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Science Outreach Using Social Media

OCEANOGRAPHY FROM THE LAB TO THE PUBLIC

By Amelie Meyer, Alexey K. Pavlov, Anja Rösel, Jean Negrel, Polona Itkin, Lana Cohen, Jennifer King, Sebastian Gerland, Stephen R. Hudson, Laura de Steur, Paul A. Dodd, Laura Crews, Marius Bratrein, Mats A. Granskog, and Nick Cobbing



Communication is a key aspect of a scientist's work. Part of our mandate is to communicate findings not only to the research community, through peer-reviewed articles, but also to the wider public. Raising awareness of how science serves the public is becoming increasingly important. There are few incentives, and generally negligible financial support, for scientists to communicate with the general public. @oceanseaicenpi is an initiative led by a small team of researchers who are exploring the use of social media for science outreach. Over the past four years, @oceanseaicenpi has built a global audience of more than 7,000 followers, successfully sharing knowledge and findings in polar oceanography and

related disciplines. By presenting the benefits and sharing advice on how to create and run social media accounts for science outreach, we hope to inspire research groups, individual researchers, and institutions to further engage in science communication using social media.

SOCIAL MEDIA AND SCIENCE OUTREACH

Since the beginning of this century, the number of social media platforms, media-sharing sites, and blogging platforms has soared to include millions and billions of users. These social media platforms provide great opportunities for professional science communicators, individual researchers, and research

teams to connect with the general public (Bik and Goldstein, 2013).

Social media was originally designed for global social networking and information sharing. Large academic institutions quickly recognized the potential of using social media platforms to connect with student communities at universities. Individual researchers are now also using social media platforms (e.g., Twitter) to accomplish academic objectives such as professional networking and science communication (Hemmi et al., 2009; Veletsianos, 2012). However, research groups are still underrepresented on social media (Pavlov et al., 2018). This can be partly explained by the difficulty researchers may encounter in trying

to convince their leaders to use social media for science outreach. Many senior researchers do not use or understand social media well, struggle to see associated benefits, and think it should be left to professional science communicators. Yet the perception that social media

should not be part of the life of scientists is changing. For example, the oceanography community has a small but strong presence on the Instagram platform, composed of institutes, associations, small research groups, and large universities (Box 1).

Box 1. Existing Institutional Oceanography Accounts on Instagram

Below is a non-exhaustive list of Instagram accounts managed by the global oceanography research community in English as of June 2017:

@asloorg — Association for the Science of Limnology & Oceanography
@biosstation — Bermuda Institute of Ocean Sciences (USA)
@cu_earth — Cardiff Earth & Ocean Sciences (UK)
@eoscentersfstate — Estuary & Ocean Science Center SFSU (USA)
@havforskningen — The Institute of Marine Research (Norway)
@gccoastal — Griffith University Coastal Research (Australia)
@ifremer — IFREMER (France)
@labhuiofrank — Frank Laboratory Pacific Biosciences Research Center (USA)
@mbari_news — Monterey Bay Aquarium Research Institute (USA)
@nasa_coral — Coral Reef Airborne Laboratory project (USA)
@noaa — National Oceanic and Atmospheric Administration (USA)
@noaafisheries — NOAA Fisheries (USA)
@noaaoccean — NOAA National Ocean Service (USA)
@noaaocceanexploration — NOAA Office of Ocean Exploration and Research (USA)
@nocnews — National Oceanography Centre (UK)
@nopp_org — National Oceanographic Partnership Program (USA)
@oceanscientists — Ocean Scientists from SCRIPPS (USA)
@oceanseaicenpi — Norwegian Polar Institute Oceans and Sea Ice team (Norway)
@pap_observatory — Porcupine Abyssal Plain Ocean Observatory (UK)
@paytanlab — Biogeochemistry at UCSC (USA)
@rsmas_beal_lab — Lisa Beal Oceanography Lab at RSMAS (USA)
@samsmarinescience — Scottish Association for Marine Science (UK)
@schmidtoccean — Schmidt Ocean Institute (USA)
@scripps_ocean — Scripps Oceanography (USA)
@sizrs.apl — UW-APL Polar Science Center (USA)
@uh_oceanography — Department of Oceanography U. Hawaii (USA)
@ucsc_core — Communicating Oceanography Research Effectively at UCSC (USA)
@whoicoastalsystemsgroup — Coastal Systems group at WHOI (USA)
@woodshole_ocean — Woods Hole Oceanographic Institution (USA)

Social media comes in many types and flavors. While popular platforms such as Facebook, Instagram, and Twitter can connect researchers with the global public, academic and professional social media platforms such as ResearchGate, Google Scholar, and LinkedIn allow scientists to network, collaborate, and share their work globally. Here, we present @oceanseaicenpi, the successful social media initiative of our Oceans and Sea Ice research group at the Norwegian Polar Institute in Tromsø, Norway. Using several social media platforms, we use @oceanseaicenpi to communicate science, educate the public, and develop networks with the professional community. Based on four years of experience, we provide advice for research groups on how to create and run social media accounts for outreach to the wider public. By articulating the “why” and “what’s in it for us,” we also provide readers with a context for discussion among their own research teams.

@oceanseaicenpi: FOUR YEARS OF EXPERIENCE

The Oceans and Sea Ice team is an interdisciplinary group of 15 to 20 oceanographers, sea ice scientists, and atmospheric scientists who work in the Arctic and Antarctic regions. The team decided in early 2014 to start using social media as a tool for science outreach, and in April that year created @oceanseaicenpi on Instagram and Twitter. The Facebook page was initiated in January 2015 (Pavlov et al., 2018).

From 2014 to 2018, the total @oceanseaicenpi audience grew to over 7,000 followers across the Instagram, Twitter, and Facebook channels. The original audience was mostly composed of friends, colleagues, and family members but quickly diversified to wider demographics (Pavlov et al., 2018). The growth in followers was linked to interest in the team’s fieldwork campaigns such as the large Arctic expedition N-ICE2015 (Granskog et al., 2016), and online collaborations with journalists and large institutions.

HOW RESEARCH TEAMS CAN USE SOCIAL MEDIA

Using social media, we strive for sustainable and widespread science outreach that is time efficient and does not rely on funding.

Creating and Running Social Media Channels at Work

(1) To begin, get your institution leadership on board, including your team leader, research director, and communication department. (2) Next, create a one-page mission statement outlining which social media platforms you plan to use, how often (e.g., weekly posts), and who will be involved. This document should also have a list of weekly tasks and outline the procedure for creating a post. (3) At this stage, divide tasks

among team members. It is useful to appoint a “coordinator” who checks that posts are being put together and determines who is the main point of contact for each post. Rotate the coordinator position once or twice a year. (4) Start writing posts: collaborate with colleagues in-house and elsewhere, including journalists, artists, and other communities. For example, if you hear a colleague talk about an upcoming project, ask him or her if you can post about it. **Box 2** provides some tips and advice on how to write posts. (5) Keep track of your progress using built-in analytics and third-party services. (6) Identify your audience (e.g., demographics, geographic spread) for each account using available analytics, and tailor your posts accordingly (post type, style, and timing). (7) Finally,

talk about your social media initiative not only to colleagues (in-house and at conferences) but also to family and friends.

Schedule

A weekly post on social media channels seems to be a good compromise between the minimum needed to gain followers and a realistic workload for a small team of researchers. We suggest preparing the post during the week and putting it online on Friday, when analytics data show the highest engagement rate from followers. Team members can take turns drafting the weekly post, while the rest of the team can help by reviewing it before it goes online. In addition to the weekly post, team members can share smaller posts and relevant information daily on social media platforms that require more frequent interaction to grow followers (e.g., Twitter).

Box 2. Writing a Post

1. Include a good photo or illustration: It sounds simple, but it is not! Experiment with images and make note of which generate the most engagement; check what you like on other similar social media accounts; figures from papers sometimes do well (e.g., on Twitter), but tables of data should be avoided.

2. A post should have only one key message: Explain a single concept in 120 to 150 words. If a post is too long, keep the second part for another post. The language must be non-specialized.

3. Tag relevant accounts and use hashtags: Use the platform’s search function to find members of the global community who might be interested in your post. These can be accounts with whom you have not interacted in the past. Doing so will increase your reach.

4. Be accurate and rigorous: Check your facts, proofread, and always provide photo credits.

5. Vary the type of posts to keep your followers interested.

6. Post when your followers are most responsive: If most of your followers are in Europe, don’t post at a time when they are likely to be asleep!

Types of Posts

Post topics can describe fieldwork (Figure 1), an oceanographic instrument, a technique, or a research campaign. A post can be educational (Figure 2), explaining a scientific concept (such as ocean surface and internal waves), introducing a topic, or sharing historical information about famous oceanographers and expeditions. It can describe a research project, highlight team members, or present

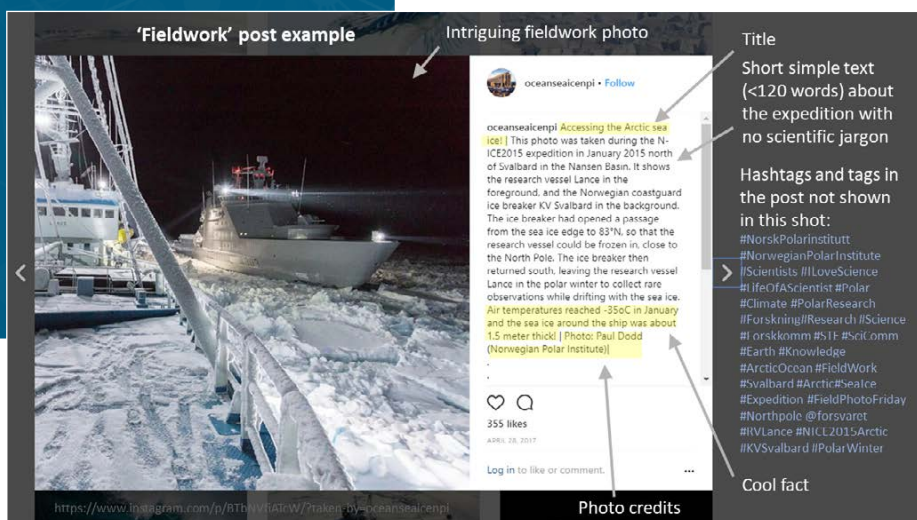


FIGURE 1. Example of a “fieldwork” post from the @oceanseaicenpi Instagram account. <https://www.instagram.com/p/BTbNVfiATCW/?taken-by=oceanseaicenpi>

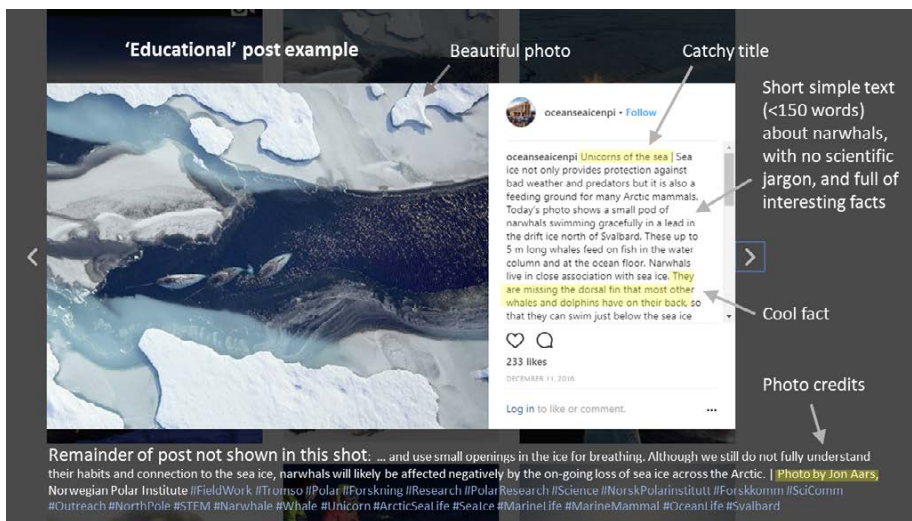


FIGURE 2 (left). Example of an “educational” post from the @oceanseicenpi Instagram account. <https://www.instagram.com/p/BN32Gpvh9RQ/?taken-by=oceanseicenpi>

FIGURE 3 (below). Example of a “publication” highlight from the @oceanseicenpi Twitter account. <https://twitter.com/OceanSealceNPI/status/976033419032317952>

new findings and publications (Figure 3). Finally, posts can provide updates about conferences and workshops. See Box 3 for links to additional online examples.

Post Popularity

Each social media channel has its own unique audience. As a result, different types of posts will be more popular on different channels (Pavlov et al., 2018). For @oceanseicenpi social media channels, fieldwork and education posts are most popular on Instagram, publication highlights on Twitter, and team portraits on Facebook. Keep track of your audience responses and take them into account!

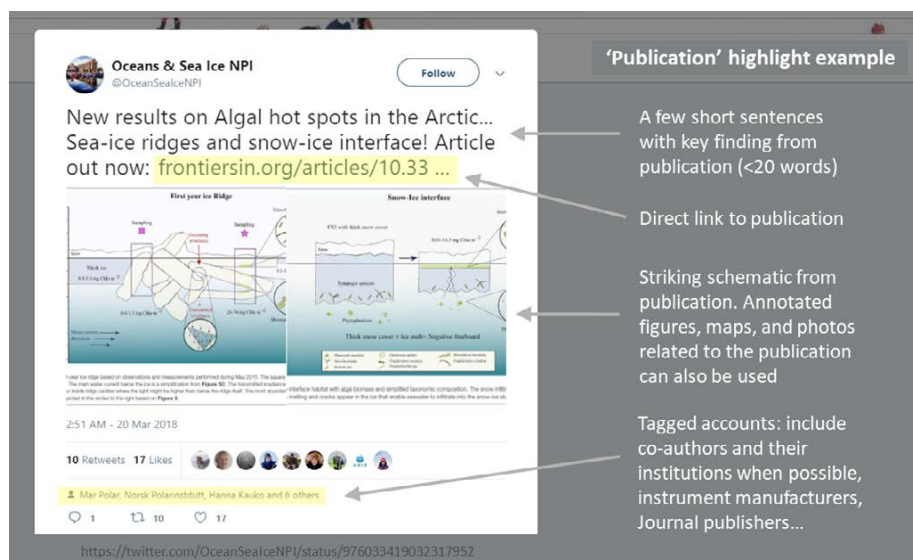
BENEFITS

Connecting with the Public

A key goal of @oceanseicenpi is to communicate science directly to the public. One reason social media is so effective at doing so is that when followers interact with our posts, individuals in their networks—who are not otherwise connected to us—can also be exposed to our content. For example, an average of 2,311 people saw each @oceanseicenpi tweet in 2017 when we had only 700 Twitter followers.

Communication Skills

Writing posts for a general audience every week has taught us how to clearly communicate complex and



specialized topics and findings. Being better communicators helps us (1) convey our messages more clearly in research papers, proposals, and while teaching; (2) build support and trust for science and increase informed decision making; and (3) make science more accessible, diverse, and inclusive.

Research Visibility

A direct benefit of using @oceanseicenpi has been the increased visibility of the team’s research. By highlighting our findings on @oceanseicenpi accounts, we have increased the number of reads of each publication, their scores in non-traditional online impact metrics such as “altmetrics” (Priem et al., 2012), and even the number of citations. For

example, team publications from the 2014–2017 period that were promoted on our social media platforms got twice as many reads on ResearchGate, the largest academic social network online in terms of active users (Van Noorden, 2014). Issuing press releases to promote publications can also have positive impacts on the number of downloads and citations (Mathelus et al., 2012).

Networking

The @oceanseicenpi initiative has been a great source of networking opportunities, not only within the research community but also with artists, journalists, government officials, and the teaching community. This has led to greater visibility for our research group, access to

more projects, collaborations with artists, and interactions with other fields in and outside science.

SUMMARY

Social media platforms are new tools that can be particularly effective for science outreach. Small research groups can play an important role but are underrepresented in social media. The @oceanseicenpi initiative demonstrates how members of a small research group can successfully communicate their research on a regular basis using social media. Science communication using social media not only fulfills its purpose of reaching out to the public across ages and cultures but also benefits the research group in many ways: it helps team members become better communicators, grow their networks, and significantly increase the visibility of their research. Initiatives such as @oceanseicenpi provide bridges between science and society, thus reducing the gap between scientific research and the public perception of science. 📷

REFERENCES

- Bik, H.M., and M.C. Goldstein. 2013. An introduction to social media for scientists. *PLoS Biology* 11(4), <https://doi.org/10.1371/journal.pbio.1001535>.
- Granskog, M.A., P. Assmy, S. Gerland, G. Spreen, H. Steen, and L.H. Smedsrud. 2016. Arctic research on thin ice: Understanding the consequences of ongoing Arctic sea ice loss (N-ICE2015). *Eos, Transactions American Geophysical Union* 97:22–26, <https://doi.org/10.1029/2016EO044097>.
- Hemmi A., S. Bayne, and R. Land. 2009. The appropriation and repurposing of social technologies in higher education. *Journal of Computer Assisted Learning* 25:19–30, <https://doi.org/10.1111/j.1365-2729.2008.00306.x>.
- Mathelus, S., G. Pittman, and J. Yablonski-Crepeau. 2012. Promotion of research articles to the lay press: A summary of a three-year project. *Learned Publishing* 25(3):207–212, <https://doi.org/10.1087/20120307>.
- Pavlov, A.K., A. Meyer, A. Rösel, L. Cohen, J. King, P. Itkin, J. Negrel, S. Gerland, S.R. Hudson, P.A. Dodd, and others. 2018. Does your lab use social media? Sharing three years of experience in science communication. *Bulletin of the American Meteorological Society* 99(6), <https://doi.org/10.1175/BAMS-D-17-0195.1>.
- Priem, J., P. Groth, and D. Taraborelli. 2012. The alt-metrics collection. *PLoS ONE* 7(11), <https://doi.org/10.1371/journal.pone.0048753>.
- Van Noorden, R. 2014. Online collaboration: Scientists and the social network. *Nature News* 512:126–129.
- Veletsianos, G. 2012. Higher education scholars' participation and practices on Twitter. *Journal of Computer Assisted Learning* 28:336–349, <https://doi.org/10.1111/j.1365-2729.2011.00449.x>.

Box 3. Example Posts

Describing an Oceanographic Instrument

<https://www.instagram.com/p/6pbuG7Lc8j/?taken-by=oceanseicenpi>

Describing a Technique

<https://twitter.com/OceanSealceNPI/status/934010208845746176>

Describing a Research Campaign

<https://www.instagram.com/p/7xl7FdrC5F/?taken-by=oceanseicenpi>

Explaining a Scientific Concept

<https://www.instagram.com/p/BSIO8HYgGQ4/?taken-by=oceanseicenpi>

Introducing a Topic

<https://www.facebook.com/oceanseicenpi/photos/a.606317222806508.1073741828.606307362807494/728668527238043/?type=3&theater>

Sharing Historical Information

<https://www.instagram.com/p/BAPTekZLcwt/?taken-by=oceanseicenpi>

Describing a Research Project

<https://twitter.com/OceanSealceNPI/status/913703865467404288>

Highlighting Team Members

<https://www.facebook.com/oceanseicenpi/photos/a.606317222806508.1073741828.606307362807494/1186778074760417/?type=3&theater>

Presenting New Findings

<https://www.instagram.com/p/zu1Dlvrcxz/?taken-by=oceanseicenpi>

Presenting New Publications

<https://twitter.com/OceanSealceNPI/status/826754036825194496>

Conference Updates

<https://twitter.com/OceanSealceNPI/status/789521093124100096>

Workshop Updates

<https://twitter.com/OceanSealceNPI/status/667703511740715008>

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