

11.9 FUTURE OF THE DATA HOLDINGS OF THE METEOROLOGICAL SERVICE OF CANADA

Tsoi-Ching Yip* and Michael Minuk
Meteorological Service of Canada, Downsview, Ontario, Canada

Introduction

The Meteorological Service of Canada (MSC) is planning to modernize the National Climate and Water Archive (NAS). The goal is to create a paperless archive so that all the operational atmospheric and water quantity monitoring data will be captured and quality controlled in near real-time and will be made available to users in a timely fashion.

The current MSC NAS contains long-term operational climate, weather, water, marine, lightning and some air quality monitoring data in both electronic digital format and paper format.

There are a number of external factors that prompt MSC to change her way of doing business. Rapid advances in monitoring technology create new large on-line data sets such as Doppler Radar data and satellite data. The capacity of the current NAS cannot handle these data. Computer technology such as telecommunication, data storage, personal computer, and Internet advances at a fast pace. In addition, user expectation changes. People demand quality data in near-real-time fashion.

Issues

Major issues that we are facing now are:

- How to transmit these large data sets from the place of origin to the data depository centre in an affordable manner?
- How to store these data automatically in a cost effective fashion?
- How can we deliver the data to users efficiently?
- What kind of metadata is required so that users can understand the data and use them effectively?
- What is the best method to handle the historical paper records?

Pilot project:

Doppler Radar Data Archive – Prototype Development

MSC is building a Doppler Radar Network (Lapczak, 1999). The network consists of 29 sites. By the end of 2001, twenty sites would be built.

* *Corresponding author address:* Tsoi-Ching Yip, National Archives and Data Management Branch, MSC, 4905 Dufferin Street, Downsview, Ontario, M3H 5T4. email: tsoi.yip@ec.gc.ca

At the moment, archiving of these data is on an ad hoc basis. A project was launched August, 2001 to develop a proof of concept system to archive data from 5 to 6 Ontario and vicinity sites. We are evaluating options of transmitting the data using either the MSC wide area network or the Internet. There are pros and cons of using these options. We are also evaluating various compression algorithms. Options of storing the data into databases or sequential files are being considered. User requirements are being gathered. Managers would like to use the system to track network performance and to help them to do life cycle management of the network. We are in the process of defining hardware and software specification for the prototype. A preliminary list of data and metadata required is provided below:

Radar Data to Archive

- Volume Scans (software needed to read the header to get the radar parameters)
- Capi and Echo top images for quick look only
- Selected hourly intermediate radar data files (numerical products) such as precipitation amounts and other files that are useful for data quality assurance

MetaData to Archive

- Tombstone data (lat, long, ground height, start date, tower height, antenna type, antenna size, radome, polarization, etc.)
 - Data Format version
 - IRIS Manuals from Sigmet (PDF files) and header files
 - Operator/Maintenance Electronic Log
 - IRIS/Radar configuration files
- URP (Unified Radar Processor, software developed by MSC for Radar product generation) Configuration Files*
- Configuration, software, documentation, release dates (archive before and after release events)

Ancillary Access Software

- CAPPI/Echo top quick look software
- Volume Scan header file reader
- QA software - monthly precipitation, annual precipitation

Some preliminary data access requirements are:

- Web interface to download data
- Integrate log display system
- Climate/Case Product processing tools

Metadata will be stored into a database for users to query the Radar Archive.

Beta-testing of the prototype system is scheduled for December 2001.

Conclusion:

MSC is in the process of modernizing her Climate and Water Archives to meet current and future user's needs. One of the projects is to develop a proof of concept prototype Doppler Radar Data Archive System. This system would be completed and be ready for demonstration by the end of December, 2001.

Reference:

Lapczak, S. et al, 1999: The Canadian National Radar Project. Proceedings, the 29th Radar Conference, Montreal, Canada, July 1999, 1-4.