

**OPERATIONAL USE OF POLAR ORBITTING SATELLITE IMAGERY  
IN THE PRAIRIE AVIATION AND ARCTIC WEATHER CENTRE**

Steve Ricketts\* and Edward Hudson  
*Meteorological Service of Canada, Edmonton, Alberta*

**1. INTRODUCTION**

AVHRR (Advanced very high resolution radiometer) imagery is a critical data source for the meteorologists who do the aviation, public and marine forecasts for Canada's north. Surface weather stations are limited and many are bare-bone limited capacity automatics. Many of the manned stations operate during the day only. There are no weather radars nor is there an array of lightning sensors "north of 60N". The acquisition and processing - and sharing of raw data and processed imagery internally and externally - of AVHRR imagery from an in-house satellite receiver in Edmonton and a shared facility in Resolute and the mapping and enhancement of imagery for operational use by the meteorologists will be shown on the poster.

**2. NEW DATA FOR THE HIGH ARCTIC**

From March until early May there is mix of adventurers, tourists and scientists who head to the North Pole. Since the mid 1970's, the forecasters of the Prairie Aviation and Arctic Weather Centre have had an AVHRR acquisition and processing system situated in Edmonton and have been able to see the pole only about once a day as Edmonton is at 53N and for real time data one must be able to "see" the satellite as it seeing the earth. Forecasters longed for a station further north to capitalize on the orbits of the AVHRR satellite. Such a station not only gets a pass or two before Edmonton can get one, but has coverage from the High Arctic to the pole and a little beyond through the day.

Forecasters doing aviation, marine, and public forecasts for the High Arctic now have access to a new receiver in Resolute at 75N. Figure 1 illustrates how much "more" Resolute can see by comparing the pass coverage from both Edmonton and Resolute. Figure 2 compares the "first for the day" images from Edmonton and Resolute. Figure 3 shows how well the Resolute facility sees the Arctic Basin and Canada's north. The Resolute facility, installed for "science" by Institute Maurice

Lamontagne, Fisheries and Oceans Canada, in a Meteorological Service of Canada building has become a shared facility with a feed to a Meteorological Service of Canada processor. A cost-effective high-speed data link to the south is being sought but for now, regular phone lines are used to get imagery "south" to Edmonton and beyond. In Edmonton, the Resolute imagery is re-mapped and enhanced. Both Edmonton and Resolute AVHRR images can be looped. Forecasters are able to use the Resolute imagery, for example, as an underlay when drawing the cloud regime over the High Arctic.

**3. CONCLUSION**

The AVHRR imagery acquired from Resolute allows forecasters to see and monitor cloud systems over and approaching the high Arctic from the north. This has led to improved forecasts for the high Arctic including forecasts for flights to the North Pole.

Imagery from both the facility at Resolute and the Meteorological Service of Canada Edmonton facility are shared with the world gratis via a publicly accessible web site, albeit with less detail. The last 6, 12, 24 and in cases up to 50 images can be retrieved and viewed individually or looped. The Resolute imagery is labeled "*Northern Canada and Arctic Ocean*" at URL:

**<http://www.cmc.ec.gc.ca/cmc/htmls/satellite.html>**

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\*Corresponding author address: Steve Ricketts, Manager, Prairie Aviation and Arctic Weather Centre, Twin Atria Bldg - Room 200, 4999 - 98th Avenue, Edmonton, AB, T6B 2X3, Canada  
email: Steve.Ricketts@ec.gc.ca

Figure 1. Sample pass showing what Edmonton at 53N versus what Resolute at 75N “see”

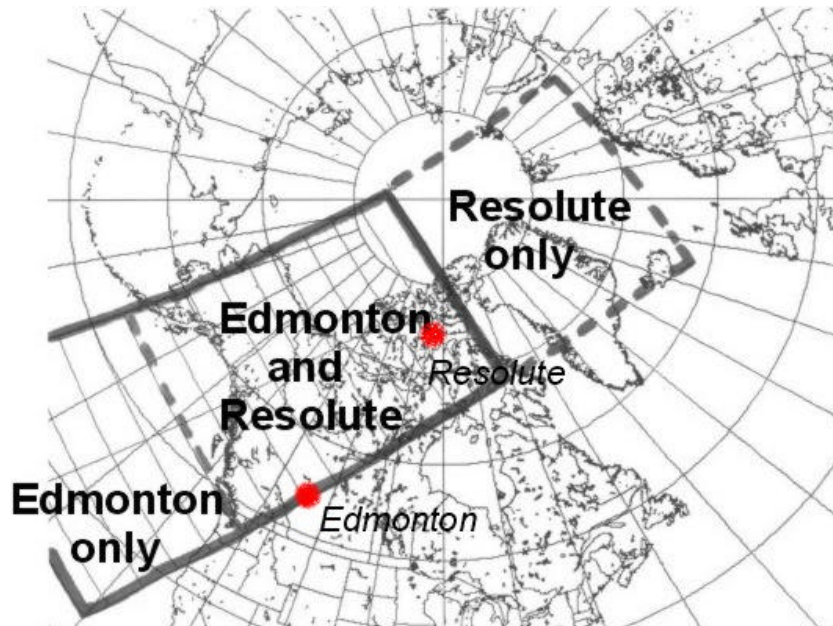


Figure 2. 27 February 2001: First pass of the day from the Edmonton facility (1009 UTC) (LHS) versus the first pass of the day from the Resolute facility (0840 UTC) (RHS)

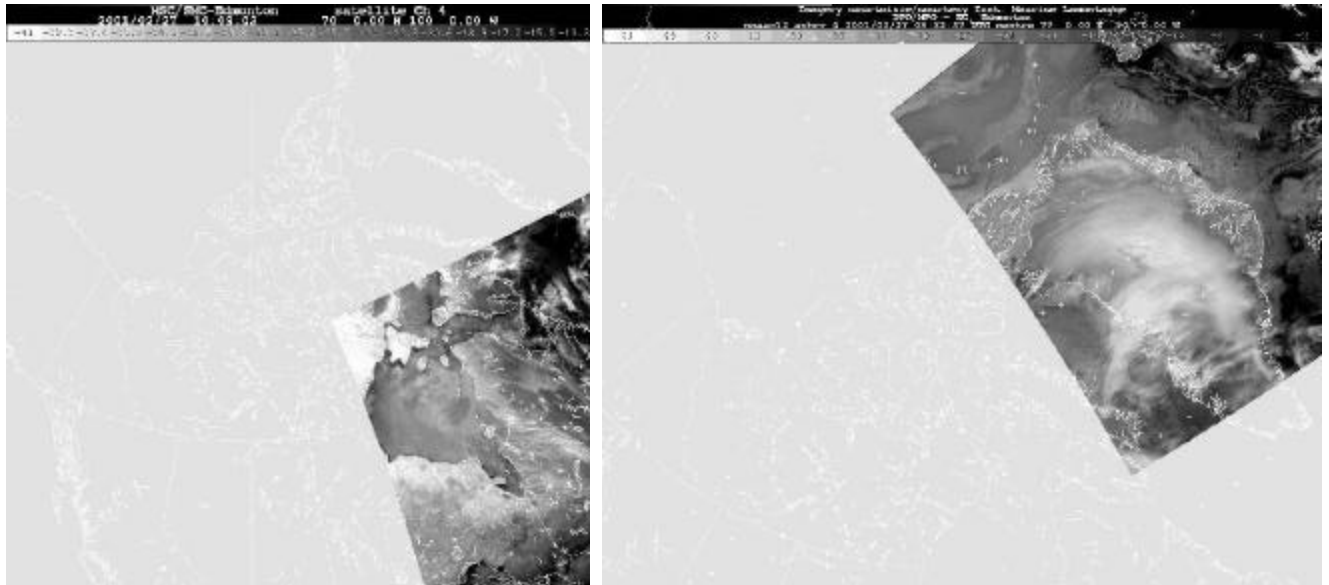


Figure 3. Sample "Resolute" image copied from the web site 27 February.  
<http://www.cmc.ec.gc.ca/cmc/htmls/satellite.html>

