

Student Position Statement

Student Scholarship Winners: Ruth Adler; Nicholas L. Balascio; Elena P. Bondareva; Laura S. Brosius; Xuehua (Sherry) Cui; Waliul Hasanat; Timo Kumpula; Jordan Lewis; Elizabeth A. Nelson; Ethan H. Roth; and Qin Yu

Winners of the 2008 Arctic Forum student scholarships were requested to submit a short summary of their views on the final panel discussion question (see page 24): *What are the three highest priority actions—scientific, educational, management, or political—we should take to improve our ability to respond to these observed and predicted changes?*

Students raised several issues, which fall into the following themes: education, traditional ecological knowledge, and communication; policy, management, and international collaboration; and environmental impacts, science, and research. The following is a compilation of their ideas, comments, and concerns.

Education, Traditional Ecological Knowledge, and Communication

With the recent public concern about climate change and global warming, the public has begun to place heavy demands on the science community for solutions. Because the public ultimately influences policy makers, it is vital that they be able to make informed decisions and think critically about the science presented. Therefore, the first priority action should be centered on education, traditional ecological knowledge, and communication.

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Since change is occurring in the Arctic more rapidly than anywhere else on Earth, it is important that other regions are aware of the Arctic's role as "a canary in the coal mine." The message the science community must send is that although change may not be occurring at the same rate everywhere on Earth, it is a reality and an issue that requires immediate action. To do this, the science community must tap into the traditional, local knowledge held by village elders. Reindeer herders, hunters, fishers, whalers, and other locals have detailed information about changes in their environment that can supplement scientific knowledge. Without this information, the science community cannot hope to paint a whole picture to the public at large. Without this whole picture, information is incomplete and good decisions cannot be made. It is therefore crucial to foster the transfer of traditional ecological knowledge to the science community and to promote communication between the science community and the public at large.

The science community must find a way of effectively communicating their science outside of academia. Communication and education can be encouraged by recruiting, engaging, and enlisting people who are concerned about arctic climate change and directing their enthusiasm and energy towards the education of outside organizations and individuals. Youth initiatives, in particular, are an invaluable way to generate new faces as well as new ideas for

old causes. The science community must focus on educating not only their students and colleagues, but the general public, as well.

Policy, Management, and International Collaboration

It is becoming increasingly apparent that strategic planning and action must be taken to better understand and respond to global climate change. Many problems have been identified, but few solutions have been developed. These solutions must be made at the global level. Therefore, in addition to local and national policy and management, international collaborations must be developed. Extreme climate change in the Arctic and Antarctica demand a higher level of strategic planning and collaboration than ever before.

It is imperative that management structure be achieved at the community, university, and government levels and that the science community consider its influence of these various levels of policy and management. Often, current policies and management techniques are developed far from the local site, with little consideration as to how they actually affect the local communities they involve. The science community has an obligation to the people who live and subsist off the lands they study; it is not enough to report on

evidence of a changing landscape. There are socioeconomic implications as well. The science community is obligated to help provide arctic peoples with the resources, knowledge, and evidence necessary to defend their land while maintaining healthy ecosystems necessary for subsistence. The community must work to support policy and management techniques that foster healthy ecosystems—from the microbes we study to the people who live on the land. Proper management can also be used to help bridge international, disciplinary, and political divides. Scientific investigation of arctic change, its implications, and solutions must become a cooperative effort between those nations that are directly affected by arctic change. This necessitates expansion of international collaborations and the establishment of a joint funding body that will oversee solely collaborative projects. Researchers from institutions outside the Arctic should also be encouraged to participate in such collaborative investigations, thus lending a different perspective and also acting as liaisons of arctic science to other states and nations.

Environmental Impacts, Interdisciplinary Science, and Research

We as a society need to consider the political and socioeconomic implications of resource extraction in an ice-free Arctic Ocean. Offshore drilling will have a substantial impact on the North Slope communities and the ma-

rine mammals they subsist from. It is up to the science community to continue its research and interdisciplinary science to provide evidence and solutions to climate change. Research needs to focus on environmental and social impacts of climate change. Key environmental issues include:

- Potential environmental disaster from petroleum exploration in the Barents, Kara, and Beaufort Seas.
- Potential environmental disasters from petroleum exploration on land in Russia and Alaska.
- Indigenous peoples' (Inuit, Saami, Nenets) rights. Who owns the land? How will compensation be made? What will happen after the resources are used?

Researchers from all areas of the circumpolar regions should aim to establish stronger networks and collaborations to eliminate overlap and expedite progress.

To really move forward in understanding and mitigating climate change, we must understand the system as a whole. For this reason, interdisciplinary science is crucial, and the science community must work to foster interdisciplinary research and modeling. It is unreasonable to separate human activities from the natural system; human activities are interwoven with the natural world, so good modeling strategies that include both natural

science and anthropological regimes must be incorporated into the process. This will enhance understanding from different aspects and will drive international and interdisciplinary cooperation.

While the idea of exploration is always an enthralling one, in the 21st century scientists can no longer be doing science just for the sake of doing it. We have to ask ourselves what is the social context in which our work fits? Who does it stand to benefit? We should be forming as many collaborations as possible, not only with scientists but also real people. The scientific frontier requires us to be interdisciplinary and approach problems differently than in the past.

Conclusion

Taken together, these priorities will continue to strengthen the progress in counteracting climate change and helping those most affected by it. These actions will begin to help those in need of assistance now and in the future, as environmental regions around the world, respond differently. The science community is tasked with some serious work. To achieve goals and mitigate problems caused by climate change, we must think seriously about the priorities we set. These must include: education, traditional ecological knowledge and communication; policy, management, and international collaboration; and, importantly, environmental impacts and continued scientific research, especially of an interdisciplinary fashion. The Arctic is at the forefront of climate change and will continue to serve as the example of what can, and will, happen to the environment as a result of environmental change.