

Societal Engagement Knowledge Exchange Nr. 3

What is the deal with the viral picture of the dogs walking on water?



Dogs running on sea ice flooded by surface melt water, Inglefield Fjord, Greenland, June 2019. Credits: Steffen M. Olsen (DMI)

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Summary for publication

On the cover sheet of this report, we have placed the picture of dogs running on sea ice flooded by surface melt water, taken in the Inglefield Fjord, Greenland, on 13 June 2019 by the Blue-Action coordinator, Steffen M. Olsen (DMI). You must have seen this a million times in the past months.

The picture was published on Twitter by a colleague of DMI taking part in the same expedition, and went viral over the internet overnight. It was retweeted and picked up by all the major magazines and newspapers in the world. The photo is more symbolic than scientific.

This powerful image has awakened the society around the world, raising awareness on what is happening in the Arctic area, why the climate changes in the Arctic are important for those living outside the Arctic and how society needs to engage for reducing the impacts of climate change.

The idea behind this deliverable is to set the story straight, to give an overview of how the picture resonated around the world, and on the lessons learned on how to deal with this huge interest of the world media.

Work carried out

Danish Meteorological Institute (DMI) operates a network of weather and climate stations distributed across Greenland. DMI is a governmental organisation under the Danish Ministry for Climate, Energy and Utilities. DMI performs forecast and warning services along with continuous monitoring of weather, climate and seas, in part to secure human lives and assets, in part to create an economic foundation for economic and environmental society planning. DMI provides meteorological, oceanographic and climate related services for the community within the large geographical area of the Kingdom of Denmark (Denmark, Faroe Island and Greenland), including surrounding waters and airspace. The institute plays a central role in monitoring the Arctic from space and delivers critical operational services to society and stakeholders including sea-ice charting for Greenland waters.

DMI engages with local communities in research and co-design of services to understand and prepare for climate change. Communities in Greenland rely on the sea ice for transport, hunting and fishing. Extreme events, such as flooding of the ice by abrupt onset of surface melt call for an increased predictive capacity in the Arctic.

The context

On 13 June 2019 Steffen, Rasmus and three Greenlandic hunters who support the DMI team, Angit, Paulus and Aksel set out to recover climate monitoring stations on sea ice at the Inglefield Fjord in Greenland (see picture left). The mission turned out to be more challenging than expected.



Melting sea ice in summer is normal and flooding in the area has been seen before, but the temperature of 17 degrees Celsius in Qaanaaq were extreme for early June.

Steffen took a picture, with his smartphone, and Rasmus tweeted it. The picture went viral on Twitter and on the internet.

Steffen's report:

#Quote: " I was in northwest Greenland to collect instruments that had been deployed out on the sea ice in December, a trip I've done annually for the last eight years. This year the Arctic summer had come a few weeks early and it was 15-17 celsius, which is extremely warm for mid-June. In the fjord we found ourselves in more water than we could have imagined, which reflects what we know – the season for sea ice is getting shorter. In a temperature-driven early breakup and melting of the ice cover, the water was 20-40cm deep and the dogs were struggling. Even the local hunters, whom we rely on for their traditional knowledge, were uncertain and found it extreme. We had never seen that much water on the ice in early June. We reached

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our limits and had to turn around. After 48 hours more cracks had developed in the ice and drained most of the surface water away, so we were able to complete the assignment. People would like to say that this picture is proof of climate change. I think that, symbolically, it shows how societies are challenged to plan and adapt for the future. This way of life and culture may not exist in 50 years' time, so we can use this photo to illustrate the impact of climate change on extremes and where we are heading." #End of quote.

#Quote: "It is not an unknown phenomena - melt ponds and water on ice, but we were beyond ponds. Both me and the local hunters were unprepared for the extent of surface melting and huge amounts of water. I have no scientific climate record to qualify a more detailed reply. Still, this photo was shot on a day where the entire Greenland experienced record high melting and high temperatures, including the ice-sheet. Therefore I find it fair to use the photo in the context of climate change, but it should not be over interpreted." #End of quote.

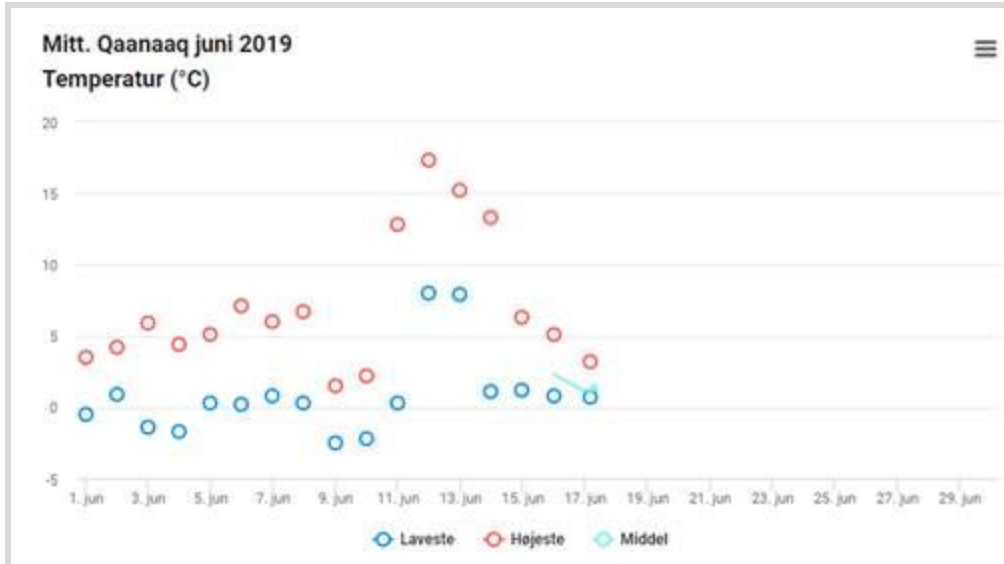
Ruth Mottram (DMI) clarified the following:

#Quote: "Steffen is working in close collaboration with the local hunters in Qaanaaq (many people still live a traditional subsistence lifestyle in this region). They are monitoring sea ice and ocean conditions in Inglefield Bredning, close to the village of Qaanaaq and at DMI we now have quite a few years of data from this region. In the project they place instruments on the sea ice that forms in the bay in winter each year and then retrieve them around about now in late spring/early summer before the sea ice breaks up, in order not to lose what are pretty expensive instruments into the ocean!

This year the expedition to retrieve the instruments (by dog-sled, still the most practical way to get around in this region at this time of year) ran into a lot of standing water on the sea ice. The ice here forms pretty reliably every winter and is very thick which means that there are relatively few fractures for meltwater to drain through. Last week saw the onset of very warm conditions in Greenland and in fact much of the rest of the Arctic, driven by warmer air moving up from the south as you can see on the maps here: <http://polarportal.dk/en/weather/nbsp/current-weather/>

This led to a lot of melting ice, both on the glaciers and ice sheet and on the still existing sea ice. The DMI weather station nearby at Qaanaaq airport registered a high of 17.3C on Wednesday 13 June 2019 and 15C on Thursday 14 June 2019 (which is pretty warm for Northern Greenland, even in Summer!) as you can see in the graph below (and here: <https://www.dmi.dk/vejrarkiv/>). These numbers still need to be quality controlled by our climatologists and I am currently checking if these would be new records for this station for June – but given how warm it was it's easy to see why there was a lot of melting! As the ice in this region is relatively thick and fracture free the meltwater is unable to drain away through cracks in the ice as it would normally and hence the challenging conditions for the dogsleds.

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Weather station nearby at Qaanaaq airport registered a high of 17.3C on Wednesday 13 June 2019 and 15C on Thursday 14 June 2019. Source: DMI

With regard to what it means in future, our climate model simulations expect there to be a general decline in the length of the sea ice season around Greenland, how fast and how much is very much dependent on how much global temperature rises, but this week's warming is still a weather driven extreme event so it's hard to pin it down to climate change alone.

Our forecasts indicate that the warm conditions over Greenland will persist at least another few days. Normally we would expect these kind of warm melt events to occur later in the summer in late June or July so it is pretty unusual that it happened this early, though it's not unprecedented, a similar event happened in June 2012 for instance that was if anything more extreme than this one." #End of quote.

Setting the story straight



- The photo illustrates a natural phenomenon, we should as such not be concerned. However, these days were characterized by extreme and early melting rates in Greenland.

- Extreme events, flooding of the ice by abrupt onset of surface melt call for an increased predictive capacity in the Arctic.

- This photo illustrates arctic warming and in particular the expectation that weather will be more extreme in the future. The temperatures in Qaanaaq 13 June 2019 were less than half a degree from the record of June 30 2012 and obviously reached two weeks earlier.

- Rapid melt and sea ice with low permeability and few cracks leaves the melt water on top.

- The ice is around 1.2 m thick and we have about 870 m water below us.

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- The local hunters and their dogs are really experienced, daily life in the high Arctic. We rely on their experience and traditional knowledge when we are on these missions. Local hunters are however experienced with melt water flooding of the ice.
- Together with the local hunters DMI has as other years been measuring also ice thickness from December 2018 to today. During this mission, we finally managed to retrieve the equipment, after three attempts.

With his smartphone, Steffen also managed to record a short video, less than a minute long, of the ride with the sledge and the dogs. To the date of today, the video has been seen 116.000 times.

<https://twitter.com/SteffenMalskaer/status/1147112022330499072> The video per se helped us to back up the authenticity of the photo which was questioned by some (photoshopped).



The broader public's (mis?)understandings

We came across interesting comments showing a different perspective and understanding of the content and context of the photo.

The public believed that the colleagues and the dogs were on the *melting ice sheet*.

This is not correct: dogs are running on sea ice flooded by surface melt water.

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Climate change deniers claiming the photo is not authentic/it was photoshopped.
We have a set of photos taken in the same context on the same day, and the video.
Climate change deniers claiming that this is not a rare event (Comparison with the picture taken in 1984 showing also ice melting).
In the social media, we indicated several times that the photo illustrates a natural phenomenon, we should as such not be concerned. However, these days were characterized by extreme and early melting rates in Greenland. This is also nicely reported on the website of Visit Greenland: https://visitgreenland.com/viral-picture-sled-dogs-walking-on-water-steffen-olsen/
The project is called “Blue-Action”, are you climate activists?
The Blue-Action team members are not activists. The name was chosen before the climate activism started, and there is a chance that the name of the project and its goals might be misunderstood, considering how public opinion has evolved in the last few years, and how climate action, climate change, climate emergency have become popular buzzwords.
Media representatives were repeatedly asking for a high-resolution of the picture and the video.
The photos and the video were taken during an expedition, by a non-professional photographer, to picture a moment, and they were not the goal of the expedition. The photo and the video were taken using a smartphone, there is no high-resolution version.
Animalists were asking why the dogs need to work and pull the sledge? Why the need to work in cruel conditions (whip)?
DMI gave exhaustive information about why the local communities rely on the work of their dogs for transport, hunting and for living. This is a context that might be unknown to some of the followers. And no, the dogs were not whipped, the whip hit the water to the right, to make them turn left.

The social media “challenge”

Dealing with the requests (still incoming!) was a challenge for DMI public relations officers, for the authors, and for the colleagues working in the Blue-Action project.

The approach we adopted in dealing with the request was based on pragmatism:

- We asked those requesting the use of the photo to credit the author, the institute and the project. We also indicated that the photo had to be used in a relevant context. *This was relatively easy to accept for those requesting use.*
- We asked them to provide links or reference to the published materials, for us to track down and monitor the use. *This was not always pursued by those requesting use.*

Lessons learned

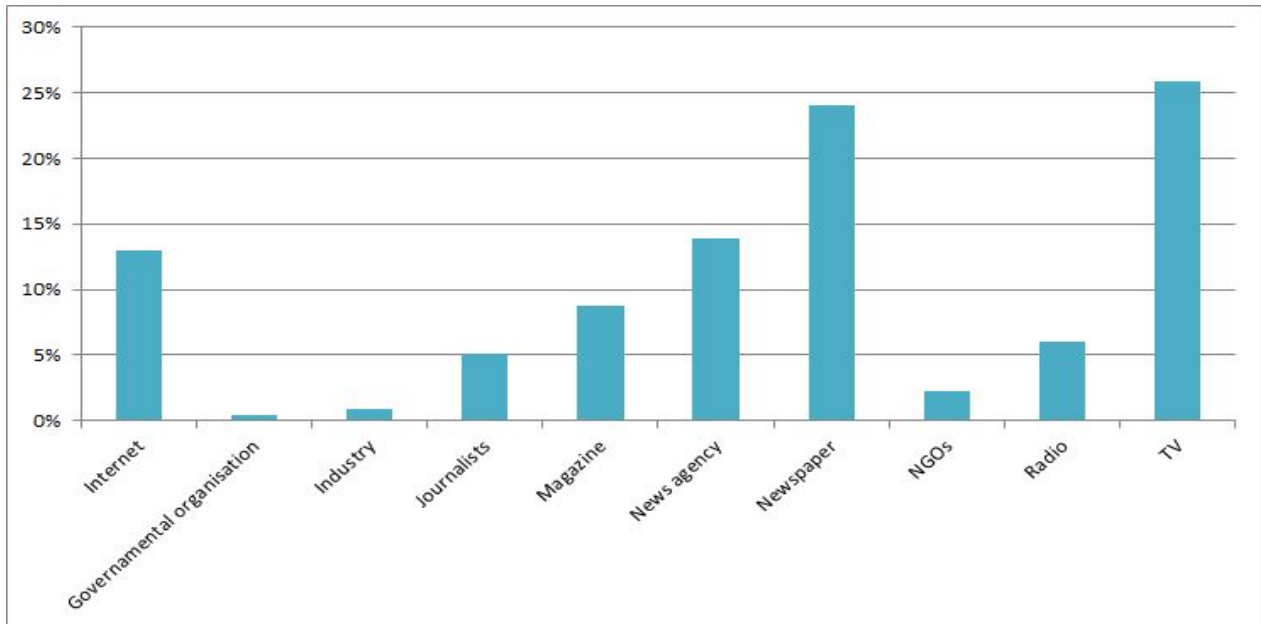
- Allow the photo to be used for non-commercial activities only. We are a public-funded organisation and a public-funded project!
- Make the photo available under CC BY-SA 4.0: Attribution-ShareAlike 4.0 International <https://creativecommons.org/licenses/by-sa/4.0/>
- Ask to acknowledge the photo properly: agree on a format to be used by all those asking to use the photo. Indicate that “Use is granted as long as the picture and the video credit Steffen Olsen (DMI) and in relevant context. Add to the text: **“We expect you have read our comments, Interpretations are your own.”** Provide the email address of your Public relations/Communication office.
- Ask those who are granted permission to send you copies of their articles, publications, etc to your mail and the one of your Communication /PR office.
- Authenticity of the photo: Be prepared to face skepticism, most of the skepticism was silenced when the video was published online, as it was clear that the picture was not a product of Photoshop. If you take a picture, take other pictures changing the perspective to verify their authenticity. One picture is not enough to silence skepticism.
- Be ready to reply to all the comments and questions to your tweet/social media post. Be available to provide more information about the context. Be clear, be honest.
- Plan time for you to address comments, to track comments, to track published works. Time not just for the author of the picture, but also for the Communication /PR office in your organisation, and of the communication lead in the project and of the project management.

Overview of the requests received: who requested interactions and their geographical coverage

Nature of the requesters: We tried to map the requests for interviews and for commenting on articles. These were received from June 2019-October 2019.

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This is an overview:



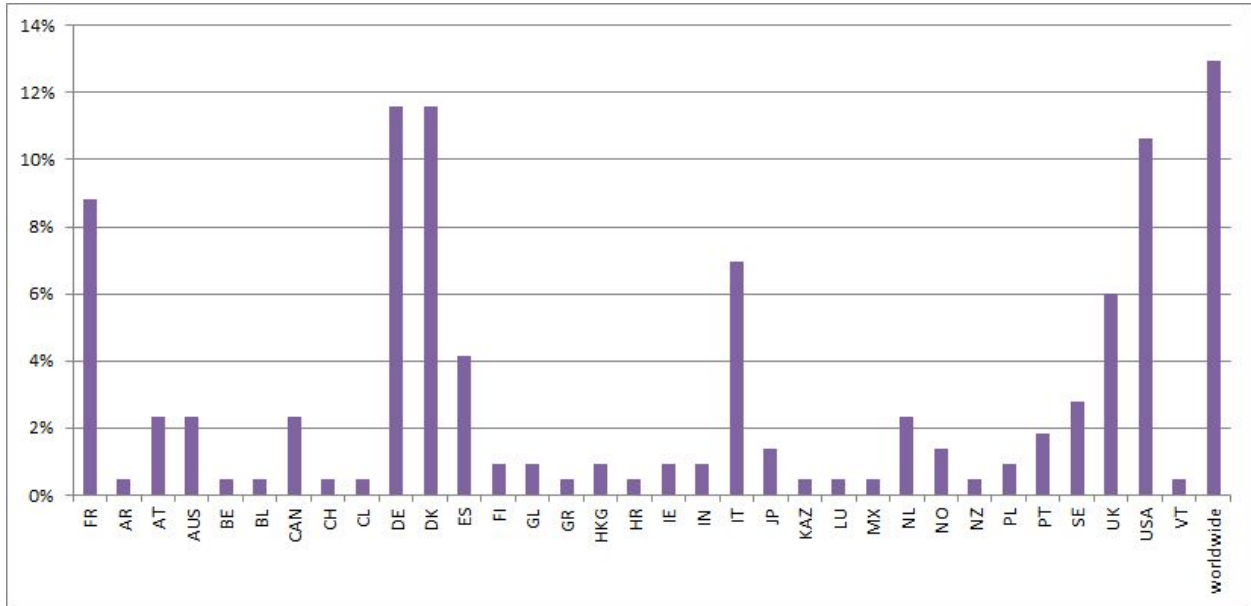
Requesters were grouped in broad categories. With the wording “internet” we refer to online newspapers, magazines, blogs, podcasts, pages and groups on social media. Credits: Chiara Bearzotti (DMI)

Some of the requests coming from non-governmental organisations were mostly related to the possibility to have interviews or further interactions to be defined at a later stage (work is still ongoing).

- Mario Molina Center for Energy and Environment <http://centromariomolina.org/>
- Al Gore Climate Reality Project <https://www.algore.com/project/the-climate-reality-project>
- UNESCO’s communications-team
- WWF Germany
- European Pressphoto Agency

Geographic coverage of the requesters: This was not always clearly identifiable. Some organisations were acting “worldwide” and for some others it was not possible to locate them on a map (not appearing in this chart).

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Geographic coverage of the requesters. Credits: Chiara Bearzotti (DMI)

Considerations of the Blue-Action Societal Engagement Group

In Blue-Action, we have an independent advisory board focussing on the project societal engagement, this is our Societal Engagement Group (SEG). The SEG was established with the scope of pushing us to open up a dialogue between broader societal stakeholders and the project teams, for us to receive critical feedback on development and results.

The approach of getting a SEG as independent advisor is consistent with both the EU's commitment to Science Education within the Responsible Research and Innovation agenda and the wider aims of Citizen science.

Here below, we asked two of our SEG members to provide some considerations on how they have perceived this picture and how this is linked to their current activities.

Interview with Laura Meller, Polar Advisor, Greenpeace, SEG advisor to Blue-Action



About me and my organisation

I have a PhD in conservation biology, looking at climate change and the connection to protected area networks. I've been working with Greenpeace as an Arctic advisor since, although my work now is less about undertaking science, and more to do with political strategy and advice. I help develop our understanding of the changes we want to see in politics, and what we might do to influence those changes. I am a member of the Blue-Action advisory group because my science background and Arctic remit is a good fit for the project.

Photo above: courtesy of Laura Meller.

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The scope of my Greenpeace role has now expanded to cover the Antarctic and the oceans more broadly. This rapid expansion of my remit is a result of the changing scope of our work: when I started, we were very focused on the Arctic region. Now there is a process in the UN for a new treaty to protect oceans beyond national borders, including the Central Arctic Ocean. It means we now look at oceans more globally, but the Arctic is still a very important area for us.

As an organisation, we base our demands on the best available science. We engage deeply with science because it is an important foundation for us to understand what we should focus on, and what our level of ambition should be. However, we understand that in this world it is not always the best scientific argument that wins, so we need to have people's hearts and minds with us. Engaging with people and sharing messages is a key part of our work. We also see we need to challenge the way power is distributed in the world today to achieve our vision: that of a zero emissions world, where we have a healthy environment and where people are able to live a good, peaceful life.

Greenpeace audiences

In my work, such as the Protect the Oceans campaign, we have three different main audiences. The first is those people who are directly involved in the political process in the UN such as the ministers, or their staff assist in giving them the political direction. At the other end, we have the people that we want to engage with, work with us, support us, and join us. This can be anyone who cares about our work and wants to support the demands, join the campaign, and help put the pressure on the decision-makers. Our final main group are key influencers, those people who might be stakeholders and who could take part in the political process but are not fully engaged with the issue. These could be MPs or scientists, people who are following the themes but may not yet be involved in the depth of the issues.

We do engage with these audiences differently. For the general public, we have a broad supporter base built up. We have a strong presence in social media, and we invest a lot in that as it is an important way for us to reach out. With decision-makers, we have issue experts and campaign staff in each country who reach out to them directly. However, it's artificial to separate these: our campaign supporters reach out to the decision-makers, and of course they in turn will see and be influenced by what is happening in the media. We cannot separate our political and communications work.

My considerations on the viral photo

For me on first seeing the image, it has a very strong sense of this is not right. It is an instinctive emotional reaction that things are not the way they are supposed to be, with the combination of the sled and the water. It is seeing both of these things together that is effective.

The immediate story that comes to mind is that someone was travelling in a dog sled and has reached an area that is supposed to be ice, but has turned to water. From my experience of trying to ski, ice with water makes things slow and hard to travel, but also raises concerns that the association is that what used to be normal and easy and predictable is not like it was. Clearly my association is affected by 15 years of climate activism and work with the issue, so it is not necessarily what everyone would see immediately.

I also think the image has a very authentic sense to it. This comes from the sense of movement, the random pattern of the dogs. It looks like someone just took the picture on their way to somewhere, so has a sense of day to day life, rather than being a prepared photo opportunity, which I think is important.

I understand why it went viral, because it does communicate a story easily without words. In Finland, people associate strongly with winter sports and awareness of climate change is high, so the link would likely to be obvious to a lot of people in this country. I wonder whether northern countries might feel it

more, people who have connection to snow and ice, and perhaps the reactions of people in southern countries might be different.

What images like this can contribute to our climate change conversation

I think the risk with very strong images that show destruction or devastation, and the inevitability of change for the worse, is that they give the sense of helplessness and hopelessness. It is difficult to take them in as there is no way to answer the problem, so it is easier to disregard it.

This one is interesting because it has dogs and people, things that are familiar and close to us. It combines Greenland and glaciers, concepts that are quite distant to most people, with the dogs and people that we associate with home. People tend to feel a stronger emotional connection to animals, particularly those we live closely with, so these kinds of images have value in bringing the effects of climate change into the personal. Sadly, we are increasingly able to be able to use images of the personal effects and effects on humans, because it is getting closer and closer to us.

Balancing scientific complexity with communication efficacy

After my first emotional reaction, I did think more about the story behind the image. I thought that these are climate scientists on an expedition, so they should know what they are going into. It wouldn't have been a surprise to them, so it raises many questions about what is going on and why. I can understand why people were asking deeper questions about how rare this event was, and how bad.

We had a similar experience in Finland, although it wasn't a Greenpeace photo. At the time, there was a big campaign against clear cutting forests. A bird ringer found an owl chick on the ground close to its nest tree next to a fresh clearcut, and after ringing and weighing the chick he placed it on a stump and took a photo (Figure 1). On first look you had a terrible feeling from the image, which gives the impression that there is a baby bird with a home destroyed, and this went massively viral in the country and beyond.

But people's first impressions, that the chick had lost a home tree through clearcutting, was not correct. While the forest was cut, and the baby was found on the ground close to the nest that was damaged, the nest was in a tree that was still standing. The ringer never intended to say that the tree had been cut out from under this chick, but people made their own interpretations because of what they saw in the photo and how the mind created a story around it. There was a strong counter-reaction, because people felt they were fooled, even if it was only their own reactions.

The problem is, that there was actually an important conversation message there: clearcutting forests during the birds' breeding season is very damaging, and also in this case the forest was cut right next to the nest tree. It was a bad thing, it just wasn't quite as bad as what people thought the image said.

We do find we need to be very careful about how we communicate in social media. In particular, Greenpeace is under a lot of scrutiny from the public in the information we put out, which is absolutely right. However, it does mean that we need to ensure that what we say is completely accurate, and balance that and the level of details with the simplicity required with social media and speaking in language that makes sense to people.

In order to do that, we often work by having an issue expert and a communications expert having a dialogue about the message to find that balance. It comes from experience, and no one always gets it right. It also means having to be very careful with personal social media accounts too. I can be more personal in my own account, but I would be conscious of my association with Greenpeace and being a spokesperson for the organisation. That is a responsibility, and people are looking for complete honesty from us on that.



"Sad owl" image. Credits: Jukka Tanner.

Lessons for Blue-Action

My impression of Blue-Action's communication on social media channels is that it is aimed at very academic audiences- a lot of the content is on meetings and conferences. For a wider audience, I would suggest complementing this with stories from the field, and making it more personal. Recently scientists have been much more outspoken on the scientific basis of climate change, and it is more accepted that they will have a personal stance.

This doesn't have to be in conflict with sticking to the facts and being objective. People like to see the people behind the science, and it makes it more relatable if there is a personal angle. None of the team should feel obligated to do so, it is a personal choice for everyone. This element of personal choice is needed for authenticity, and authenticity is very important to people. There could be a lot of value in this approach, but it should be done with caution.

It is also understandable if the team doesn't want to put themselves in the light like this. It is equally valuable to say that I am concentrating on the science, and I don't want to contribute in this way. I don't mean Blue-Action should sound like Greenpeace – they are two very different voices.

One suggestion would be to start introducing the scientists, starting towards the personal and but taking it gently. It can begin very neutrally: you don't need to have banners and political demands! I think what the photo showed is that stories of the field and the human aspect and impact is very effective in sharing a message. You might also think of inviting people to ask questions of the scientists about their work and observations and invite a dialogue, which is effective in social media. Then there is a human aspect but it can focus on the observations and models, and the impact on bettering the world.

It is worth also thinking about how to make it personal to those you are communicating with. Instead of showing raw graphs, is it possible to make comparisons to what it means for a ship or someone who is using those predictions. It is all about bringing it down to a very personal level, so it has meaning in the reader's own context.

Final thoughts

This has been a very interesting and thought-provoking discussion for me as well. My final conclusion from this conversation is that the threat of the backlash shouldn't stop us from using these images. It also highlights the importance of being as accurate and transparent as possible with the background and context, to keep the story and message at the centre.

Interview with Laura Curtis-Moss, Worldwide Programme Manager, Edinburgh Science, SEG advisor to Blue-Action

About me and my organisation

I have a background in art and environmental education, which I now combine working in designing science communication events. I work for Edinburgh Science, particularly on our international business, developing content for science festivals overseas and the largest science festival in Europe, held annually in Edinburgh.

In the past year we've become more focused on environmental issues, and for the 2020 science festival our theme is elements, with strands based around water, fire, earth and air. Our big blockbuster exhibition is called Pale Blue Dot, which has a focus on seas and oceans. This is designed to use images and be very visually impactful, and talks a lot about climate change. The aim of exhibitions like this is to engage with the general public.

Our audiences and messaging

Our audiences are very diverse. We work a lot with families, but have specialised events for each group as well, from adult talks and workshops to events for younger children. We often try to reach people that are not commonly engaged with science, so create events in different spaces that attract people, such as our partnership with the National Museum of Scotland for the exhibition.

We mainly use social media to inspire audiences to attend other events that share science in more in-depth ways. We have a communications and marketing team that specialise in online content. We try to use these formats as teasers that get people interested in the topic, so they will participate more deeply.

Overall, we work to engage people with environmental issues. We work with partners to maximise the reach of our messages: so next year in Scotland is the Year of Coasts and Waters, so we have timed our oceans exhibition to fit with this wider theme. We also talk to science organisations so we can facilitate sharing messages they want to get to the public. For example, conservations organisations are keen to raise the profile and benefits of marine protected areas, so we are using that message within the exhibition.

We also like to engage with the more complex science, and encourage debate on contentious issues. We create a counterpoint to some of the simplistic messaging that is out there: that plastic is bad for example. We try to highlight long-term scientific projects or innovative research. We are also interested in how these environmental problems interact with people, and the social justice side of many of these issues.

My considerations on the viral photo

My first impression is that it is a very cool picture: it looks like an amazingly dramatic adventure. I'm drawn in by the aesthetics of the image before anything else. It is beautiful, with the colours and the dramatic landscape. Because of this, my mind immediately goes to a narrative of a positive story: an adventure, a journey, an escape in a beautiful landscape.

I don't know much about dog sledding, but very quickly I can see that there is something very jarring about the dogs being in water. The more I look at it, the more the beauty becomes overcome with concern for the dogs and the people involved in the image. The cognitive dissonance between the beauty of the image and the devastation of the climate change story it suggests is very powerful.

Another of the reasons I think it has such an impact is because of the perspective of the image: it looks like you are in the standpoint of the sled driver. You feel ownership of the situation, like you are there and responsible for this situation. It is also very shareable because of the aesthetics and the feel of a story behind it: altogether, it fits the requirements of going viral on social media.

What images like this can contribute to our climate change conversation

There is a lot of conversation about climate change on social media at the moment, and images like this need to be used carefully. Context is important. I can't go online at the moment without seeing climate change messaging (although I am aware that is a product of my choices), but a lot of it is still "here is a starving polar bear", "here is a washed up whale". We are increasingly seeing reports of people who do care very deeply about these topics reporting "eco-anxiety" or "caring fatigue" through the constant bombardment of these messages. It's too much for many people.

As a person who is on board with climate change messaging, who believes this is an important issue on which we need to take action, I want to see more messages containing positive news. I have worked in teaching people about environmental issues, and research shows that if you begin a lesson by being negative, people learn less and feel helpless about the issue. In contrast, if you begin with a positive image of a solution, even if you then go on to discuss the negative causes, people learn more effectively and go away feeling empowered. In all learning now we try and start with the learning outcomes- the change you want people to go away with. It's like Blue Peter- you are more inspired to undertake the task if you can see the final product you are aiming for.

Obviously this is more difficult to undertake with social media. But there are increasingly more ways to embed a longer narrative, such as Facebook or Insta stories, or using video on Twitter. Even if using a single image like this, it is important to not frame it in a way that is completely helpless, but use it as a hook to draw people into the message that something is being done or could be done. Of course this depends on your audience- for some, who are the beginning of their climate understanding journey, images like this that illustrate a stark truth might be needed to shock people into action. Targeting efforts is important.

Seeing images like this in the wider context of what can be achieved is also important. I get frustrated by seeing messaging that is all about individual change to affect climate change outcomes. We need to shift the messaging to focus on the wholesale systemic shift that is required. People changing a toilet roll is not going to affect the ice melt in the Arctic. Not enough organisations have the bravery to step up and say we need massive system change now.

Balancing scientific complexity with communication efficacy

There will always be people on twitter that will claim you are being disingenuous or not telling the whole story. You only have 280 characters, of course you are not telling the whole story! This is compounded because many people are flicking through rapidly and don't read it properly, so they see what they want to see. It's also very difficult when something gets shared, as it gets retweeted and retweeted, and the context becomes twisted and lost.

Using keywords can help to ensure that you are framing it correctly, even if there is no nuance. Putting "earlier", "worse", focusing on keeping those unequivocal words front and centre means that you have some voice to be able to respond if people claim otherwise. Being very clear and honest at the beginning gives you a stronger position to then have a conversation if people want more details. I would also suggest considering embedding text in photograph or adding a photograph to an infographic, which makes it harder to take out of context. This makes it as easy as possible to find the truth, and makes sure people can trace it back. However, no matter what you do, there will be people who will seek out images like this to argue with you about climate change on Twitter.

It is a difficult balance communicating complex science, because the public hates uncertainty, and understands it in a very different way. Part of the problem is that climate change deniers and oil companies do not communicate uncertainty. It then makes the scientific community sound more uncertain than it really is. I think that it is important to be very clear what you are uncertain about, and restate what it does and doesn't affect: for example, say that anthropogenic climate change is happening with certainty, but our predictions of the exact effect have this level of uncertainty. It is about how you frame the message.

Lessons for Blue-Action

Using images like this to share the science being undertaken is a great way forward for Blue-Action. There are many great communicators on social media sharing their science in an accessible and interesting way, and I follow them for that reason. Many people use a platform like Twitter to be able to interact with scientists and learn, so there is a large warm audience out there. Even people who are experts in their field are unlikely to be experts in your exact field, so there is value in sharing your thoughts and science in an accessible way. It is important to remember that most people are using Twitter on a phone on a bus home, for example. They have finished work, and they don't want to click through to a scientific paper. They want the key points in an interesting, easily digestible format. They can follow up later if they want, but at that moment they want little flashes of interest or inspiration.

One suggestion would be to create a multi-layered approach of information. So if you publish a paper: write a blog post that describes it simply and links to the paper, and then write a tweet that is simpler still and links to the blog post. This means people can follow the trail as deep as they want, but each part makes sense individually.

I think that Blue-Action could contribute to climate conversations by using its position to share messages like this. I think anybody involved in climate science has a responsibility to get people on board with the

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message. I also think all of us could do better than just presenting the evidence dispassionately. In a court of law, lawyers don't just blandly read out the evidence: they turn it into a narrative to persuade those listening of the truth behind it. That is how people understand the world, through stories and emotions- it's not through a dispassionate uploading of the evidence. You have to explain it, contextualise it and argue your case.

I understand that there is an argument for ensuring that people understand that science is objective. However, the public doesn't believe that scientists are truly objective anyway. You can undertake science objectively, but there are some things it's ok to not be objective about, if you see a danger ahead in the results you find. Scientists are also allowed a moral opinion, and to be human.

People also want to hear scientists' solutions. I suggest the key is just to be clear and honest about what is opinion and what is the evidence. Social media is also a two-way street- share something like this an invite opinions and questions. People love the opportunity to interact, and it is a way to encourage people to learn more, but also understand what is important to those you are talking to.

Lessons learned

- Some reflections on the lessons learned is provided in the text already.
- The inputs provided by the SEG members are very valuable for improving our communication strategy on social media. We will base our strategy for the upcoming months on their comments.
- The viral experience has affected internal institutional procedures to be better prepared for massive requests and possible public investigations in politically sensitive matters (Climate Change).

Contribution to the top level objectives of Blue-Action

This deliverable contributes to the achievement of the following objective indicated in the Description of the Action, part B, Section 1.1: <http://blue-action.eu/index.php?id=4019>

Objective 8 Transferring knowledge to a wide range of interested key stakeholders

In Blue-Action we planned, with this type of deliverables, a certain flexibility in what we wish to report upon. The idea behind this deliverable is to set the story straight, to give an overview of how the picture resonated around the world, and on the lessons learned on how to deal with this huge interest of the world media.

Dissemination and exploitation of Blue-Action results

Uptake by the targeted audiences

This deliverable is a public deliverable, targeting the general public (PU) and is going to be made available to the world via CORDIS and via Zenodo.

This is how we are going to ensure the uptake of the deliverables by the targeted audiences

We will use elements of this deliverable as inputs for our website and our newsletter, and the social media we use. An idea is also to use the SEG member to convey information through their channels.