



The U.S. Opinion on China's Climate Issue During the Biden Administration from the Perspective of Big Data Software WordSmith 8.0

A Corpus-Based Study on American Newspaper the *New York Times*

Yanyi Yang, Haoyu Gong^(✉), and Jieyu Zang

School of Northeast Asia Studies, Shandong University, Weihai, China
{yangyanyi118, gonghaoyu0812, zangjieyu0113}@mail.sdu.edu.cn

Abstract. Big data application offers a new roadmap to study international relations. As an analytical method based on big data, a corpus-based study can help analyze international relations. From the perspective of big data, the American mainstream media represented by the *New York Times* broadcast plenty of news on China's climate issue. The study aims to observe how the mainstream media broadcasts relative news? What characteristics it demonstrated in the process of broadcasting? And what are the focuses of relative news? In order to study these questions, the paper gathered the relative news by the LexisNexis, establishing the corpus which included more than 120,000 words. Then the big data software WordSmith 8.0 was used as an instrument to process the corpus words, getting the "word list" (generating the tag cloud), "collocations" and "concordance". After analyzing the results, some monumental information is worth pointing out, which could benefit to understand the Sino-US climate relation by the perspective of big data software WordSmith 8.0.

Keywords: big data · WordSmith8.0 · corpus · China climate · the Biden administration · climate issue

1 Introduction

At the beginning of 2020, the COVID-19 epidemic swept the world, and the "Grey Rhinoceros" of global climate change accelerated, leading the international climate and political game towards a new stage. Both China and the United States, as major carbon emitters in the world and participants in the international community, co-exist in cooperation and competition on climate change issues. Compared with President Trump's decision to give up America's leading position on emission reduction, China is playing a more active role in global climate governance. Biden actively sought to "lead" the climate governance process again after taking office. At the same time, the mainstream media in the United States have paid more attention to China's participation in global climate governance. An in-depth study of China-related news of influential

American media during the Biden administration helps us to analyze the position and views of American state media on China's participation in climate issues, and explore the cognition and attitudes about Sino-US climate cooperation released by the United States from different levels.

This study will take corpus analysis as the main research method, and by selecting the reports on China's climate governance in *The New York Times*, USA during the relevant period, analyze and summarize the hot topics of American news media's reports on China's climate governance, make clear the outline of American views on China's climate governance, get the attitude of the United States towards China's participation in global climate governance, and seek the possibility and key points of cooperation between the two countries in this respect.

2 Literature Review

2.1 Big Data and Social Science Research

Kitchin (2014) pointed out that in the context of the big data era, the analysis and processing technology based on big data has created a new development opportunity for "Data-Driven" social science research. Big data makes "every research field has a large amount of information-based data", which will promote "most humanities and social sciences to have the characteristics of natural sciences", make up for the criticism of insufficient output of Social Sciences, and promote its "scientific" and "quantitative" development [1]. Humphreys and Wang (2018) argued that in text analysis, big data can realize the mining of deep-seated cultural information in cross-temporal and cross-cultural texts, and the efficient vocabulary analysis and reflection ability has attracted more and more attention [2].

2.2 Analysis of Political Discourse

In recent years, the study of political discourse and text has gradually become an important issue in political science. Van Dijk (1997) developed the research methods of critical discourse analysis and made important contributions to the development of political discourse analysis [3]. According to Fairclough (2005), political behaviors, events and processes are often very complex, but we need to know how they are organized and expressed in discourse, and what impact they will have on public cognition after "precipitation" in discourse. Political discourse analysis can show "simplify and reflect" politics in discourse [4].

2.3 Analysis Framework

Currently, environmental and ecological issues have become a common concern of all mankind. Yang (2009) maintained that it is the consensus and expectation of the world that the state, as the actor, undertakes and practices environmental governance and ecological protection, especially environmental and ecological protection at the cross national, cross regional and global levels, and undertakes international responsibility. This consensus and expectation is one of the core standards used by the international community and foreign citizens to judge the international image of a country [5].

3 Methodology

3.1 Research Questions

With the aggravation of global warming, climate issues are increasingly becoming the focus of international attention. The relationship between climate-change adaptation and national interests is getting increasingly closer. With the evolution of climate issues, China's role orientation and cognition in climate governance are also changing. Since the outbreak of the COVID-19 epidemic, the instability of the international community has obviously intensified, and public opinion has cast a shadow over China's climate governance. China and the United States, as the largest emitters of greenhouse gases in the world, compete and cooperate in international climate governance. How have American media described, evaluated and disseminated China's climate governance since Biden took office? What are the more important aspects? How to see China's role in global climate governance? Through the case study of *The New York Times*, USA, these are the questions to be answered.

3.2 Instrument

We mainly use corpus WordSmith8.0 software as the main analytic tool. WordSmith Tools is a comprehensive software package for observing the expression of words in texts, especially in the field of linguistics. It can help us quantitatively and intuitively analyze the views of American news media on China's climate governance through the retrieval and analysis tools such as Concord, WordList and KeyWords search.

3.3 Data Source

Based on *The New York Times* as our data source, we can have a clearer understanding of American views on China's climate issues during the Biden administration. As the representative of American high-level newspapers and serious journals, *The New York Times* is often used by other newspapers and news agencies directly as a news source, with credibility and authority.

We use LexisNexis as our main database to collect our corpus. LexisNexis provides data services from more than 9,000 databases around the world, including news newspapers, magazines and academic journals. We collected 900 news reports from January 21, 2021 to December 31, 2021, covering more than 100000 words, and analyzed the views of the United States on China's climate issues during the Biden administration.

4 Result and Discussion

In this section, with the assistance of WordSmith 8.0, we selected the top 30 highest-frequency words about the Chinese climate-related reports of the *New York Times* after the Biden administration came to power and drew a Tag Cloud to vividly demonstrate what it concerned. Then we analyzed all the collocation of China (notional word only) to find out what perspective the mainstream American media supported on the issue of the China participating in the climate governance.

4.1 Analysis of High-Frequency Words

As shown in Table 1, 30 words of high frequency were selected to analyze the focus of the reports of the *New York Times*. To demonstrate the result visually, we plotted a word cloud graph to reveal the result as is shown in Fig. 1.

To start with, the words “emission”, “coal” and “percentage” indicate the issue that Chinese industrial emission and the percentage of emission had been the hot topic of the U.S. mainstream media Chinese climate related reports. Hence, it’s inevitable for the media to make the tracking reports on the China government’s climate agendas. For example, the process of the carbon neutrality and the road-map of the carbon peak, which can be extended from the words “carbon” and “government”. In the second place, from the words “Biden”, “Trump” and “administration”, the media especially emphasizes the transformation of administration from Trump to Biden, explained as the positive signal on the Sino-US’s climate cooperation. Finally, the emergence of the words “global”, “company” and “leaders” shows that the media regard the Chinese climate from several levels, including global view, the lens of the private sector, the roles of head-of-state.

4.2 Analysis of the List of Collocations

With the use of Wordsmith 8.0 to search the collocations of China, 359 index lines were obtained, among which the top 10 most frequent collocation words of China (notional words only) are listed in the Table 2.

To begin with, from the word “Russia”, we can infer that the mainstream media has put the Chinese climate issue into the context of triangle relationship among China, US and Russia. Secondly, the word “company” is more worthy to focus on is that the influences of Chinese multinational companies in the process of participating in climate governance had intrigued the media to notice, the so-called “China’s environmental threat theory”, which blamed the Chinese foreign investment flowing to the high-polluted industries and infrastructure, had been spreading in the international opinions. In addition, obviously, the speech of the president Xi Jinping on the climate issue gets substantial attention in the mainstream media, which can analyze from the word “Jinping”.

4.3 Analysis of Concordance

By deeply studying the concordance of the selected articles of the *New York Times*, we can make a conclusion that the American media hold a fundamentally critical but optionally pragmatic opinion on China’s participation in the climate issue.

To begin with, the media blamed China with huge volume of emissions and little contribution to achieve the climate commitment, which referred to “China emits more carbon into the atmosphere today” and “China has revealed little about how to reach its 2060 goals”. What’s more, the media had mentioned the relationship of cooperation between China and the US on climate issue, deducing from “the United States and China should not prevent talks on climate” and “Climate may be one of the few areas of cooperation”. Last but not least, it seems that the US is trying to exert the climate discourse to pressure China to play a role expected by the US in order to coordinate with

Table 1. Table of the word list

NO.	WORD	Freq.	%
1	CLIMATE	1,313	0.73
2	CHINA	1,147	0.64
3	EMISSION	633	0.35
4	BIDEN	610	0.34
5	CHANGE	551	0.31
6	NEW	532	0.30
7	GLOBAL	428	0.24
8	COUNTRIES	424	0.24
9	WORLD	413	0.23
10	PRESIDENT	384	0.21
11	COAL	355	0.20
12	CARBON	350	0.19
13	WHO	349	0.19
14	ADMINISTRATION	314	0.17
15	POWER	309	0.17
16	ENERGY	306	0.17
17	PEOPLE	262	0.15
18	GAS	256	0.14
19	GOVERNMENT	232	0.13
20	WARMING	227	0.13
21	COMPANIES	211	0.12
22	POLICY	198	0.11
23	TRUMP	195	0.11
24	PERCENT	194	0.11
25	XI	178	0.10
26	LEADERS	173	0.10
27	AGREEMENT	169	0.09
28	FOSSIL	165	0.09
29	EUROPEAN	165	0.09
30	ECONOMIC	162	0.09

had been partly shaped by the discourse of climate issue, especially with the Sino-US strategic competition relationship developing. With the help of the big data, we set corpus of the *New York Times*, calculated the words and sentences form frequency, collocation and concordance by WordSmith8.0 software. Based on these processes, we analyzed the results to conclude the following.

First, China's emissions and the percentage distribution of emissions between North and South have aroused the interest of mainstream media in the United States. The United States seems to be worried about China's pollution and shirking its responsibilities as a developing country. Under such circumstances, the media also attach importance to China's participation in climate governance, especially whether China can responsibly achieve its set climate goals.

Secondly, the media also pays attention to the potential possibility of cooperation between the two sides in the field of Climate Governance. The Biden administration favors climate issues, and China has also played a more active role in climate issues. Therefore, the media pays attention to climate interaction from multiple levels, including relevant speeches by the leaders of the two countries, climate negotiations at the level of government officials of the two sides and multilateral dialogues such as the global climate summit.

Finally, the media's coverage of climate issues is becoming internationally politicized. On the one hand, the media emphasizes this from the terms of traditional alliance relationships. The United States hopes that the EU will cooperate with its call for climate governance and strive to take climate governance actions. On the other hand, the media placed China's climate issue in the context of the triangular relationship between China, the United States and Russia. In addition, multilateralism is prominent, reflecting the return of the United States to the multilateral framework and calling for global participation in climate governance.

In conclusion, with the aid of big data software WordSmith 8.0, it's found that the climate issue has been one of the key areas of Sino-US relationship in the period of the Biden administration. As a compound of both an opportunity and a new challenge, climate issue is playing an indispensable function in the Sino-US relationship from several levels. What's more, such a comprehensive way, which synthesized international relations and big data, will promote the research more scientific and visual.

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