Live from Antarctica: The National Science Foundation’s Education and Outreach Event

**Live from Antarctica: The National Science Foundation’s Education and Outreach Event**

**Information Paper submitted by the United States**

***Summary***

In December 2021, the National Science Foundation (NSF) Office of Polar Programs (OPP) hosted its first “Live from Antarctica,” event that virtually connected people from over ten countries to learn from scientists about research being conducted in Antarctica. Since then, there have been multiple live-streamed events that have provided a live, behind-the-scenes look at what it's like to live and conduct research in Antarctica. Past events have included virtual tours of Antarctic research stations, demonstrations of scientific instruments, and equipment used in Antarctic research via the video conference platform, Zoom. “Live from Antarctica” events aim to engage and educate the public about the important scientific research being conducted in Antarctica and to inspire the next generation of scientists and researchers.

***Introduction***

“Live from Antarctica” uses live-stream technology to provide a virtual window into the world of science and research in Antarctica to people across the globe. The events are organized by the OPP communications team and aim to increase public awareness and understanding of the unique scientific research being conducted in Antarctica. OPP identifies potential presenters for the events by working with U.S. Antarctic Program (USAP) participants to find those who may be interested.

During the events, attendees can ask questions and interact with the presenters in real-time using the Question-and-Answer feature in Zoom, creating an engaging learning experience. The events cover a wide range of topics related to Antarctica, including climate change, glaciology, ecology, oceanography, geology, and astronomy. They are designed for kindergarten through 12th grade students, educators, and the general public, and are often hosted in collaboration with schools, museums, and science centers. The events are designed to be inclusive and accessible to participants of all backgrounds and ages. “Live from Antarctica” events are recorded and made available for viewing at any time, which allows individuals to access the content at their own pace and in a way that works best for them. All live and recorded events feature closed captioning and American Sign Language (ASL) interpreters can be included upon request.

***Live-stream technology and challenges***

“Live from Antarctica” events are live broadcasted using YouTube and the webinars are hosted in the video conferencing software, Zoom. Information on how to live stream Zoom webinars on YouTube can be found [here](https://support.zoom.us/hc/en-us/articles/360028478292-Livestreaming-meetings-or-webinars-on-YouTube). Satellite communications in remote areas of Antarctica where internet connectivity is limited are used to establish a connection with the individual(s) physically in Antarctica. Connecting participants to individuals in Antarctica, where internet connectivity can be limited or unreliable, can sometimes make it difficult to establish and maintain a stable connection throughout the event. Other factors that can contribute to technological difficulties can include extreme weather conditions. The extreme cold weather can impact the performance of technology, making it important to ensure that equipment is properly insulated and protected. However, “Live from Antarctica” events are usually held during the Austral summer season when most researchers and scientists are working at the research stations. Further, live-streaming events in general can be prone to technical issues, such as poor connectivity, audio or video quality issues, or equipment failure; therefore, it’s important to have a backup plan in place to address these issues quickly and minimize disruptions to the event.

***Past events***

Since the beginning of this initiative in December 2021, six separate events (one with two sessions) have successfully occurred. Over 3,000 participants are estimated to have tuned in from 13 different countries during the events which are scheduled for no longer than an hour. The full list of events that have occurred to date is provided in Table 1 which includes the estimated number of participants and countries.

|  |  |  |  |
| --- | --- | --- | --- |
| **Event** | **Date** | **Participants** | **Countries** |
| Marine Biologists at McMurdo Station | 12/10/21 | 1000 | 11 |
| Researchers Aboard an Antarctic Icebreaker | 12/16/21 | 175 | 13 |
| World Krill Day | 8/11/22 | 161 | 10 |
| All Things Penguins from Antarctica | 1/10/23 | 983 | 11 |
| It's Not All Snow and Ice (2 sessions) | 2/3/23 | 500 | 10 |
| In search of worms and gooey invertebrates | 3/6/23 | 330 | 6 |

*Table 1 – Information on past events*

For those unable to attend, archived recordings of “Live from Antarctica” presentations can be found on the [National Science Foundation’s YouTube Channel](https://www.youtube.com/playlist?list=PL0ujJTaPsv3fkcPG53Pbf-xMt6ddwS12i), or directly via these links:

[Live from Antarctica! Marine Biologists at McMurdo Station](https://www.youtube.com/watch?v=8lokpwTwZLE)

[Live from Antarctica! Researchers Aboard an Antarctic Icebreaker](https://www.youtube.com/watch?v=D541qbZS32s&t=1s)

[Live from Antarctica! World Krill Day](https://www.youtube.com/watch?v=azFbn548Tfk)

[Live from Antarctica! All Things Penguins](https://www.youtube.com/watch?v=oXnLxR2g2z4)

[Live from Antarctica! It’s Not All Snow and Ice (Session 1)](https://www.youtube.com/watch?v=Hoy3yvlpLTg&list=PL0ujJTaPsv3fkcPG53Pbf-xMt6ddwS12i&index=3)

[Live from Antarctica! It’s Now All Snow and Ice (Session 2)](https://www.youtube.com/watch?v=LVBiZrZdQFU&list=PL0ujJTaPsv3fkcPG53Pbf-xMt6ddwS12i&index=2)

[Live from Antarctica! In search of worms and gooey invertebrates](https://www.youtube.com/watch?v=MVpGaPHFfh4)

***Promotion of the events***

“Live from Antarctica” events are promoted by OPP through various channels to reach a wide audience. In an analysis of one of the Live events, “All Things Penguins,” social media (Twitter, Facebook, and Instagram) proved to be the most effective way of promoting the event. Social media had the highest referral method (42.6 %) followed by the “other” category (34.4%) which included referrals from friends, family, and colleagues. The other referral methods that were the least successful included Listserv email (13.4%), the NSF website (5.8%), and the USAP website (3.8%).

OPP uses social media to post updates, announcements, remind followers about upcoming events, and encourage participation. During the promotion of “All Things Penguins,” there were eight posts by the NSF social media team which reached over 69,000 individuals and had an engagement rate of 1.7% which was considered successful by the social media team. The engagement rate on social media is determined by taking the total number of engagements (likes, comments, shares, and clicks) divided by the total number of impressions (number of times a post is displayed on social media, whether it's viewed by a unique user or not) and then multiplied by 100 to get a percentage. The factors that contribute to the engagement rate include the number of followers, the time period over which the engagement rate is calculated, the size of the industry or organization, the type of content being shared, and the goals of the social media campaign.

Other ways of promoting the events are through NSF newsletters. Interested subscribers can sign up using the [newsletter registration form](https://public.govdelivery.com/accounts/USNSF/subscriber/new?topic_id=USNSF_317) and enter their email address. Both the “Office of Polar Programs (OPP) Newsletter” and ‘Office of Polar Programs (OPP) events topics under subscriber preferences contain information on upcoming events, links to registration pages, and other relevant information. To be a participant, individuals must register before the event and questions can be submitted in advance. OPP also issues news announcements about upcoming events and sometimes promotes the events to journalists and media outlets.

***Feedback and engagement***

OPP gathers feedback from participants and viewers in the form of a post-event survey to evaluate the effectiveness and make improvements for future events. The surveys typically include questions about the quality of the content, the effectiveness of the delivery, and overall satisfaction with the event. OPP also uses social media to look at comments from participants and viewers about the event. Follow-up interviews with participants and viewers may be conducted to gain more detailed insights into their experiences and opinions about the events. The feedback can help to ensure that the events are meeting the needs of the audience and providing valuable insights and perspectives on scientific research in Antarctica. In the analysis of the “All Things Penguins event,” survey results were overwhelmingly positive and indicated that respondents found the event to be excellent. The surveys can also be used to gather information on what respondents want to see at future events. Some of the topics that respondents were interested in for future events included “whales,” “living in the region,” and “climate change.”

***Conclusions***

Over 3,000 people across the globe learned about research activities in Antarctica increasing the public’s awareness and understanding of Antarctic research and inspiring the next generation of scientists and researchers. As a result, “Live from Antarctica” events can serve as a model for other countries looking to increase their outreach and education efforts. They are relatively easy to facilitate and a well-planned and executed event can provide a valuable learning experience for participants and help to promote scientific literacy and engagement to a wide group of people across the globe. Although planning events that take place in remote locations in Antarctica can be difficult due to limited or unreliable internet connectivity, the benefits of these events in terms of promoting awareness and understanding of Antarctic research and inspiring future scientists and researchers make them well worth the effort. By promoting collaboration between scientists and educators, using technology to reach a wider audience, focusing on real-world issues, promoting inclusivity and diversity, and incorporating evaluation and feedback mechanisms, countries can use events like “Live from Antarctica” to boost engagement and education outcomes of other National Antarctic programs.