EGUsphere, author comment AC2
https://doi.org/10.5194/egusphere-2022-494-AC2, 2022

Reply on RC2

Emily E. Zawacki et al.

Author comment on "Exploring TikTok as a promising platform for geoscience communication" by Emily E. Zawacki et al., EGUsphere, https://doi.org/10.5194/egusphere-2022-494-AC2, 2022

We thank this second anonymous reviewer for their time in reviewing our manuscript and for their helpful comments that will improve this work.

First of all, it's not clear which research gap this paper tries to address…

This study is the very first to produce and evaluate geoscience content on TikTok. TikTok and short-form video content has exploded in popularity, and until this point there had been no research on how to capitalize on this success for geoscience communication efforts. We thus fill a crucial research gap related to science communication efforts via short-form video content and provide the first ever analysis of geoscience content on TikTok. There is no way to predict which videos may go 'viral' on TikTok (as is the case for any type of viral content). Virality likely requires some type of luck, but also content resonates with the viewer. Our goal with this study was to produce different types of content (different video length, video topic, presentation style, etc.) and evaluate what trends (if any) we can discern in content that had the highest success in terms of reach and engagement.

The authors listed two goals in the manuscript…

We agree with the reviewer that an included discussion of user comments would be beneficial and strengthen our findings. As we discuss in the section on ethical implications, user privacy on TikTok is an important consideration, and thus we will likely not include any specific comments, as no users gave explicit agreement to be part of this study beyond TikTok's terms of use. However, we can group comments to categories related to statements like, "That was a cool video," "I learned something new," "I have a further question related to this video," "I know the place that they're talking about here," etc. to evaluate the type of user engagement the video receives. Our videos received a total of over 3,500 comments during the study period, so we will concentrate on an analysis of comments for our top ten most viewed videos.

Also, the authors may want to do a more thorough literature review about the existing geoscience efforts on TikTok…

There is no other existing literature related to geoscience communication efforts on TikTok, as ours is the very first study to exist. The majority of geoscience content on TikTok is produced by young individuals who have recently or are currently completing

bachelor's or graduate degrees in the geosciences. Content is often split between "meme-style" videos, showing what's inside a rock when you break it open, and explainer videos of geology topics. Our organizations are pioneering an effort to produce concerted geoscience education videos on TikTok and encourage more scientists and science communicators to do the same. Our study provides the first knowledge base of what types of geoscience communications videos may be successful on TikTok. While there is no existing literature on the topic, there are many museums that now have TikTok accounts (e.g., the American Museum of Natural History), and an analysis of museum-related content would be complementary to this study, but outside the scope of the current study.

We agree that the term "place-based" can be misleading, so we will change this term to "location-based."

The authors may want to discuss what their hypothesis works…

There is no singular way to predict the success of a video, and unfortunately there will never be a formula to guarantee success with social media content. However, we have been able to observe certain trends both related to the topic of the video and the 'construction' of a video that may aid in its success and increase the impact of the communication effort. For example, after making a video talking about the geology of a specific location that got a large amount of views, we made more videos featuring location-based geology that were also largely successful. As the videos were all made during a pilot period, the pilot was focused on producing various different types of content. After full analysis of the videos (this study), that allows us to fully assess patterns and trends in video success, which can then be incorporated into the development of new videos.

For example, what are the teaching goals of each video? why do some of the videos get so many views? While some others are not…

The teaching goals of each video are essentially to convey geoscience-related information (in our organizations' case seismology, geodesy, and topography) in a way that is accessible and engaging to the viewer. There unfortunately is no way to specifically discern the exact reason for why a video is successful, as it is likely a combination of factors (the topic + the design/format + the visuals).

Regarding the number of GMV videos, they are restricted to when magnitude 6+ earthquakes occur, so it is generally not possible to get a large sample size of videos over a short period of time. However, even with a smaller sample size, the GMV videos are the best way to isolate variables,as the video design/format, visuals and description are the same, and observe if there are any other factors that may impact the videos' success.

As a 'lecture-style' video is our own definition and wording, we will include a more thorough explanation of what we mean with this term. (Essentially, like a teacher would 'lecture' to a class using a PowerPoint presentation, our 'lecture-style' videos feature the host directly talking to the audience like a teacher would, showing visuals and imagery in the background.)

Moreover, two million views in 4 months with only 48 videos are amazing, but does the views of TikTok comparable to those of YouTube videos?...

Views on TikTok can be difficult to compare to views on YouTube, as TikTok videos are so much shorter than YouTube videos, as noted by the reviewer. For a few of our TikTok videos, we pulled a number of visuals directly from longer videos on the IRIS and UNAVCO YouTube pages, which would be the best comparison of a long-form vs short-form video. However, it is difficult to directly compare the number of views, as some of the YouTube videos have been up for seven years accumulating views and likely have variable spikes in

views over time. A future study could perform a more specific direct evaluation of short-form vs. long-form educational geoscience video content.

The best direct comparisons we can provide for TikTok vs. YouTube as platforms are the Terra Explore lidar TikTok videos that were uploaded to the OpenTopography YouTube channel as 'YouTube Shorts.' The same exact videos on YouTube received extremely few views, orders of magnitude lower, compared to the videos on TikTok. This observation would suggest that there is a unique opportunity for expanded reach of science communication topics on TikTok. However, that is beyond the scope of this paper.

Furthermore, the work provides some valuable data..

We have since performed more rigorous statistical analyses per the comments of Reviewer #1, which will better aid in the clarification of such statements.

Minor notes:

Line 30-32, 291-299:

There is little existing literature that we are aware of that discusses geoscience communication on YouTube. However, there is now a study by Wang et al. (2022) in *Geoscience Communication* that does evaluate geoscience videos on YouTube that we will include in a review. (Please do let us know of any other specific studies you may be familiar with.) While YouTube and TikTok both are video platforms, the short-form, 'casual', vertical videos of TikTok and its algorithm-driven nature make them less comparable than at first glance. However, we can include more of a discussion of our organizations' own efforts on YouTube, which differ quite greatly from the videos produced for TikTok. For example, the OpenTopography YouTube channel primarily features tutorials and webinars geared towards researchers and scientists, rather than direct public outreach efforts. IRIS on their YouTube have videos that range from public outreach (e.g., 'Women in Geoscience Series') to educational animations and explainers. UNAVCO's YouTube channel largely has videos from webinars and short course videos.

Line 60:

TikTok now does allow users to directly upload a singular 10 minute video file within the app or via desktop, however you can only film videos on TikTok that are 3 minutes in length (which is the primary mode of creation).

Literature Review is not enough…

There currently is no other existing literature related to the geosciences on TikTok, and there are very few other studies that evaluate or discuss science communication on TikTok or short-form video. Our study is the very first to create and evaluate geoscience communication on TikTok, and we are pioneering evaluations and investigations rather than drawing upon an existing knowledge base. The analytical toolkit that we use is more generally related to performance of content on social media. We can include a further discussion of the types of geoscience videos on TikTok (primarily produced by individuals who have recently graduated or are currently in bachelor's or graduate geoscience programs).

Regarding figure 5…

Shares are not reported as a video view category. There is no way to know how or where a video has been shared (copied the link vs. texted to a friend vs. posted to a social platform, etc.). We hypothesize that video views from shares are counted as a 'Personal

Profile' view, as videos shared are the direct link to the video. Additionally, a video being shared does not equate to a video view, and there is no way to know whether the video was actually viewed when it was shared.

Line 350-355:

We have no reason to believe that the gender percentages reported on TikTok are unreliable. While users do not self-contribute this data, TikTok works to discern gender from accounts that the user links (Facebook, Instagram) where users can report gender, or from algorithmic assessment of user behavior, users' names, etc. (If anything, TikTok is known for over-mining user data). These are the same demographics that are given to multi-million dollar companies that run targeted advertising campaigns on the app, who would rely on robust demographic data. We do note though that the gender % of followers does not account for non-binary individuals, and what is lacking is a more nuanced catagorization of gender.

I personally want to see more data about the timing of geohazard events…

All videos related to geohazards (primarily earthquake and GMV videos) were released the day of or the day after the event. Thus, there is essentially no lag time that can be analyzed.

The demonstration using food could not be the major reason for different views…

What we suggest in the text is that the difference in the videos' performance is that one video was ~30 s, and the other video was ~1 min. The significantly longer duration of the video is what we hypothesize led to its smaller reach, suggesting that shorter demonstration videos better capture an audience's attention.

The authors may want to clarify how this work contributes to broader theoretical debates like how geohazards affect or how place-based design affects engagements..

There is an upcoming abstract from the Geological Society of America 2022 meeting that appears relevant to this point: (doi: 10.1130/abs/2022AM-379409) "It is recommended to practitioners for devising pedagogically-sound lessons on any geology/environmental science-related topic to include using as many recent, real-world incident examples as possible and especially relying on controversial, debatable, and sensational sub-topics (within reason)." We can connect our findings to others like these that observed increased student engagement from teaching topics related to geohazards and location-based geology.