MONTHLY REPORT OF THE CANADIAN METEOROLOGICAL SERVICE

JANUARY 1971

1871

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TRIVIA

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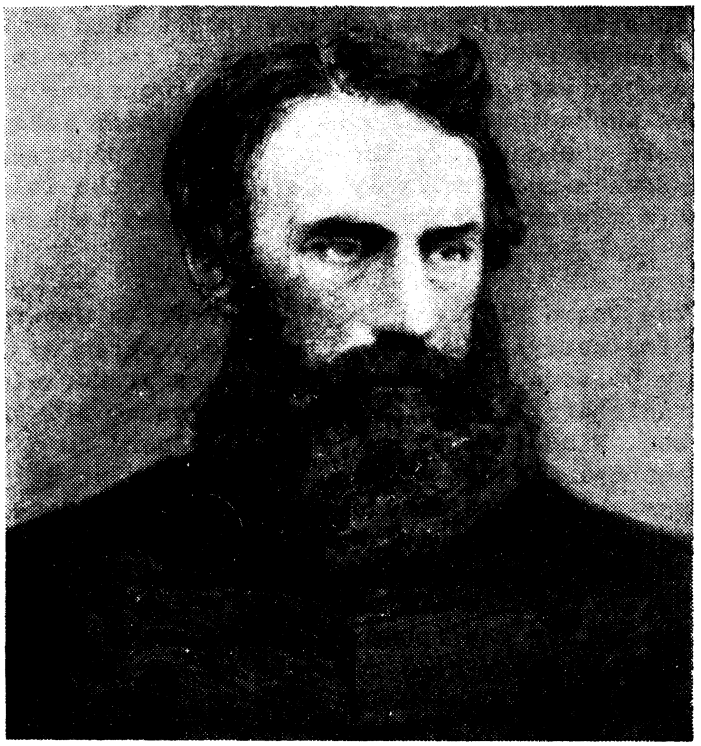
ITEM 1

MAJOR-GENERAL C.J.B. RIDDELL - 1817-1903



The following biography of Major-General C.J.B. Riddell was written by Dr. Andrew Thompson who has kindly agreed to provide us with a continuing series of biographic sketches of the Directors and their impact on the early years of the Service.

Charles James Buchanan Riddell was born on November 17, 1817, the third son of Sir John Buchanan Riddell. He was one year at Eton College and entered the Royal Military Academy at Woolwich in 1832. He commenced his military career at the age of seventeen when he joined the Royal Artillery as 2nd Lieutenant - in December 1834 - and the following year was assigned to Quebec, at that time the largest military base in Canada.

Riddell took advantage of his leave to visit the United States and meet the leading American scientists and political figures including President Jackson and his successor President Van Buren. On his promotion to 1st Lieutenant he returned to England and thence to Jamaica for a short stay, but owing to illness he returned to England.

Great interest in terrestrial magnetism suddenly flared up in Europe in the eighteen thirties among leading physicists. England's share in this international research was spearheaded by the Royal Society of London who planned to undertake a series of two or three years continuous hourly magnetic observations at each of four locations widely separated around the globe where the data would be of special interest in that region of the earth where the magnetic intensity was considered to be greatest - namely Eastern Canada and similarly a station on the island of St. Helena where the earth's magnetic intensity was supposed to have its minimum value.

The Board of Ordnance of the British Government accepted the responsibility for carrying out the magnetic program as it had the necessary supervisory personnel at its Headquarters at Woolwich, England, as well as the considerable staff, buildings and stores at St. Helena and in Canada. Accordingly Lieut. Riddell was chosen by the Board to be superintendent of the proposed Montreal Observatory and J.H. Lefroy at St. Helena. Lieut. Riddell, as superintendent of the proposed Montreal Observatory, was provided with a staff of three non-commissioned officers and two gunners. In order to gain time Riddell sailed by fast ship to New York and arrived in Montreal on September 28, 1839, while his staff did not arrive there until November 29th. In a fortnight it was found that the ground on St. Helens Island at Montreal, where Riddell had been directed to set up the observatory, had considerable magnetic material which made the location ineligible for the observatory. Lieutenant Riddell was a man of action and he immediately requested that the commanding officer at Montreal give instruction to the district officer at Toronto for the erection of the observatory and quarters for himself and staff according to the specifications already prepared for Montreal.

Approval for the shift of location to Toronto was quickly granted, but conditions at Fort York where Lieut. Riddell had been assigned were unsatisfactory. The buildings temporarily proposed for the observatory were on swampy land probably not far from the southwest corner of Bathurst and Front Streets, and in addition they were crowded as a result of extra

soldiers being brought to Toronto on account of the McKenzie uprising in 1838. The crowded conditions in the fort, the accumulation of magnetic material such as guns and military supplies, conflicts with engineers about the size of the observatory and whether its walls should be stone or wood, made contentions inescapable with the military personnel at the Fort. The British Treasury complained to the Board of Ordnance that Lieutenant Riddell had spent more money than was necessary for the new observatory. Riddell replied on August 28, 1840 that the plans of the observatory ordered by Professor Lloyd in the official instructions had been followed exactly except wooden walls had been built instead of stone because the stone would have had to have been brought from quarries forty miles away. However Lieutenant Riddell was a "bonnie fighter" and he got himself and his party established so that on May 5, 1840, he was able to write to his superior officer "I have transmitted this day the meteorological returns for the months of January to April and the required magnetic data for March and April".

Shortly after Riddell's arrival at Toronto he was informed by a member of the council of King's College (renamed the University of Toronto) that they would be willing to grant a plot of ground for the observatory. This offer was subsequently confirmed and was accepted for a 2½ acre plot on the condition that it would revert to King's College when it was not used for observatory purposes.

Lieutenant Riddell, overworked since his arrival in Montreal in October 1839 and weakened by chronic dysentery, left Canada for England February 17, 1841, upon the recommendation of his doctors.

Later in 1841 he was appointed Assistant Superintendent of Magnetic Observatories and for the following four years was engaged largely in the reduction of the data obtained at Toronto and the other ordnance observatories. The excellent published volumes of magnetic and meteorological data at the ordnance observatories brought about his election as a Fellow of the Royal Society in 1842. His textbook on magnetic observations written at this time was the standard work on the subject for twenty years. Riddell's collaboration with European workers in terrestrial magnetism and worldwide correspondence, did much to advance the study of terrestrial magnetism.

After 1846 Riddell left scientific work to return to a military career where his untiring energy raised him to the rank of Major General at his retirement in 1866. He participated in the Crimean War, and the successful embarkation of the artillery without casualty and the provision of all the necessary supplies were mainly attributed to him. On the outbreak of the Indian Mutiny in 1857 Riddell was sent to India and he commanded the artillery in the relief of a number of Indian cities. He was mentioned three times in dispatches, but on account of ill-health returned to England in 1863 retiring from active service in 1866.

Subsequently Riddell retired to his property in Devonshire improving his farm and continuing his interest in scientific work. He married in 1847 and had one daughter. Taken ill with influenza followed by pneumonia, he died at his home in Devonshire on January 25, 1903.

ITEM 2

CANADIAN METEOROLOGICAL SERVICE - CENTENNIAL SYMBOL

1871 

1971

The above symbol, which will be used throughout our centennial year, was designed and drawn by Mr. N. Steinhaur of the Instrument Division, Canadian Meteorological Service Headquarters.

The symbol represents cyclonic or counter-clockwise flow typical of a weather system as seen from a weather satellite orbiting the earth. The maple leaf in the centre identifies the Canadian Meteorological Service as a federal organization with nationwide responsibilities. The contrasting type styles used in the numerals are authentic to the dates shown. The dates themselves, of course, pronounce the 100th anniversary of the Canadian Meteorological Service in a bold and graphic manner.

ITEM 3

FEDERAL-PROVINCIAL OKANAGAN STUDY

On January 11, 1971, a meeting was held in Victoria to discuss participation of the Canadian Meteorological Service in the Federal-Provincial Okanagan Water Resource Study. The Canadian Meteorological Service was represented by H.L. Ferguson, Head, Hydrometeorological Research

Project Unit, and J.B. Wright, Supervisor of the Scientific Services Unit, Pacific Region. Representatives of the British Columbia Water Resources Service and the University of British Columbia also attended. Enhancement of the basin climatological network will be completed in the spring. Mesoscale analyses of monthly precipitation and evaporation should be underway by late spring 1971. These analyses will be based on a grid point technique. It is hoped that the analyses can be largely automated using the Climatology Division computer. Analyses will also be carried out on selected portions of existing hydrological and climatological basin records dating back to 1920. Estimates of lake evaporation for large valley bottom lakes and small high elevation lakes will also be made in connection with the study.

ITEM 4

CANADIAN COMMITTEE ON AGRICULTURAL METEOROLOGY

The annual meeting of the Canadian Committee on Agricultural Meteorology was held in Ottawa on January 27-28. Principal discussions covered:

(1) Pollution in relation to agricultural pesticides.

(2) The "communications" aspect of farm weather services.

(3) Observational networks and procedures.

The seriousness of pesticide pollution (e.g. DDT) is recognized, but the whole process of pesticide transport is poorly understood. As a result of discussion of prepared papers, the Committee supported the development of a monitoring system and research into minimizing drift loss during application. The planning of ways to educate agriculturists of the importance of weather information and climatic data in farm decisions was considered high priority, and a committee was formed for this purpose.

Considerable progress has been achieved in research-oriented training, particularly at Guelph University. The vital importance of network measurements has been repeatedly stressed, since agriculture is particularly sensitive to weather hazards such as drought and moisture excess. Advances made by CMS in this area were noted with appreciation, but is was recognized that major voids still exist in the national network.

A role in which Agriculture must become more active is in the operation of mesoscale networks which will enhance understanding of plant and animal response to climate.

Papers presented to the Committee by CMS personnel provided the basis of much of the discussion and many decisions. These were "Synoptic Scale and Long-Distance Transport of Pesticides" by E.I. Mukammal and G.A. McKay, "Communication and Farm Weather Services" by F.J. Mahaffy, "Climatic Hazards and Meteorological Measurements" by G.A. McKay and R.A. Treidl, and "Information on Ground-Based Inversions in Canada" by R.A. Treidl.

ITEM 5

IMPRESSION SUR LE SEMINAIRE "INTRODUCTION AUX SERVICES DE LA CLIMATOLOGIE"

La division Climatologique présentait du 18 au 22 janvier 1971, une semaine d'information sur les services climatologiques. Une trentaine de techniciens représentant chacune des Régions Canadiennes étaient présents.

Cette réunion avait pour but: (1) Etablir des contacts entre gens de même milieu. (2) Savoir le pourquoi d'un tel service, son histoire et ses projets. (3) Par des lectures soigneusement préparées, nous informer du travail effectué par chacune des sections de cette division. (4) Echanger des idées, discuter des problèmes existants dans chacune des régions et quoi faire pour y remédier. (5) Savoir, comment nous, qui sommes en contact avec le public, pouvons directement répondre à leurs questions, en sachant ou se procurer les réponses aux renseignements demandés et ainsi améliorer le service tout en allégeant le fardeau de la section climatologique.

Cette semaine de renseignements nous a fait connaître l'importance de la division climatologique au sein de la météorologie et nos impressions se conjuguent du fait que cette réunion fut très intéressante et enrichissante en informations.

Nous tenons à souligner l'importance d'une telle réunion à tout les membres du personnel qui d'une facon ou dune autre, ont à répondre aux demandes du public, et espérons qu'un très grand nombre de ces personnes puissent y assister, tout en espérant que d'autres divisions fassent de même.

Nous remercions très sincèrement M.J.E. Parker l'organizateur de ce colloque et aussi toutes les personnes qui de près ou de loin ont contribué à la réussite d'un tel séminaire. Merci aussi à notre ministère qui nous a permis d'y assister.

Signé
Groupe de la région du Québec

ITEM 6

PRESENTATION OF AWARDS TO CANADIAN METEOROLOGICAL SERVICE PERSONNEL BY UNITED STATES NATIONAL WEATHER SERVICE

Mr. T. Wiacek, O.I.C., Toronto Weather Office, and Mr. G.T. Meek, Port Meteorological Officer for Ontario Region, were delegates at the International Shipmaster's Grand Lodge Convention at Buffalo, January 26-27, 1971. During the course of the convention both were signally honoured in being awarded illuminated certificates and U.S. Weather Service centenary medallions. Mr. Wiacek was recognized for his twenty-five years of involvement in marine forecasting services for the Great Lakes, and Mr. Meek for his outstanding co-operation in developing international marine weather observing program from ships on the Great Lakes. The illuminated certificates were presented by Mr. John McClain of the Cleveland National Weather Service Office in the absence of the meteorologist-in-charge, Mr. Richard Fay.

Mr. Wiacek and Mr. Meek expressed their appreciation for the consideration of the U.S. National Weather Service in presenting the awards and for the continued support provided to the Canadian Meteorological Service Great Lakes Program.

Left to Right: W. Kennedy, Port Met. Officer, Cleveland. Geoff Meek, Port Met. Officer, Toronto. Captain D. Erickson, President of International Shipmaster's Association. Ted Wiacek, Officer-in-Charge, Toronto Weather Office and J.R. McClain, Forecaster, Cleveland Weather Office, Ohio.

ITEM 7

PROGRAMMED COURSE - ELEMENTARY METEOROLOGY

The program in Elementary Meteorology produced by INTEXT Company of Montreal in conjunction with the ASTS has been tested in the Western Region, tested in the classroom on several different courses at ASTS and is now ready for general use in all Regions.

The program consists of six Modules as follows:

Module I - The Atmosphere
Module II - Weather Determinants
Module III - Pressure and Wind
Module IV - Weather Phenomena
Module V - Air Masses and Fronts
Module VI - Aviation Meteorology

The first five modules are devoted to General Meteorology and Module VI is a large Module, Aviation Meteorology. It is our intention, when the need arises, to complete modules on Marine Meteorology, Agricultural Meteorology, Hydrology, Climatology, Air Pollution, Fire Weather, etc. Special students who require a core subject of Meteorology would use the first five modules plus the module dealing with his special subject.

These modules will be available in the next few weeks in English and French for internal use only. It is, however, recommended that serious consideration be given to a wider distribution through the Queen's Printer on a cost recovery basis. The program for the outside user will be more elaborate with a "fancy binding".

At this time it would be opportune to offer this program, after review, to Civil Aviation for Private and Commercial pilots. This program is far superior to any other Weather program on the market today and would be worth at least $25.00 per set.

The advantage of having individual modules is self-evident; some students may only require certain parts. Should amendments be necessary at a later date, the module could be withdrawn and amended without affecting the whole program.

This program is being successfully used in the field as a prerequisite to advanced training and in time will reduce the time required for advanced training.

It is our intention to give this program to WMO for International distribution.

ITEM 8

EXPERIMENTAL LONG RANGE FORECASTS

An experimental program to predict the weather 4 to 6 days in advance was started in November by the Extended Forecast Unit of the Central Analysis Office. Recent advances in numerical weather prediction techniques by the Dynamic Prediction group have made possible the integration of a primitive equation numerical model of the atmosphere for a 6-day period. This is the first Canadian model which can routinely provide a realistic pattern of the upper level flow 6-days ahead.

At present forecast charts originating at the Extended Forecast Unit specify in precise form how the weather systems will have evolved by the third day. However, the ability to specify detail decreases as the period of the forecast increases; accordingly forecasts for longer periods must be made in more general terms. It appears likely that supplemental information will have to be prepared to provide assistance in preparation of such general or probability forecasts.

The purpose of the present experiment is twofold, first to define more precisely the necessary supplemental information, and second to devise the techniques and programs necessary to provide this supplement. Revised verification procedures will also be necessary.

As anticipated, the early verifications of the flow pattern and temperature pattern suggest that there is a long way to go before distribution of such forecasts is justified. But increased accuracy, by numerical methods, of the upper flow pattern for the 4 to 6-day period is assured within the next two to three years and only waits on the availability of faster computers. The present experimental project will give the Unit the expertise necessary to gain maximum value from these more accurate predictions when they become available.

ITEM 9

COMPUTER-PRODUCED AUXILIARY ANALYSES FOR SHORT-RANGE FORECASTING

A study was conducted in the Forecast Research Section to investigate the feasibility of diagnosing and specifying, by statistical methods, time zero values of low cloud ceilings, obstructed visibilities, amounts of cloud cover and 6-hour precipitation amounts. Input variables used were objectively determined quantities obtained from aviation weather reports, radiosonde observations and geophysical fields. It was found that removal of radiosonde observations from the available input variables did not change substantially the accuracy of the results. Using independent

data, correlation coefficients of 0.7 to 0.9 were achieved in depicting areal representations of the large scale structure of ceilings and visibilities in 3 categories:

(1) Ceilings $<$ 1,000 ft and/or visibilities $<$ 3 miles.

(2) Ceilings 1,000 ft to 3,000 ft and visibilities $\geqslant$ 3 miles.

(3) Ceilings $>$ 3,000 ft, or ceilings unlimited, and visibilities $\geqslant$ 3 miles.

In general, it was found the use of the above input variables to obtain short term forecasts of weather parameters would require additional sophistication and modifications in the technique, but the display of some of the physically significant input variables for use in local forecasting by traditional methods was found to have merit. Variables displayed in this way include:

(1) The eddy flux of sensible heat and water vapour to and from large water bodies.

(2) The height of the lifting condensation level.

(3) Regression estimates of depth of the planetary boundary layer.

(4) Terrain and frictionally induced vertical velocities.

(5) An objective surface frontal index.

(6) The convergence of water vapour flux.

Results of the study to date are very encouraging and indicate that the application of statistical methods on physically significant quantities will probably yield operationally useful results for the short range forecasting of significant weather parameters, provided adequate short range forecasts of the surface pressure, temperature and moisture fields are made available. An important application, that could be readily implemented with computer assimilation of hourly data, would be the depiction of present weather likely to be encountered between observing stations.

ITEM 10

WEATHER - ON THE LIGHTER SIDE

Ellen Davignon, the climatological observer at Johnson's

Crossing, Yukon Territory, periodically writes an article for the Whitehorse Star. Below is an article recently published entitled:

WEATHER REPORT

EEE - yike, I think winter has finally reached our notch of the banana belt!

I tossed back the old electric blanket this ayem, threw a robe over my p.j's, yanked a pair of Phil's galoshes over my moccasins and stumbled down to the Stevenson Screen. Looking around blearily I checked the sky conditions. Hah! Easy this morning, clear aside from a little bit of stratocumulus at 5 thou. There was a fluffy line of pink something just overhead, well away from identifying landmarks but I cheated just the least little bit and sed it was probably just a loose piece of my st. cu.

My ever-on-duty conscience kept yelling at me "It's cirrus or altostratus - look at it". But I ignored it and checked the wind. The smoke was rising in a straight column. The Beaufort Scale (of wind speeds) uses a dear little system of rustling leaves to gauge wind velocity, but I think Mr. Beaufort must have lived in an orange grove; we haven't had a leaf to rustle since early in September. So I use smoke signals and my breezes have three speeds besides calm. A 45 degree lean is three mph, 90 degrees is five ditto and if the plume is broken into bits and pieces I come shrieking into the lodge "Hurricane, hurricane!" and make it eight mph and gusting in my report.

But today it was calm, and, the preliminaries over, I released the latch on the screen and reached for the minimum thermometer. If it had not immediately frozen to my cringing flesh it would have fallen from my nerveless fingers. -30 degrees!!!

Instantly numbed to the bone I staggered up the walk and beat feebly on the door till Anne came and let me in. Cold isn't near so cold until it has been recorded for posterity - and my posterity was damn near frozen.

ITEM 11

PERSONNEL

The following have accepted positions as a result of recent competitions:

Competition 70-PTAH-65 - Meteorology MT5
Supervising Forecaster
Halifax Weather Office
- A.J. Russell

Competition 69-PTAH-139 - Meteorology MT7
Chief Prognostician
Extended Forecast Unit,
Central Analysis Office
- G.M. Shimizu

The following transfers took place:

R. R. Cooper	-	To Officer Training, Canadian Forces From W.O. Frobisher
S.E. Delisle G.J. Irwin	-	To W.O. Montreal From CFB St. Hubert
P.W. Galbraith	-	To Atlantic Weather Central From Prairie Weather Central
B.D. Lawson	-	To CFB Moose Jaw From CFB Portage la Prairie
L.R. Layton	-	To W.O. Edmonton From CFB Moose Jaw
N.C. Meadows	-	To W.O. Goose Bay From Canadian Forces
L.R. Legal L.K. McDonell A. Serna	-	To Officers Training, Canadian Forces From W.O. Goose Bay
J.E.D. Reid	-	To Prairie Weather Central From CMS Headquarters
J.R. Sandilands	-	To W.O. Goose Bay From CFB Rivers
Miss S.K. Woodbury	-	To W.O. Halifax From W.O. Regina

Effective February 8, 1971, and for a period of approximately six months, Mr. Hugh Cameron will be seconded full-time to the staff of the Administrator. Mr. Cameron has been freed of all of his responsibilities within the Forecast Division for this period of time.

Mr. Cameron's primary role will be to give the ACMS staff support in the development of proposals for a concept and for objectives of the Canadian Meteorological Service.

TRIVIA

MOVING THE HEAD OFFICE

The following article is reprinted from "Up the Organization by Robert Townsend" (copywright 1970 - Robert Townsend) by kind permission of Alfred A. Knopf, Inc., New York.

"Put one man in charge of the whole operation (let's say his name is U. Heep), and give him the following frame of reference:

(1) All executive offices (including the chief's) must be the same size (small) and furnished with the same basic furniture. (As anyone knows who has ever moved a head office, it can be very expensive. From the standpoint of billing cycles and collection of receivables, two moves equals one fire. My concern with sameness of basic furniture is in deference to the timetable. Six months after the move, when the business is out of shock, give each officer the same budget for refurnishing and redecorating and let him run amok if he wants to. If someone feels that cushions on the floor, psychedelic posters, and black lights will help him get his job done, I'm all for it.)

(2) Don't consult or listen to anyone inside the company (especially not the chief executive) on matters of taste or preference.

(3) Hire whatever independent experts you really need. But don't ask for advice unless you intend to use it.

(4) If the building is ready on time, works reasonably well, and the cries of outraged vanity and offended taste die out within thirty days, it will be named the Heep Building. If not, it will be named the Heep Memorial Building.

The usual practice is to hire architects and decorators and have them report to a committee of tasteless slobs. After taking twice as long and costing three times as much, this method leaves you with one solid result: all your key people are now completely preoccupied with status symbols and have no time for their work."

AIRPORT FOG

The following article by Eric Nicol is reprinted from the Vancouver Province, October 10, 1970.

"A plane about to take off from Vancouver International Airport for the purpose of testing a new fog-dispersing technique was denied

permission to take off - because of the fog.

At moments like this, modern technology looks very much like Stan Laurel simpering hopefully after one of his more extravagant booboos, till Babe Hardy belts him with the retributive bowler.

But let's not be soppy. There must be a rational solution to a purely mechanical problem such as that at Vancouver Airport. What we do is examine the options, after taking the precaution of exchanging our plane tickets for rail: The fog-dispersal plane waits till the fog has blown away, then takes off and flies around above the airport till the fog rolls in again.

The drawback to this plan is, of course, that the plane may have to be refuelled in the air, and the pilot becomes a bit edgy flying around in circles for perhaps weeks at a time, waiting for fogs that never come in.

Watching all the other planes land, while you are denied permission to land because of no fog, can make a person feel unwanted, even unloved.

Diverting the plane to another airport that IS closed by fog doesn't really solve the problem. Even if the fog-dispersal pilot can find it, his contract for dispersing fog is with the first airport. He can't wander around from airport to airport radioing "Hey, man, how much is it worth to put a hole in your sock?"

The Department of Transport has rules about haggling while stacked:

- The airport creates an artificial fog for the fog-dispersal plane to disperse. This at least permits the pilot to land in time to enjoy Christmas with his family.

- The airport obtains special permission for the fog-dispersal plane to take off despite ceiling zero. This is the plan that Vancouver Airport is reported to have put to Ottawa, which is the final authority on fog.

All fog has to go through Ottawa. Otherwise it is not official fog.

To qualify as federal government-standard fog an airport fog is measured against the fog found on Parliament Hill as a result of hot air coming into contact with cold facts.

If Vancouver Airport obtains permission from Ottawa for the fog-dispersal plane to take off when there is no visibility, its troubles are over, more or less. A lot depends on whether the crew are able to find

the plane on the tarmac, or indeed if they WANT to find it.

At this distance they could be excused for dispersing in the airport bar. Fog is where you find it.

Whatever their flight plan, this corner wishes the fog dispersal plane happy landings. Like, at an airport."

J. R. H. Noble
Administrator
Canadian Meteorological Service