ARCTIC PEOPLE, CHANGING PLANET

Citizens and Partners at the Top of the World

Igor Krupnik, Smithsonian Institution
“The State and Fate of the Arctic”
Wilson Center, March 19, 2014

Inupiat hunters on ice floe off Wales, Alaska.
Photo: Winton Weyapuk, Sr., April 2007
1990s: The First Call

http://globalwarming.markey.house.gov/impactzones/alaska.html

Assessing the Consequences of Climate Change for
Alaska and the Bering Sea Region

Proceedings of a Workshop

University of Alaska Fairbanks
29-30 October 1996

THE IMPACTS OF GLOBAL CLIMATE CHANGE
IN THE BERING SEA REGION

AN ASSESSMENT CONDUCTED BY THE
INTERNATIONAL ARCTIC SCIENCE COMMITTEE UNDER ITS
BERING SEA IMPACTS STUDY (BEISS)

RESULTS OF A WORKSHOP
Arctic Science Conference
American Association for the Advancement of Science

Girdwood, Alaska 18-21 September 1996

BEISS Project Office
University of Alaska Fairbanks

Published in 1997 by
BEISS Project Office

The Potential Consequences of Climate Variability and Change

ALASKA

A Report of the Alaska Regional Assessment Group
For the U.S. Global Change Research Program
Published by the Center for Global Change and Arctic System Research
University of Alaska Fairbanks
Fairbanks, Alaska 99775-7740

December 1990

PREPARING FOR A CHANGING CLIMATE

We would like to acknowledge the contributions made by the members of the International Arctic Science Committee:

University of Alaska Fairbanks
U.S. Climate Change Science Program

Photos: Regions and activities that could be affected by climate change:
a) Akutan, Alaska, showing a traditional lifestyle. (Photo by Tom Schult)
b) Coastal area of western Alaska. (Photo by Anne Walker)
c) Alaska Native village on the Bering Sea coast. (Photo by Anne Walker)
Climate Change Impacts on Northern Communities:

- Coastal erosion
- Thawing permafrost
- Warming weather
- Advance in shrub vegetation
- Increase in tundra and forest fires
- Change in species distribution
- Reduced access to subsistence resources
By 2000, the Arctic was viewed as the ‘Canary’ of the Global Change processes. These images from the Arctic became the familiar symbols of our warming planet, as were also the famous ‘hockey-stick’ graph and polar bears on shrinking ice floes.
The role of the Arctic as the harbinger of climate change and new threats to its residents were amply documented in the *Arctic Climate Impact Assessment* report (2004-2005).
The first study of Arctic change using local indigenous people’s knowledge was the Canadian ‘Traditional Ecological Knowledge and Management Systems’ (TEKMS) of 1992–1994 and its publication, *Voices from the Bay* (McDonald et al. 1997)
Already by the year 2000, polar residents were reporting a sustained and consistent warming trend in their home environments, while many climate scientists were still ‘sitting on the fence’.

Photo: G. Carleton Ray
Some recent publications on indigenous peoples’ knowledge and monitoring of Arctic climate change
Why Do We Need Indigenous Knowledge?

Frozen sea off the town of Savoonga, St. Lawrence Island, Alaska. Photo: Igor Krupnik, 2000
Many Eyes, Experienced Monitors

A small northern community can easily beat a good university by the number of experienced people it puts on weather, ice and wildlife watch 24/7, year after year.

Gambell, Alaska, winter 2008. Photo: Igor Krupnik
High Resolution at Local Scale

The use of many indigenous terms and indicators allows hunters document ice conditions with the high level of precision.

Photo and captions by Winton Weyapuk, Jr.(to the right)
Team Work and Data Sharing

Indigenous monitors in their daily observations share data and routinely perform what scientists practice only while working in teams.

Photo: G. Carleton Ray
Sample map documenting GPS-based observations by one indigenous monitor, April-May 2009
http://sikuatlas.ca/climate_river_igliniit.html

Top right: David Iqaqrialu from Clyde River, Nunavut logs ice and snow information with his portable GPS-based system
http://ittaq.ca/projects/research-projects/research-current-projects/igliniit-trails-project

Bottom right: Eric Joamie and Gita Laidler work with Pangnirtung elders and hunters, 2005 (Pulsifer et al. 2010)
Melting Arctic:
Fellow Citizens at Risk

Barrow, Alaska, the U.S. northernmost community of 4500, faces the wrath of the warming ocean and increased threat of storm-triggered floods and coastal erosion.
Over the past 50 years many Arctic rural communities have been transformed into modern towns. The costs of new construction, local services, and infrastructure maintenance have increased exponentially. More Arctic residents are now at risk and at a higher cost...

Left: Alaskan Inupiat village of Kivalina in 1964 (Photo by Ernest S. Burch); modern town of Kivalina, 2007 (Photo by James Magdanz, ADFG)
178 Alaskan Communities at Risk

2009 Army Corps of Engineers’ Study reports that 178 rural Alaskan communities are facing erosion problems, due to heavy storms, permafrost thawing, and seasonal floods.

http://www.climatechange.alaska.gov/docs/iaw_USACE_erosion_rpt.pdf

Photo: Lars Krutak

Photo: www.3rnet.org
26 Native Alaskan communities are declared as ‘high-risk’; some are literally sand-bagged year-round.

12 communities have already decided to relocate to higher ground at enormous estimated cost: $95-125M for Kivalina (population 374), $80-130M for Newtok (population 354), $100-200M for Shishmaref (population 563), about $2M per household.


http://www.theatlantic.com/magazine/
Arctic Warming: It’s Everybody’s Bell!

Average Monthly Arctic Sea Ice Extent
September 1979 - 2012

2012 sea ice minimum
http://svs.gsfc.nasa.gov/vis/a000000/a003900/a003998/index.html
Thank you!