Communicating Science Through Short-Form Video on Social Media (TikTok, Instagram Reels, YouTube Shorts)

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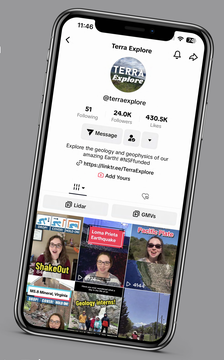
Introduction

Short-form video content has come to dominate the social media landscape. In addition to TikTok, vertical short-form (~15–90 s) videos can be shared via "Reels" on Instagram and as "Shorts" on YouTube, providing science communicators new pathways to reach audiences and directly interface with the public.



We initially created a TikTok account **@TerraExplore** in October 2021 to share educational geoscience and geophysics videos and assess best strategies for geoscience communication on the platform.

We continued to create TikTok videos and cross-posted many of our TikToks on Instagram as "Reels" and on YouTube as "Shorts" on the **EarthScope Consortium** and **OpenTopography** accounts to evaluate the reach and engagement of short-form video science communication content. We assessed the performance of videos posted between August 2022 and October 2023 on TikTok, Instagram, and YouTube.

Scan to watch our videos on TikTok!

Short-Form Video Basics

Short-form videos are made using music/sounds, filters, text, and camera effects and are predominantly distributed to viewers via algorithmic feeds on platforms like TikTok, Instagram, and YouTube.

Our videos primarily use "green sceen" effects and image overlays to explain key concepts in geophysics (seismology, geodesy, topography) and discuss recent/notable earthquakes and volcanic eruptions, as well as show geophysics in action.

TikTok	Instagram Reels	YouTube Shorts
15 sec–10 min	15–90 seconds*	15–60 seconds

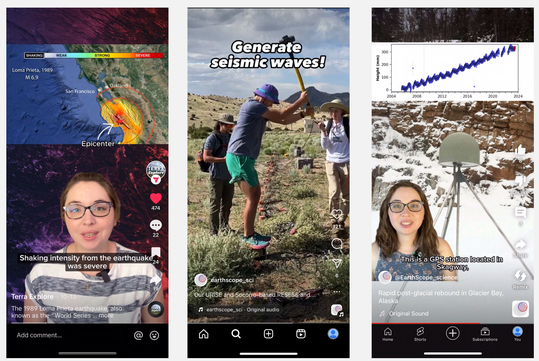


Figure 1. Examples of our videos on TikTok (left), Instagram Reels (center), and YouTube Shorts (right). *Up to 90 s can be recorded in Instagram, but longer videos (3 min) can be uploaded to the app.

Which Platform Gets the Most Views?

Videos uploaded to TikTok had the highest reach. The median views for cross-posted videos were **5x** higher on TikTok than on Instagram, and **21x** higher on TikTok than on YouTube.

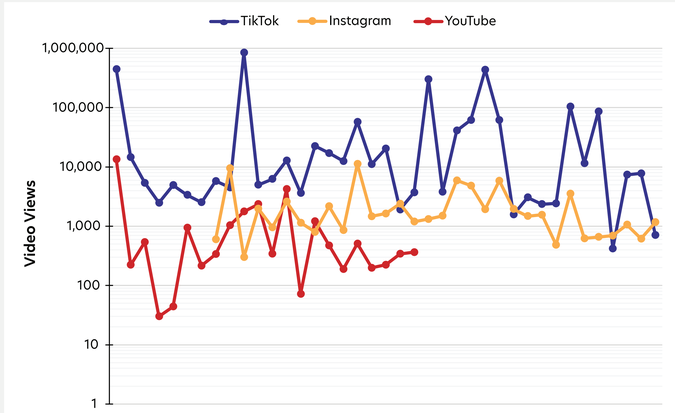


Figure 2. Number of video views that cross-posted videos received on each platform. Not all videos could be cross-posted on all platforms, as YouTube Shorts must be under 60 seconds. Note the log scale on the plot.

How Engaged Are Our Viewers?

Viewers on YouTube Shorts tended to watch videos for longer before scrolling to the next video than did viewers on TikTok or Instagram Reels.

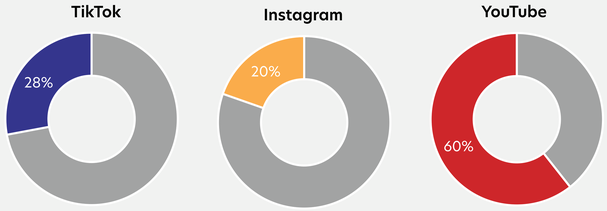


Figure 3. Average percentage of a video watched on each platform. (Average watch time / Length of video * 100)

Our videos ranged in length from **6 seconds** to **2 minutes**, with an average length of **62 seconds**.

7% Engagement Rate

Videos posted to both TikTok and Instagram had the same average Engagement Rate. (Total engagements [likes, comments, shares] / Total viewers * 100)

How Did Viewers Discover Our Videos?

Every platform has different ways that a viewer can discover and watch a short-form video, from an algorithmic main feed, to following, searching, and more. Most of our video views came videos shown to non-followers on algorithmic feeds (e.g., "For You" and Shorts feeds).

In mid-March 2023, TikTok introduced a new STEM Feed. TikTok does not provide traffic source information for the STEM Feed. Introduction of the STEM Feed drastically reduced the algorithmic distrubtion of our videos on the "For You" Feed.

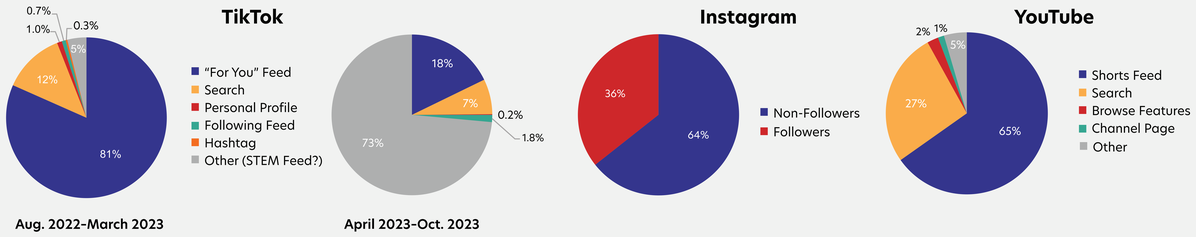


Figure 4. Traffic sources of where viewers discovered and watched our videos on each platform. Instagram analytics lack more detailed information on video traffic source.

Who is Watching Our Videos?

(Note: Instagram Reels analytics do not provide information on viewer demographics)

Although TikTok followers skewed male, there was an approximately equal split in the gender of users who viewed our videos.

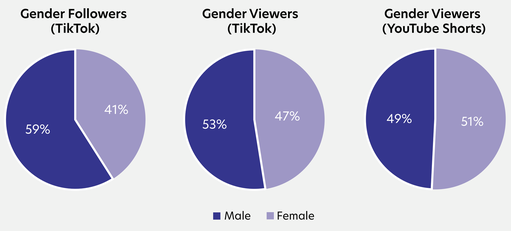


Figure 5. Gender of followers/video viewers. TikTok and YouTube assume the gender of an account, it is typically not user-specified.

Viewers of all ages watch short-form video, though the majority of our viewers were under 35. Our videos were viewed by more young (18-24) users than those who follow our account.

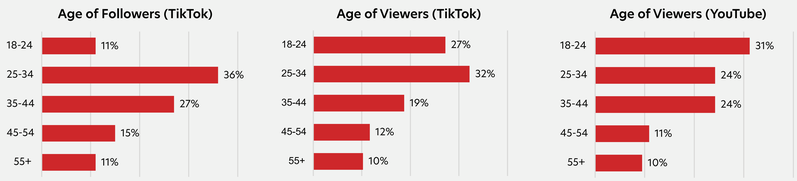
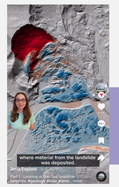


Figure 6. Age distribution of followers/video viewers. TikTok users must submit their age to create an account. Google (YouTube) asks users to verify their age, but some age information is assumed.

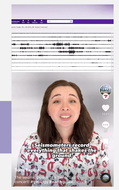
Tips For Video Creation



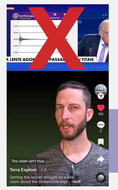
Use interesting visuals or visualizations that the general public may not often see

Video about the 2014 Oso, WA landslide using a lidar hillshade image showing topographic change (red=erosion, blue=deposition)

Tie video topics to current events, whether natural hazards or science in society



Video about the seismic signature of a Taylor Swift concert, aka 'Swiftquake'



Dispel misinformation, provide a knowledgeable trusted explanation

Video correcting that a seismic signal was not from a submersible implosion, but rather from a distant earthquake

Showcase the diversity of experiences within geoscience, like with 'day in the life' videos

'Day in the life' video from one of EarthScope's summer interns sharing what it's like to do lab research

Conclusions

When cross-posting videos to multiple platforms, the videos on **TikTok** received the most views. TikTok excels in providing large reach for science communication content. Although the video views were low, viewers on **YouTube Shorts** showed greater engagement in watching the videos for longer.

Views across all platforms primarily came from algorithmic feeds, but **Instagram Reels** provided the most consistent view source from followers. TikTok does not provide consistent or significant views from followers, putting pressure on all videos to go 'viral.'

While the STEM Feed demonstrate's TikTok support for educational science content, its introduction has negatively impacted the distribution of our videos on the main "For You" Feed.

Our videos reached viewers of all ages—especially young viewers—demonstrating the potential for science communication content to reach wide, diverse audiences.

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