleaned (removing non-article material);
- **Language handling:** articles from outlets published in other languages were machine translated (Google Translate) for inclusion, with the caveat that translation can affect lexical signals;
- **Corpus structure:** three subfolders (Left / Center / Right) used in Voyant for lexical/framing exploration;
- **Metadata:** a metadata file was maintained to support descriptive statistics.

4 Methods

- **Preprocessing (Python):** metadata + descriptive stats;
- **Lexical analysis (Voyant):** We used frequency lists to identify dominant vocabulary per group and examined collocates;
- **Framing evidence (Voyant):** We used relative frequencies to examine trends around key terms (e.g., "crisis," "urgent," "disaster," "emergency") to verify framing.

5 Descriptive statistics

Figure 1: Corpus Summary

	LEFT	CENTER	RIGHT
Total words	76655	65028	50638
Unique word forms	9713	8771	7321
Document length (range)	130 – 2658	251 – 1808	150 – 1620
Vocabulary density (range)	0.351 – 0.677	0.375 – 0.639	0.349 – 0.709
Average words per sentence (range	15.4 – 43.5	17.2 – 36.2	16.1 – 37.5

Figure 2: Distribution of Non-English Articles (by language)

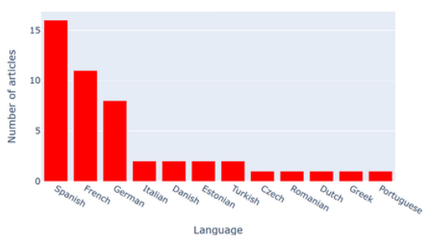


Figure 3: Non-Articles per Orientation

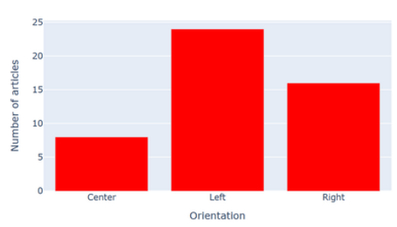


Figure 4: English vs Non-English Articles

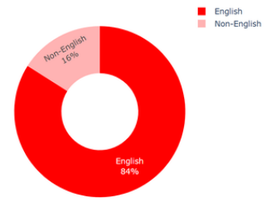


Figure 5: Top 5 Outlets per Political Orientation

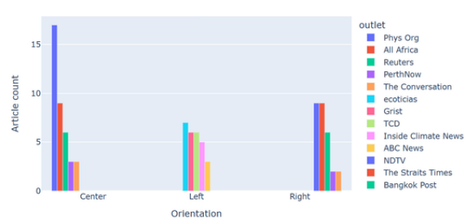


Figure 1 summarizes the three subcorpora (Left/Center/Right) and shows differences in size and lexical richness: the Left corpus contains the most total words, while the Right corpus is smallest; vocabulary density and sentence-length ranges also vary across groups. Figure 4 indicates that the dataset is predominantly English (84%), with a substantial non-English portion (16%). The non-English articles are unevenly distributed across orientations (Figure 3), with the Left corpus containing the most non-English articles, followed by Right, then Center. Figure 2 shows that this non-English subset is concentrated in a few languages (especially Spanish, French, and German), while the remaining languages occur only rarely. Finally, Figure 5 shows that each orientation includes a small number of outlets contributing a relatively large share of articles, which is important to consider when interpreting differences between Left/Center/Right.

6 Analysis

Orientation: Left

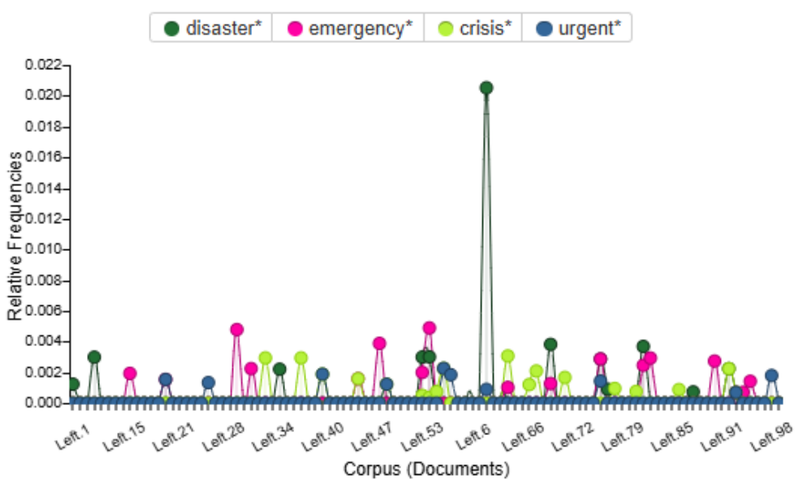
Figure 6. Top 5 most frequent words

Term	Count	Trend
climate	367	
energy	235	
water	197	
power	159	
change	148	

Figure 7. Collocates of "climate"

Term	Collocate	Count (context)
climate*	change	120
climate*	action	23
climate*	science	12
climate*	crisis	8
climate*	central	8

Figure 8. Policy framing



Climate-related discourse in the Left-leaning corpus is primarily framed in terms of urgency and crisis, highlighting the gravity of the situation and the necessity of quick action. The five most common words in the corpus are shown in Figure 1, which highlights "climate" as the main topic, which is supported by terms like "energy", "water", and "change", reflecting systemic and environmental priorities. In addition to being the most frequent collocate, Figure 2 shows how "climate change" is tightly associated with framing phrases like "crisis", which reinforce the overall sense of urgency. Lastly, Figure 3. suggests that urgency framing is there, but it is focused in specific articles rather than dispersed equally, seen by looking at the "disaster" spike.

Orientation: Center

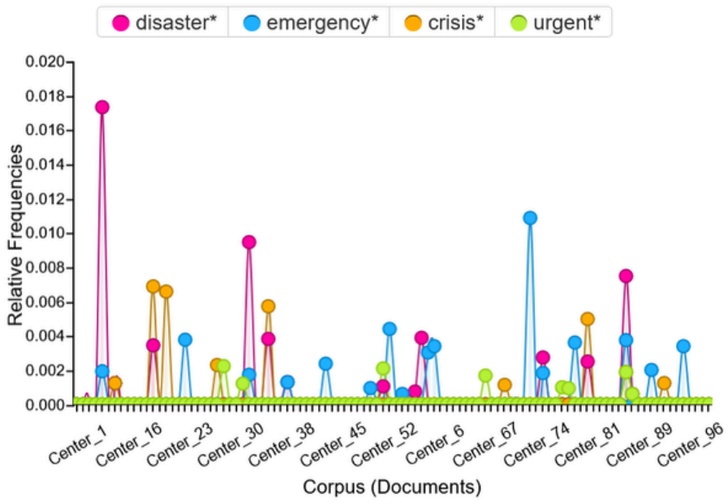
Figure 9. Top 5 most frequent words

Term	Count	Trend
climate	400	
change	189	
water	127	
air	124	
global	115	

Figure 10. Collocates of "climate"

Term	Collocate	Count (context)
climate*	change	150
climate*	action	14
climate*	models	9
climate*	resilient	8
climate*	related	8

Figure 11. Policy framing



Climate-related discourse in the center-oriented corpus combines issue-based discussion with moderate action-oriented framing. Figure 4 shows that climate and change are the most frequent terms, alongside words such as global, water, and air, indicating a broad and systemic focus on environmental issues. Figure 5 reveals that while "climate change" remains the dominant collocate, terms like "action" and "resilient" also appear, suggesting a pragmatic emphasis on response and adaptation rather than alarm. Finally, Figure 6 shows that urgency-related policy framing occurs more regularly than in the right-leaning corpus but remains uneven across documents, pointing to situational rather than consistently intensified crisis framing.

Orientation: Right

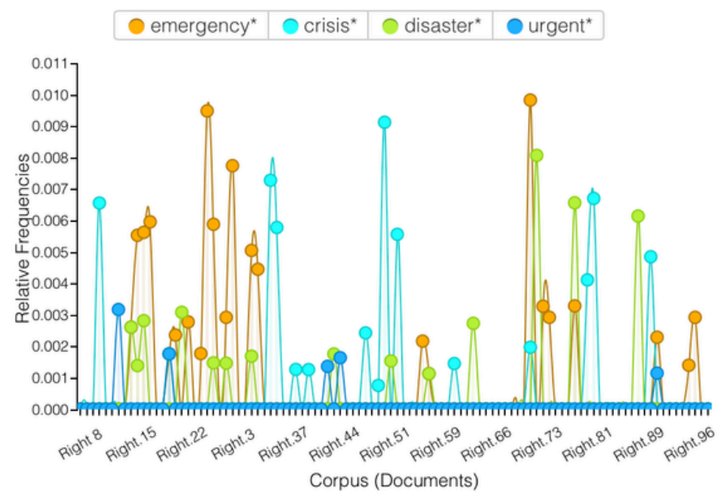
Figure 12. Top 5 most frequent words

Term	Count	Trend
power	143	
water	141	
air	132	
storm	131	
energy	124	

Figure 13. Collocates of "climate"

Term	Collocate	Count (context)
climate*	change	51
climate*	crisis	4
climate*	policies	3
climate*	scientist	2
climate*	reparations	2

Figure 14. Policy framing



Climate-related discourse in the right-leaning corpus is largely framed in neutral, issue-based terms rather than through sustained urgency. Figure 7, which presents the five most frequent words in the corpus, points to a focus on environmental phenomena and infrastructure. Figure 8 shows that while "climate change" is a common collocate, urgency-driven terms such as "climate crisis" occur only marginally. Finally, Figure 9 indicates that policy-framing vocabulary appears infrequently and unevenly across articles.

7 Limitations

- Outlet dominance: A small number of outlets contribute a large share of articles per orientation, which may influence observed patterns;
- Corpus imbalance: Differences in corpus size, vocabulary density, and sentence length may affect frequency-based comparisons;
- Translation effects: Non-English articles were machine translated and unevenly distributed across orientations, potentially affecting lexical signals;
- Bias classification: Ground News political ratings are indicative and may not reflect the stance of individual articles;
- Method scope: Computational methods capture surface-level lexical and framing patterns, not deeper narrative or rhetorical nuance.

8 Conclusion

This study shows how different political orientations frame climate change differently, both in terms of what is stated and in terms of the linguistic construction of urgency, action, and responsibility. Left-leaning publications tend to highlight crisis and immediateness; center-oriented media adopt a more pragmatic and solution-focused framing, while right-leaning coverage prioritizes issue-based and infrastructure discussion with less urgency signaling.

This study emphasizes that linguistic framing is crucial in mediating environmental information and underscores the significance of critically engaging with media narratives in climate communication by combining ecolinguistic language with computational analysis.

Ground News. (n.d.). https://ground.news/

Sinclair, S., & Rockwell, G. (2026). Voyant Tools (Version 2.6.19) [Text analysis software]. Voyant Consortium. https://voyant-tools.org/

Penz, H., & Fill, A. (2022). Ecolinguistics: History, today, and tomorrow. Journal of World Languages, 8(2), 232–253. https://doi.org/10.1515/jwl-2022-0008