#SEPM- Sedimentary Geology in the Twitterverse

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Connection with the geoscience community is a cornerstone of our work as sedimentary geoscientists; it is key to our collaboration, networking, and problem-solving. This can take many forms, such as writing letters or emails, physically visiting colleagues, participating in conferences and workshops, or discussing issues in informal social settings. Methods of communication have changed rapidly over the last century, and with them, how we communicate our science to our colleagues, students, and the general public (Schäfer 2012). In the last two decades, there has been an expansion of communication via Social Media – interactive websites and applications (apps) that facilitate communication via virtual communities and networks (Peters et al., 2014). Social Media spans a wide variety of platforms – from more traditional websites or blogs, to Facebook, Instagram, and Twitter – each with its own unique content format and audience. For example, many of us view Facebook as being geared towards interacting with family and friends rather than colleagues.

In this article, we discuss the benefits and drawbacks of combining social media with sedimentary geosciences, predominantly via Twitter as a professional networking platform. Twitter is a microblogging and networking service on which users post and interact with "tweets", which are short (<280 characters) messages with links, photographs (<4), animated gifs (i.e. typically <5 seconds, looped videos), or videos. Britton et al (2019) liken spending time on Twitter to visiting a cafe with colleagues, but the Twitter cafe is open 24/7 and is not constrained by geography, languages, or institutional boundaries, real or perceived. Online discussions provide a forum for people to ask for advice, share frustrations about a broad array of topics (e.g., fieldwork problems, issues with publications or job searches, imposter syndrome, being overwhelmed with work), but most importantly, these platforms help people feel connected with their community. Realizing that you are not alone can be a critical factor in confidence and retention of geoscientists, especially for people who do not feel like they have a support network at their institution.

Engaging with social media also has numerous benefits for sedimentological research and collaboration. One of the most obvious perks is the sharing and amplification of new or ongoing research; this is a particularly good way to catch the eye of journal editors, the media, or new colleagues. For example, you could post about a new paper in Palaios or the Journal of Sedimentary Research, or tweet about an article preprint, new methodologies, or new software or computer code that you would like to share with and/or have tested by the community. Moreover, sites like Twitter allow people to ask for help, advice, or feedback in real-time, providing all geoscientists with a new (and often more rapid) venue for support with their research. Twitter can also be effectively used to build a more multidisciplinary scientific community. Because many scientific agencies and organizations have Twitter accounts, tagging them (using the "@" plus their twitter identifier) and using popular science "hashtags" (i.e., keywords) can engage a wide audience. For example, a tweet or retweet about sedimentary rocks on Mars that tags NASA (@NASA) and SEPM (@SEPMGEO) and uses hashtags such as #Mars2020 and #FieldWorkFriday can connect people who are interested in both planetary and sedimentary geology. Platforms like Twitter can also be used to build enthusiasm around new conferences or meetings by soliciting abstracts, sessions, and conference attendance. For example, SEPM started a Twitter handle for the 2020 International Sedimentary Geosciences Congress, @SEPM2020; this was used to advertise and promote sessions, to solicit abstracts and reviewers, and to remind people about upcoming deadlines. It is also becoming more common for audience members at scientific conferences to "live tweet" talks or seminars (assuming the speaker has given permission for the talk and their image to be shared). Such a tweet (or series of related tweets, known as a "thread") commonly includes a photo of the speaker and/or title slide with a concise summary of the findings of the talk. "Live Tweeting" can allow those not in attendance to follow the conference remotely, and thereby enhance the broader reputation and reach of the speaker, as well as the hosting professional society.

Social media networks can also be an important tool for career development and recruitment. Twitter is an excellent platform for career advice and networking, particularly for underrepresented minorities and/or people who feel marginalized at their institution (Britton et al., 2019). Webinars, re-tweeted advice posts, and discussion threads about graduate school or geoscience jobs within academia, industry, and government provide career advice and mentoring to the broader geoscience community and/or can be targeted at specific demographics. This can also 'level the playing field' for students or researchers who may not have access to this information, either due to the lack of mentorship or because they do not have the opportunity to attend workshops at their home institution. In this way, social media is an important tool in mentoring new geoscientists, demystifying career paths (especially for students and Early Career Researchers), as well as connecting us all with the global community of researchers (Britton et al., 2019). Twitter is also a forum for job announcements and recruiting; undergraduate and graduate students often look to Twitter and similar sites for new scientific discoveries, exciting research, and opportunities, thus being active on social media can improve the visibility of a research group or individual. Whether the goal is to recruit graduate students or postdoctoral researchers, undergraduate researchers for the summer, or a new hire in the department, social media may have a wider (or at least complementary) distribution within the community as compared to traditional tools such as emails, web postings, or printed ads. Furthermore, job seekers can use social media to preview their advisors or institution to determine whether the mentor, lab group, or department holds the same values they do.

There are also benefits of using Twitter for teaching sedimentary geoscience and communicating with the public. Sedimentary geoscience is a dynamic and highly visual field and thus social

media provides an ideal venue for science communication. Our studied systems are dynamic, beautiful, international, as well as historically relevant, and with the new advances in virtual field trips, social media brings these amazing sedimentary systems direct to your device. Many geoscientists have also started "live tweeting" class, department, or conference trips. By sharing exciting visuals, often with a specific hashtag (e.g., #ThinSectionThursday and #FossilFriday), Twitter greatly expands the reach of science communication with the public. Social Media can also be used for real-time hazards communication (complete with videos), which can lead to improved outreach, discussion, and collaboration (Hicks, 2019). Twitter can also be a great source for teaching collaborations or sharing of new educational techniques, syllabi, videos, or activities. It also provides a forum for sharing "Best Practices" for inclusion and equity, fieldwork safety, codes of conduct, and mentoring. A great example of this was the recent thread about 'bathroom issues' in the field, which touched on best practices for health during fieldwork as well as ways to enhance inclusion in field research teams.

In addition to the above benefits of social media, having geoscientists on Twitter has a number of more general positive outcomes. The most direct benefit is the visibility of sedimentary geoscientists and our research; by visualizing who is a geoscientist (e.g., #ScientistsWhoSelfie) and what kinds of geoscience are done, we become more trustworthy and human while retaining our credibility (Jarreau et al., 2019). Moreover, this kind of science communication expands the definition of geoscientists to the general public, providing role models for those who may not identify with the traditional portrait of a sedimentologist (e.g., underrepresented ethnic or racial minorities, women, members of the LGBTQ+ community, people with disabilities). Social media users can also be anonymous (or pseudo-anonymous), which allows them to openly discuss systemic issues (e.g., harassment or discrimination) without fear of retribution. Another major benefit of having geoscientists actively engaged in social media is that they can bring their expertise to bear directly on important and/or contentious scientific issues or events. For example, Katherine Hayhoe routinely uses Twitter to engage communities in discussions about climate change and many institutions use this platform to discuss local events, such as hurricanes, floods, or fires. While these activities are, on the whole, extremely positive, Twitter users must also strive to ensure clarity and accuracy in their postings (Hicks, 2019), which can be challenging given the short format of this particular platform.

Like all modes of communication, Twitter has several drawbacks. Many people see it as a time sink: "why should our students/colleagues be on Twitter when they could be writing papers or raising grant money?". Here we propose that the time spent is not lost, in the same way that time spent doing outreach, or going for coffee with a colleague to discuss teaching methods or a research problem, is not a waste of time. Furthermore, many scientists use Twitter during non-work time, such as during their bus commute, while waiting for equipment to calibrate, or while relaxing at home, so (providing it is not all-consuming) a social media presence is often not "lost research time". This can, however, lead to different problems, such as when academics feel as though even their social media time is "work" (i.e. building and maintaining a professional profile). In these instances, we suggest that Twitter users find the balance that is right for them, which may be using the social media platform more or less than other colleagues. For example, when first joining Twitter, many find it useful to follow others and 'listen' for some time before posting their own content, using that time to consider what content they find most valuable. In fact, many use Twitter as a customized information feed and rarely post at all. Another concern is that, if an account is not anonymous, professional geoscientists must ensure that all posts are 'forum-appropriate' and strike the right tone for something that could live forever online. In the same vein, there is also the risk of misrepresentation or misquotation; for example, a tweet about having a glass of wine while grading papers on a Saturday evening could be viewed as inappropriate or seen as promoting a poor work-life balance. A more serious concern is that there is the possibility of retaliation if one chooses to speak out about contentious issues via social media, which is especially concerning for people of color, ethnic minorities, women, and members of the LGBTQ+ community, where threats of physical harm or job loss may occur.

So, how do you get connected with the SEPM Twitterverse (i.e., the connected network of Sedimentary Geologists on Twitter)? The first step is to sign up at https://twitter.com/ (either on the app or web browser). Choose your "handle" (i.e., identification), which can be anything from a fun, nerdy name like @seis_matters or @clasticdetritus to a more formal/professional handle like @RowanMartindale or @KathyBenison; you can also include an avatar, picture, and short biography about yourself. Once you are on Twitter, search for and "follow" your favorite sedimentologists (like us!), geoscience societies (e.g., SEPM is @SEPMGEO, GSA is @geosociety, and AAPG is @AAPG), and groups (e.g., @GeoLatinas, @ESWNtweets, @AccessibleGEO, @NABGSocial, @SACNAS). Find your favorite hashtag, here are some to get you started: #SEPM, #MolluskMonday, #TectonicTuesday, #ThinSectionThursday, #FieldworkFriday, #FossilFriday, #FluvialFriday, #FoldFriday, #SaltSaturday, #SedimentologySunday, #AcademicChatter, #PhDChat. Finally, have fun exploring, learning, tweeting (and retweeting) about sedimentary geoscience and paleobiology! We look forward to seeing your best photos or videos from the field or lab, learning about your experiences as a sedimentary geoscientist, and expanding our #SEPM network in the Twitterverse!

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SEPM on Social Media

Since you all know all about the Twitterverse from the page 10 article, do not forget about SEPM's full range of social media: there is a Blog on the website, https://www.sepm.org/blog; SEPM Student Councilor (Kristina Butler and her Student Committee also run an Instagram account – https://www.instagram.com/sepmstudents/; and we are also building content for an SEPM YouTube Channel – https://www.youtube.com/channel/UC9iDj3Jg49rJaQKEDhnGeNg, if you have some content let me know – Howard Harper (hharper@sepm.org)

SEPM URL Locations	https://www.facebook.com/societyforsedimentarygeology/ and https://www.facebook.com/SEPM2020/	@SEPMGeo And @SEPM2020	https://www.linkedin.com/groups/2741198/
Posting			
Timing	Whenever you have something about sedimentary geology	Whenever you have something about sedimentary geology	Whenever you have something about sedimentary geology
SEPM HQ Postings	Whenever new Society news happens	Whenever new Society news happens	Whenever new Society news happens
Frequency Goal for SEPM Leadership Postings	Weekly	Weekly	Weekly
SEPM Membership Postings[1]	Whenever you have some interesting sedimentary geology items	Whenever you have some interesting sedimentary geology items	Whenever you have some interesting sedimentary geology items
Hash Tags[2]	Try to include 1 or 2 hashtags per post – use #sepm or #sepm2020 as appropriate	Try to include 1 or 2 hashtags per post – use #sepm or #sepm2020 as appropriate	Try to include 1 or 2 hashtags per post – use #sepm or #sepm2020 as appropriate
Hashtag Purpose	Tie to other posts on a similar or relevant topic or emphasize a point	Tie to other posts on a similar or relevant topic or emphasize a point.	Tie to other posts or relevant topics
Use of Visuals	Use lots of pictures – rocks and people	Use lots of pictures – rocks and people	Use lots of pictures – rocks and people

1. Please use the SEPM social media of your choice or post in multiple places. If you post on your own site then please '#sepm' to share your sedimentary geology post with the community.
2. Some hash tags, like #sepm do have other non-sedimentary geology items – while current #sepm items about sedimentary geology seem to dominate, there are other items – (Symatec Endpoint Protection Manager (SEPM)). "#sepmgeo" is more specific to the Society and can also be used and of course anything more specific to your posting like '#turbidites', etc.