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Interactive
comment

Interactive comment on "An Analysis of Conflict and Cooperation Dynamics over Water Events in the Lancang-Mekong River Basin" *by* Jing Wei et al.

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Reviewer #2: This paper uses sentiment analysis of newspaper articles to try to develop a narrative around conflict over a transboundary river. The concept of the paper is interesting, novel, and a good contribution to the field of sociohydrology. However, significant revisions are required before the article can be published.

-Author response: We appreciate reviewer #2 for his/her constructive suggestions and comments. We agree to re-work on the main issues pointed out by the reviewer to progress the manuscript further. Our explanations and responses to all the reviewer's comments and questions are listed below.

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[Discussion paper]

Major Comments - The findings are presented in a way that is very matter of fact without explicitly telling the reader about the implications of those findings in a broader context.

-Author response: We thank the reviewer for this suggestion. We agree to add the implication of the findings in the revised manuscript. The implication of this study can be two-folds, on one hand, by identifying the conflictive/cooperative sentiments exhibited by each country, and the specific topics associated with cooperative/conflictive sentiment, it can serve as a reference for water managers to collaboratively identify, manage and overcome potential conflict to achieve effective transboundary water management; on the other hand, by identifying each countries' conflictive/cooperative perspective, it can also provide empirical advances to more rigorously model social element at transboundary level in socio-hydrological models or similar studies. - The figures need to be significantly improved. There needs to be more attention to detail in the way the figures are presented and they should be restructured such that the takeaway message from each figure is clearer. Also, please be consistent with colors, fonts, symbols, and wording across all figures to make it easier for the reader to follow along.

-Author response: We appreciate this suggestion from the reviewer. We realize that all of our figures need to be improved substantially in terms of the overall presentation quality as also suggested by reviewer #1, we will re-work on this in the revised manuscript.

Minor Comments - Title: Consider adding a reference to "news media coverage" or similar in the title to more concisely describe the paper.

-Author response: Thank you for this comment, yes, we will change our title in a more concise way.

- Introduction- The introduction is through, but I would suggest making it more concise and ending the section with a clear description of what you are going to do in the paper, why you are going to do it, how it is novel, and what you hope to glean from the results/what are the implications of the approach

-Author response: We thank the reviewer for this suggestion, and will rewrite and re-arrange this section to make it clearer in the revised manuscript.

- Line 129- It would be useful to add this information about each country's desired use of water to Figure 1.

-Author response: Yes, we can clarify this in the Figure 1 to emphasize the competing desires of their shared waters.

- Line 145-163- Adding this timeline as a new figure or to one or more of the existing figures would be helpful for understanding the events that are later reported in the news articles.

-Author response: We agree that a timeline illustrating the historical conflict/cooperation events would be much helpful for readers to grasp the general history of Mekong River Basin.

- Line 203- This is a lot of newspaper articles, how many people read through these? Did you do any sort of double checking to make sure that people were coding the articles similarly? Also, did you target any specific newspapers or were these global results?

-Author response: All 12,316 articles were manually read through by the first author and two co-authors. In the initial stages of reading, we randomly select 100 news-paper to read it independently among three of us. The variability of interpretation of articles was discussed and common definitions were set to ensure consistency and reliability. For the target of newspaper, we include global results, but distinguish the sources of newspapers into countries within the basin and outside the basin to reflect the differences of how the water issues are perceived.

- Line 225- What is AFINN?

-Author response: AFINN is the name of the sentiment lexicon consists of a list of English terms rated for valence developed by Finn Årup Nielsen.

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- Line 253- Is this because of certain events? There is no mention of specific political actions, events, or climatic episodes that likely influenced news media coverage spikes and inform the article content.

-Author response: The changes of article number can be attributed to two reasons, one is the nature of news media its self (increase of news coverage in general, climatic episodes, etc), the other is due to certain events. To minimize the influence of news media change in general, we not only looked at the overall number of articles pertaining to conflict or cooperation, but also the relative prominence of conflictive sentiments to cooperative sentiment over time as seen in Figure 3b. From this we will be able to see the trend of change over time.

- Line 255-267- what do these results mean beyond just the numeric trends?

-Author response: The results indicate that Mekong countries have generally showed more cooperative sentiment than conflictive. This is in correspondence with the current literature depicts a continual trend of cooperative events within the region.

- Figure 1- I appreciate the map, but this one could be significantly improved for readability.

-Author response: We appreciate the suggestion and will change the background color for a better illustration.

- Line 319- Interesting takeaway but what does this mean for water resources management?

-Author response: The results showing Mekong countries have generally showed more cooperative sentiment than conflictive. By uncovering topics that are more associated with cooperative sentiment, and topics that are often associated with conflictive sentiment, it can serve as a reference for water managers to collaboratively identify, manage and overcome potential conflict to achieve effective transboundary water management.

- Line 327- Good takeaway which could also be communicated on one or more figures

by adding upstream -> downstream labels.

-Author response: Yes, we agree that one more figure illustrating the spatial difference of their sentiments score would be helpful.

- Line 344- Does China's state-controlled media have anything to do with this? Do other countries have state-controlled media as well?

-Author response: In the data retrieval process, the scope of search was set as English newspapers only, and to avoid possible media-biases, we did not specify the types of news media to be included (e.g. "free journalism" vs "state-run"). As stated in Line 344-346, upon inspection into the articles from China, the positive outlook on transboundary river basin management in the region are predominantly published by state-run media. We did not look in particular for other countries, but we will inspect into this.

- Line 347- Why is this?

-Author response: The reason 2011 is an out-liner as there is a significant drop in the sentiment proportion with a greater percentage of conflictive articles. This was due to a dramatic increase in the number of articles published concerning the controversial Xayaburi dam in Laos.

- Line 354- What value?

-Author response: The term "value" is used synonymously with "ecological worldviews" or "environmental value". We will clarify this term in the revised manuscript to avoid confusion.

- Discussion and Conclusion- This section is very long and would benefit from subsections which highlight the key takeaways. Also, what do these results mean beyond the case study region and what are future research directions for this type of news media sociohydrology research?

-Author response: We agree with the reviewer and will re-arrange this section with key

points in more concise way. As mentioned earlier, this study aims to provide a new perspective of understanding conflict and cooperation dynamic from each individual country's perspective to better understand when and how conflict/cooperation would occur. This method could be applied to other river basins as well to develop nuance understanding of the conflict/cooperation dynamics within the region. This study is limited in examining only English newspaper, which a variety of local voices represented in local languages newspaper sources. For future research, this could be improved by covering local languages through multiple newspaper databases, so that the social element can be more rigorously modeled in socio-hydrological models.

- Figure 1- I appreciate the map, but it would be more useful if it were annotated and the colors of the countries matched the rest of the figures.

-Author response: Yes, we will change the background color for a better illustration.

- Figure 2- This is a very useful figure but please reference it more in text. Additionally, you don't need to list the data visualization software that you used.

-Author response: We thank the reviewer for this comment. Figure 2 is the diagram of how we conduct the method, we will re-arrange the method section along with this Fig to produce a clear description of the method section.

- Figure 3a- The way this graph is structured, I cannot tell the differences the magnitudes of the categories.

-Author response: we will improve this figure for a better illustration.

- Figure 3b- What am I supposed to glean from this figure? On line 257 you write that the number of both negative and positive articles has increased, but this figure shows only the percentage of negative vs. positive articles with no discernable trend or context.

-Author response: On line 257 the number of both negative and positive articles has increased is referred to Figure 3a. As stated earlier, the reason we also looked at

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the percentage of negative vs. positive articles (as in Figure 3b) is to minimize the influence of news media change in the same period, we looked at relative prominence of conflictive sentiments to cooperative sentiment over time as seen in Figure 3b. From this we will be able to see the prominence of conflictive versus cooperative sentiment change over time. The results of this trend of change is in correspondence with the current literature depicts a continual trend of cooperative sentiments especially after 1998. We will clarify the layout as well as the description of this section to make it clearer to readers.

- Figure 4b and 4c- Add "conflictive" and "cooperative" to the figures themselves instead of just the caption and consider using a data visualization other than pie charts which are hard to compare. Also please be consistent with decimal places.

-Author response: We appreciate the suggestion, and will update and improve this figure. - Figure 5- This is a very hard figure to understand. Why did you choose these years? What do the colors in the word clouds mean? What am I supposed to take away from this figure? -Author response: The reason why these years were chosen in Figure 5 is stated in line 265-267 as they are the peak and troughs in terms of proportion of cooperative and conflictive articles shown in Figure 3b, peaks in year 2004 and 2015, trough in 2011. The color of word in cloud were generated automatically without any specific meaning. Figure 5 is the main results generated in structural topic modeling analysis, which gives information on what topics are associated with the most conflictive sentiments, and what topics are often associated with more cooperative events. We realize the presentation of this figure could be confusing, we will adjust the layout in revised manuscript for a clear message.

- Figure 6a- You show the average across all newspapers, but it would be more informative to show as boxplots to understand the distributions. Also, please annotate the y-axis to show positive/collaborative vs. negative/conflictive sentiment values.

-Author response: We appreciate the suggestion, and will update and improve this

figure accordingly.

- Figure 6b- The colors should match those of 6a. Additionally, the figure is hard to read and I am not sure what the takeaway message is from this plot.

-Author response: In the results of Figure 6, we are trying to differentiates between international countries and regional countries in how each topic is perceived by the media differently. We appreciate the comment and will improve this figure with better illustration.

- Figure 7- This is very hard to understand. What do the spikes mean? Are there trends I should be noticing? It is challenging to compare the counties as they are on separate figures with different axes.

-Author response: We realize that the message from this figure could not be clear. We will update and improve this figure in revised manuscript.

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