



CELEBRATING THE PAST – PLANNING THE FUTURE
ENHANCING ARCTIC SCIENCE AND ENGINEERING
WORKSHOP AGENDA
August 1-5, 2022, Utqiagvik, Alaska

Assessment of Research Past & Potential *The Cryosphere*



Dr. Matthew Sturm



What is the cryosphere?

- *Sea ice*
- *Lake and River ice*
- *Glaciers*
- *Ice Sheets*
- *Permafrost*
- *Snow*



USCGC Northwind



QM3 Matthew Sturm, 1973

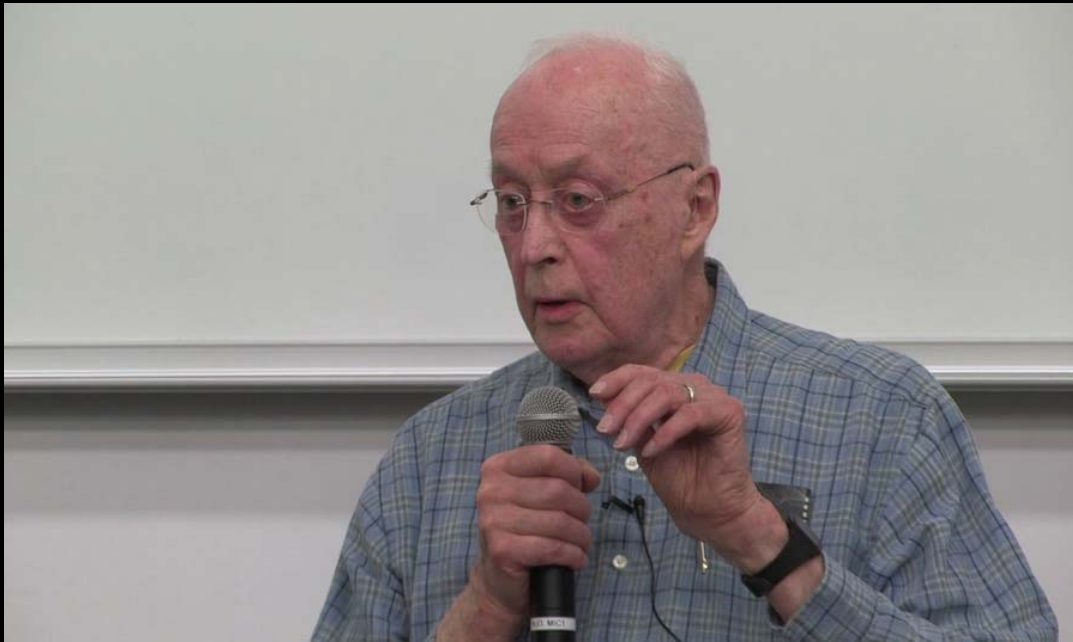
Snow and Ice Research Begun at and Continued from NARL

Carl S. Benson¹

ABSTRACT: On Alaska's Arctic Slope snow covers the surface for about 3/4 of every year, and has a profound influence on the physical and biological characteristics of the region. Melting of this snow in the spring is the most significant hydrological event of the year; it is responsible for half of the total stream runoff. The quantity of snowfall has been reassessed and found to be about three times more than measured by standard, unshielded precipitation gages. The structure of the snow pack has been measured and a profound difference exists between the snow pack on the tundra and the snow pack on the tundra. Knowledge



Grad. student Matthew
Sturm, circa 1980



Dr. Carl Benson, North Slope- 1951: NARL
1961

Spring 1924



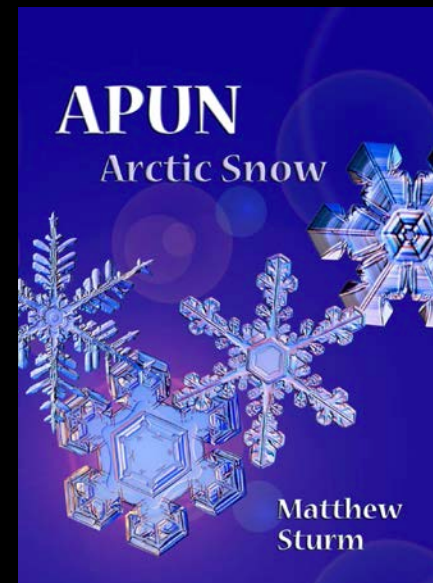
**Knud Rasmussen (third from left) and Party when they stopped in Barrow 1924.
Note Greenlandic parka styles.**

From the Eben Hopson Memorial Archives in Uqjaagvik



*Arnold Brower Sr. takes me to snow school, 2008
(also getting schooled were Craig George and Lewis Brower)*

Aniu	packed snow (ILC); any snow (Kotzebue). Interchangeable with apun, as in “what’s that white stuff there?” (TV).
Aniuvak	snow bank or snow patch (ILC). A gully filled with snow, or a deep area of snow, maybe useful as cache for caribou meat (TV). A big drift in the lee of a cabin or large obstruction (ABS).
Aniuvuruk	a drift with a sharp side downwind, smoother on the upwind side, possible a barchan (ABS).
Aniuvauraq	when soft snow is eroded and drifted into distinctive forms that can be come navigational landmarks (ABS).
Anigaruk(?)	a cornice form (ABS via notes from CG).
Akillukkak (aqilluqqaq) this	soft snow (ILC); fresh snow (ABS) that is easy to travel on. Also soft snow behind a drift. In fact, TV says must refer to soft snow associated with a drift. Soft snow, deep for walking (ILC).
Apun	snow cover; snow (generic) (ILC).
Aluktinniq	windswept bare area on lake ice (source not clear).
Avoorik (avorik)	a whaleback drift (TV).





USGS Geologists J. B. Mertie and Fitzgerald with dog team. Colville District, Northern Alaska region, Alaska. 1924. Pet-4 (NPRA) 1st Reconnaissance



Miscellaneous cargo on beach during Barex 1947. U.S. Geological Survey Professional Paper 301, J.C. Reed









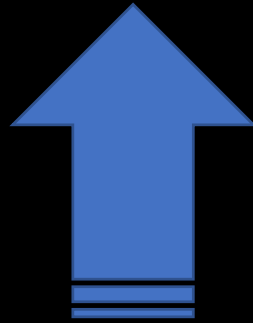








Technological Change/Societal Stresses



Climate/Environmental Change/Societal Stresses



Technological Change/Societal Stresses



CRYOSPHERE

Climate/Environmental Change/Societal Stresses

