

NOAA SEARCH-ELEMENT6: Progress Report --- March 2004

- A. Title: Arctic Change Detection
- B. PI: James Overland, Co-PI: Nancy Soreide
- C. Collaborators: Florence Fetterer, Hal Mofjeld
- D. Purpose/Objective

A major SEARCH task, as outlined in the Science Plan, is to obtain a high knowledge return from current and retrospective observations to understand and anticipate ongoing changes in the Arctic. An associated task is to supply and update this information to interdisciplinary researchers, administrators and non-specialists.

E. Accomplishments to date

We have begun to provide a view of previous and ongoing Arctic change through a website and presentations at international meetings, backed by peer review in scientific journals:

- i. One to three presentations were made at the following conferences: AMS Polar Conference May 2003, Nansen Center August 2003, ACSYS November 2003, AMS Climate Conference January 2004, AAAS February 2004, U Washington March 2004.
- ii. We support the NOAA Arctic Theme page, which is now normally #2 on the Google search priority. We have completed the Unaami web site that plots 86 Arctic climate variables.
- iii. Four papers are published or in press:

Overland, J.E., M.C. Spillane and N.N. Soreide (2004): Integrated analysis of physical and biological pan-Arctic change. *Climatic Change*, April 2004. This publication documents multiple measures of Arctic Change over the last 35 years.

Overland, J.E., M.C. Spillane, D.B. Percival, M. Wang and H.O. Mofjeld (2004): Seasonal and regional variations of pan-Arctic surface air temperature over the instrumental record. *J. Climate* (in press). This paper documents Arctic Change temperatures over the last 100 years and notes that the last 15 years are unique in the instrumental record.

Wang, M. and J.E. Overland (2004): Detecting Arctic climate change using Köppen climate classification. *Climatic Change* (in press). This paper notes a 20% reduction in tundra area since 1980.

Wood, K., and J.E. Overland (2003): Accounts from 19th century Canadian

Arctic explorers' logs reflect present climate conditions. *Eos*, **84**(40), 410, 412.

F. Plans for coming year

This is the year we implement a protocol for Arctic Change Detection. This website will be a follow-up to the ACIA report, updating the status of the Arctic in near real time. It will be a NOAA contribution in support of the Arctic Council. We have given thought to the format and will pose several questions and provide the answers based on a subset of near-real-time Arctic data, including sea ice, land and biological components. There will be a highlight section of recent major events and access to further data sets. This Change Detection element will be integrated into the NOAA Arctic Theme page. We will contribute to the Smithsonian Arctic Exhibit. In our retrospective work we will investigate proxies for Arctic climate back to 1700.

G. Expenditures (FY2003)

Salaries	N. Soreide (4pp)	\$20,470
	H. Mofjeld (3pp)	15,730
	M. Wang (10 mon)	62,012
	M. Spillane (6 mon)	33,421
	Salary Sub	<u>(\$131,633)</u>
Computer ADP		\$6,000
Overhead on salaries		49,181
	TOTAL	<u>\$186,814</u>

H. Budget for coming year

Salaries w/ Overland	Wood	\$23,000
	Mofjeld (1 mon)	18,000
	Soreide (2 mon)	36,210
	Spillane (6 mon)	48,274
	Wang (7 mon)	62,500
Computer ADP		\$10,000
1% tax		2,000
	TOTAL	<u>\$200,000</u>