

To: Participants in the June 3 2003 Teleconference Call

Subject: NOAA Atmospheric Observations in Canada – Assessment of common interests and collaboration opportunities

I would like to thank everyone who participated in our very productive conference call last week about a possible U.S – Canadian collaboration to conduct long-term atmospheric observations in northeast Canada. The following is intended to be a summary of our conversation. Please feel free to add comments , additions, corrections as may be appropriate. It can be safely assumed that the teleconference was just the beginning of what promises to be a long and fruitful collaboration on Arctic atmospheric research.

Date: June 3, 2003

Call arranged by John Calder of the NOAA Arctic Research Office

Participants:

Keith Puckett – Air Quality (Chief, Air Quality Processes)
Dave Hudak – Cloud Physics (CANDAC, CLDSAT)
Jim Drummond – Clouds, Radiation (PI of CANDAC)
Ken MacDonald – Met. Service (Provides Contact with Alert/Canadian Military)
Maris Lulis – Green house gases (Chief, Measurements and Analysis Division)
Bruce McArthur – Canadian BSRN (Air Quality Research)
Richard Leitch – Aerosols (Air Quality Research)

John Calder – NOAA/Arctic Research Office
Taneil Uttal – Cloud Physics (NOAA/Environmental Technology Laboratory)
Bob Stone – Research Scientist (NOAA/CMDL/CIRES)
Pat Sheridan – Aerosols (NOAA/Climate Modeling and Diagnostics Laboratory)
Chris Fairall – Surface Fluxes (NOAA/Environmental Technology Laboratory)
Ells Dutton – BSRN (NOAA/Climate Modeling and Diagnostics Laboratory)
Russ Schnell – Physical Science Administrator (NOAA/CMDL)

Background:

The National Oceanic and Atmospheric Administration (NOAA) has secured funding to establish long-term atmospheric observations in the Arctic with a focus instruments that measure key properties of clouds, atmospheric radiation and aerosols. Because of an interest in monitoring long-term trends related to the Arctic Oscillation, northeast Canada and Russia have been chosen as desirable sites. Due to limited resources, this program will be highly dependent on collaborations with an already existing site, and utilization (compensated) of existing personnel, housing, power, transportation and communication infrastructures. A site where similar measurements are in operation and/or desired, and a site which provides long-term historical records is also an important consideration. The measurements made by the U.S. NOAA/SEACH atmospheric observatory will be openly accessible to all interested researchers U.S,

Canadian and others. The atmospheric observatory is a part of the larger U.S. interagency SEARCH (Studies of Environmental Arctic Change) program.

(<http://psc.apl.washington.edu/search/index.html>). A 7-page planning document has provided to participants. That document provides a list of instruments planned for deployment.

Discussion points:

Alert, Canada presently seems to be the mostly likely site, although Eureka is also a strong candidate if the CANDAC (Canadian Network for the Detection of Atmospheric Change) program is successful. MSC (Meteorological Service Canada) indicated that it has no particular bias with regards to Alert vs Eureka. Some of the Alert vs Eureka issues that were raised included:

Alert provides extensive chemistry measurements and has long historical records.

Eureka is not a military base and may have less restrictions.

Eureka is a more favorable site with respect to CLDSAT overpasses, however, the two sites would be roughly equivalent with regard to the larger swath satellite sensors on AQUA and TERRA.

CANDAC and the NOAA/SEARCH Observatory program has a significantly overlapping list of desired instruments, therefore, coordination may greatly leverage the two programs (for instance reducing the need for both programs to have duplicate and expensive items such as cloud radars)

The lack of emphasis on chemistry measurements in the NOAA/SEARCH Observatory program is largely due to the extensive chemistry measurements already made at Alert.

Eureka has a astro-laboratory which was designed specifically with lidar and radiometric measurements.

It is possible that co-location of all instruments is not necessary, and perhaps having two BSRN (Baseline Surface Radiation Network) sites would be sufficient to link the measurements made at the two sites.

Surface flux measurements are best made in a location that are not dominated by local flows (for instance katabatic winds).

Eureka has more clear sky then Alert which is good for aerosol measurements and radiation studies. The Eureka station has historical lidar records.

The Eureka astro-laboratory and weather station are separated by 15 km.

Military transports provide transportation to Alert at a fraction of commercial cost. Travel to Eureka involves a commercial flight to Resolute, and a chartered flight (\$1500/person each way) from Resolute to Eureka.

Alert provides important proximity to the Arctic Ocean and sea ice studies. This may be important to the NOAA/SEARCH program because of coordination with the Arctic Ocean Buoy program.

Alert is a GAW (Global Atmosphere Watch) Site

Conclusions and Action Items:

It is clear that there are a number of overlapping interests between the CANDAC program, the Canadian CLDSAT program, Environment Canada and the U.S. SEARCH Atmospheric Observatory program. It is also clear that a careful evaluation of the Alert and Eureka sites is necessary taking into account logistics, climatology, science and collaborative opportunities. To further pursue this opportunity a 5-person committee was established:

Taneil Uttal (NOAA/SEARCH Atmospheric Observatory)
Robert Stone (NOAA/SEARCH Atmospheric Observatory)
Bruce MacArthur (Meteorological Service Canada)
Maris Lulis (Meteorological Service Canada)
Jim Drummond (CANDAC – University of Toronto)

This committee will be tasked with further identification of relevant and mutual science/environmental monitoring goals. With these goals in mind, a more complete evaluation of the two sites will be conducted. A meeting of the committee is planned in Toronto for late August, although, the process of site evaluation can begin immediately through email and phone contacts.

Ideally, the Toronto meeting would be combined with a site visit to Alert, and possibly to Eureka if it can be arranged.