

White House Arctic Science Ministerial (WHASM) Side-Event: Arctic Science, Education and Citizen Empowerment

By Kim Morris, Member of the CSPC Content Generation and Editorial Committee

On September 27, the Arctic Research Consortium of the United States ([ARCUS](#)), [Arctic Portal](#), [Woods Hole Research Center](#), Arctic 21, [the PoLAR Partnership](#), and the [EDU-ARCTIC](#) consortium hosted an expert forum to discuss how Arctic research can be used to empower Northerners who are living on the front lines of climate change, as well as ways to encourage young people to pursue careers in the ever increasingly important fields of science, technology, engineering and mathematics (STEM).

Over 150 people attended the meeting in person or via the internet. Event attendees included members of the delegations of the Arctic Council member states and Arctic Council observer states who are attending the White House Arctic Science Ministerial, as well as organizations involved in Arctic research, education, outreach and communication.

The ARCUS staff tweeted during the event ([#ArcticSciEdu](#)). A recording of the panel sessions is available [online](#).

Here is CSPC's summary of the morning session comprised of introductory remarks and two panel discussions:

[Mark Brzezinski](#), Executive Director of the U.S. Arctic Executive Steering Committee, gave a short address that gave an overview of changes in the Arctic and a context for the ministerial.

- The 8 Arctic nations + 14 other nations + 5 indigenous organizations will attend the WHASM
- Changes in the Arctic have been underestimated and baseline conditions are quickly disappearing
- Profound changes in the Arctic and elsewhere are creating a new reality.
- An enhanced collective, cooperative international response is required to meet this challenge
- Science, technology, engineering and mathematics (STEM) will be essential to meet the challenge
- One of the WHASM outcomes will be a STEM Summit
- Traditional and local knowledge, point of views and cultural needs are an indispensable component of the solutions
- 40+ indigenous leaders will meet with Dr. John Holdren, Assistant to the President for Science and Technology and Director of the White House Office of Science and Technology Policy, on the afternoon of September 27, for a consultation

Panel 1: Discussion on using Arctic science as a vehicle for education in STEM

Moderator: [Max Holmes](#), Senior Scientist, Woods Hole Research Center

Panelists:

[John Wood](#), Polar TREC teacher, Talbert Middle School, Huntington Beach, CA

- Students need to understand the changes in the Arctic and elsewhere
- Teachers benefit from real world science experience (Polar TREC) and bring enhanced skills into the classroom
- Researchers need to make connections with students (classroom visits or through Skype) to explain the science and 'humanized' science and scientists
- Students benefit from doing their own field research – it allows them to ask their own questions, learn about scientific processes and turn their attention to their local environment

- Recommendation for [Polar Educators International](#)

[Nivi Olsen](#), Greenlandic Minister of Education, Culture, Research and Church

- She is from northern Greenland and has experienced the effects of climate change personally
- Native Greenlanders have a great deal of knowledge and experience to share with scientists and the world
- Scientists come to Greenland to do research but don't necessarily share their knowledge with the locals – they need to interact more, possibly through TV and radio
- Most important resource any nation has is its people and it needs to be built up with education - science is an important factor in that education
- Greenland needs international cooperation to leverage its knowledge, people and limited resources
- Referenced the [Greenland/University of Dartmouth collaboration](#)

[Halldór Jóhannsson](#), Arctic Portal Director: The EDU-ARCTIC program

- Need qualified people to interpret the vast amount of data being generated
- Education is the missing link between the data and understanding
- 13-20 year olds need to be encouraged to become involved with STEM to increase the pool of knowledge leaders
- Use the internet for real time education and collaboration with online lessons, teacher workshops and training
- Referenced [Polarpedia](#)

[Fran Ulmer](#), Chair, US Arctic Research Commission (USARC)

- John Holdren with co-chair the STEM group at the WHASM – the panel will hear from an expert and then the ministers will ask questions/make suggestions and comments on WHASM goals
- Cited the Alaska Native Science and Engineering Program ([ANSEP](#)) at the University of Alaska as a successful program for promoting STEM in indigenous youth
- This program has been successfully modeled in other US states where there are large native populations
- STEM Summit is one of the anticipated outcomes of the WHASM
- USARC is producing a compendium of most important Arctic projects submitted by the 25 participating nations (will be available at <https://www.arctic.gov/>)

Discussion:

- STEM needs a greater buy-in by scientists in order to be successful
- The National Science Foundation could push 'Broader Impacts' further to promote scientist/student interactions
- Better communication between scientists and students (online and classroom visits) needed
- STEM education is very important to business – need to find more ways to get business to support STEM education (scholarships, cooperative experiences, etc.)

Panel 2: Discussion on empowering Arctic communities through research and education

Moderator: [Suzanne Goldenberg](#), US Environment Correspondent for the Guardian

Panelists:

[Okalik Egeesiak](#), Chair, Inuit Circumpolar Council

- Despite many countries having Arctic policy and international agreements, all is not well in the Arctic
- Inuit still have the lowest graduation rate in Canada
- Difficult to know what 'empowerment' looks like – Arctic not homogeneous
- Need to build capacity for participation and create equity for 're-empowerment'
- Arctic people must be future creators and users of knowledge and process must be framed within the Inuit culture for sustainability
- This will require reimagining the education system and long-term programs

[Gunn-Britt Redder](#), Head of Arctic and Environment Unit, Sámi Council

- Before the 1980's, Sami lived more-or-less separately pursuing subsistent way of life
- After Norway's oil boom, Sami became politically active protesting to protect their homeland
- This led to the Sami culture being recognized and the establishment of the [Sami University of Applied Sciences](#) (1989)
- Now Sami youth expect to learn about their traditional culture as part of their education and want to become indigenous scientists
- Education is a way for them to stay in their communities

[Tara Sweeney](#), Chair, Arctic Economic Council

- Resource development is a fact of life in the Arctic
- Renewable energy needs to be developed to improve quality of life and create jobs
- Connectivity and opportunity are essential – need more roads and better broadband communications (these are better developed in Europe than in AK, Canada and Russia)
- This expanded and enhanced technology and infrastructure could re-empower Arctic residence

[Igor Krupnik](#), Curator of the Arctic Center at the Smithsonian National Museum of Natural History

- Scientists are accepting the climate change observations made by Arctic people
- The International Polar Year was a milestone in this acceptance – several IPY projects were designed and run by indigenous people
- Respect for every person's knowledge and ability to generate it
- Science of climate change is about scale (large-scale models have to be scaled down to be appropriate for local needs) and local/indigenous knowledge is necessary for that to be successful
- There is a new philosophy of interpreting data from a cultural perspective – particularly when formulating mitigation efforts
- A 'knowledge for home' versus a 'knowledge for science' only: a way to make Arctic life safe and sustainable
- Incorporate the notions ethical responsibility and stewardship

Discussion:

- Governments need to prove the Arctic is important by making long-term investments

- Connectivity is important not just for the Arctic but the rest of the country
- Important to respect how the northerners want to interact with the rest of the world (one-size does not fit all, local solutions are imperative)
- Northerners are resilient – change is the only constant and they want to be part of the solution not victims
- Want to remain themselves not become assimilated into the broader national culture (differences recognized and respected)
- Need to look at real economic development for indigenous people not just ‘subsistence living’ issues
- Indigenous knowledge is unique and must be seen as complementary to ‘western’ science
- Indigenous people have an holistic outlook so STEM is only part of their experiential concept
- Need to re-imagine the Arctic – the landscape is the icon of the Arctic, not the polar bear