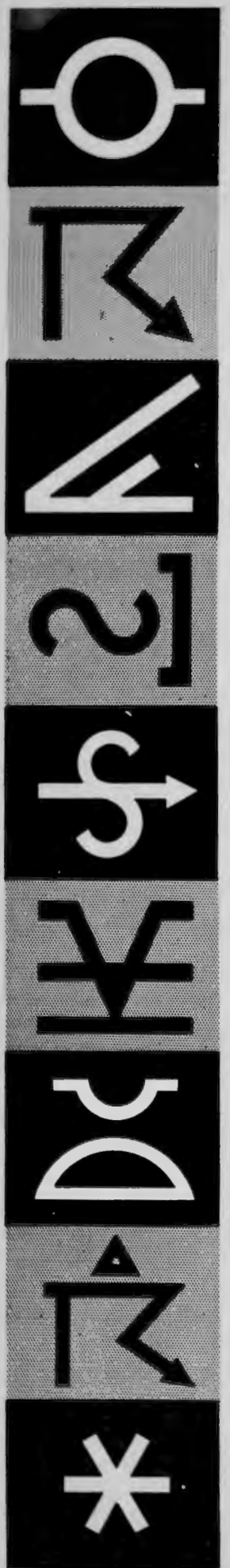

ZEPHYR

MARCH 1975 MARS

Environment Canada | Environnement Canada
Atmospheric Environment | Environnement atmosphérique

ZEPHYR

MARCH 1975 MARS

Published Under Authority of the
Assistant Deputy Minister
Atmospheric Environment Service

Publié avec l'autorité du
Sous-ministre adjoint
Service de l'environnement atmosphérique

editor/la rédactrice: B.M. BRENT

FORECASTING CLIMATE AND BEYOND

by

MORLEY K. THOMAS

Every day practically everyone in Canada is aware of both the weather and weather forecasts. We are a very weather sensitive people; consciously or unconsciously both the actual and forecasted weather have a lot to do with how we feel, what we wear and, in many instances, what we do each day. We do not think about climate as much as we do about weather, but every Canadian has a fundamental knowledge of the climate of his or her part of the province and of the seasonal changes to be expected. Few people ever suggest the need for climatic forecasts or outlooks and, fewer still expect such a service. This is fortunate, because meteorologists do not yet know enough about atmospheric processes to make valid scientific attempts at forecasting climate for next summer, for next winter, or for next decade.

Why should meteorologists try to forecast for next year when they encounter so many difficulties in forecasting for tomorrow? With the startling world population explosion and the resulting grave concerns over the world food production in coming decades, with awareness of the limitations of our natural resources, with the rising demand for energy and with an increasing awareness of the necessity to preserve the atmospheric environment, we must use our climate and its variations, both actual and forecasted, to a much greater degree than we have ever done before. Almost every day we capitalize on the weather forecast to minimize the chances of getting caught in a rainstorm, of getting sunburned, or of freezing without proper clothes. In a like manner, if it was forecasted that next summer was going to be long, hot and dry, you could make a particular set of plans, while if you knew that the characteristics of next summer probably would be short, cold and rainy, you would make completely different plans for your work or play.

Why can't we forecast climate just as we forecast the weather for tomorrow? A forecast of tomorrow's weather is based on weather observations taken several times a day, usually every hour, at a network of stations in Canada, the United States and around the world. The data are transmitted to forecast offices on high speed communication circuits, weather maps are prepared and the forecasts are made. Until the advent of computers, meteorologists, using their background of theoretical physics and meteorology, analyzed the maps directly, but it is now possible to program the physical laws of the atmosphere for computer operations in order to forecast tomorrow's weather map. From such maps meteorologists prepare the forecasts which are then distributed to all the newspapers, radio stations and television stations throughout the country.

Why do we not yet have a national program to forecast climatic trends and anomalies? Unfortunately the methods used for forecasting either tomorrow's weather, or even the 30-day averages as is done by the U.S. National Weather Service, just will not work when attempting to forecast climatic anomalies for next season or next year. The time scale is, of course, quite different. Further, we do not know enough about the general circulation of the atmosphere and what causes it to vary in order to be able to provide any kind of a meaningful forecast for that far ahead. Research on this problem is proceeding at an accelerating rate in many countries of the world. Probably the most significant target is to develop methods of forecasting six months to a year ahead. While the methods used in forecasting the weather for tomorrow and the next day are based upon the fluid dynamics and thermodynamics of the atmosphere, climatic forecasting will undoubtedly be more

statistical in character and will probably employ ocean surface temperature data, snow and ice cover information and precise information of the heat balance of the earth and its atmosphere – data that are not yet regularly available to meteorologists.

Given reliable forecasts of climatic trends and anomalies – that is, if we knew now what the character of the weather would be like next summer, each of us could think of many practical ways to use this information. You would be careful to schedule your holidays at the right time; resort operators could plan to augment or decrease the size of their staffs and plan for indoor or outdoor activities; farmers could better determine acreages for different types of crops and perhaps juggle schedules to take best advantage of fine weather for planting and harvesting. Conservation authorities, and Ontario Hydro, could better determine the amount of water to be kept in reservoirs if they knew whether or not heavy rains might be expected in the following season. The oil industry could better calculate how much fuel oil should be refined and stored in different parts of the country. If poor weather conditions were forecasted government authorities could decide what proportion of grain and other food stocks should be exported rather than stockpiled in the country. The list is endless. Most people do not realize the extent to which the daily weather forecast enters into their everyday planning. If seasonal and annual forecasts were available, each of us, in a like manner, would begin to use them to such an extent that we would not know how we ever existed before they were available. But there are problems.

If you knew today what two weeks of the summer would be best for holidays, you would attempt to be away from the office and obtain travel and other reservations for the same period. Unfortunately, so would everyone else! What sort of a chain reaction would be set off by our knowledge that next year's weather would be unfavourable for agriculture and food production? Beyond the domestic scene, what about our international relations and obligations if we were able to forecast climate years in advance? Would we take advantage of this and establish food monopolies and cartels to reap fat profits? And if we knew enough about climatic fluctuations to be able to forecast them, how far would we be from climate modification and control? If we ever get to the stage where we can control or modify climate, who would decide and implement such procedures? Canada is isolated in neither climate nor politics! We are part of a world system and our progress in being better able to understand and predict climate must be accompanied by a much broader social understanding than we exhibit today. Science and society must keep in step both nationally and internationally.

The next time you hear or read about some sensational possible manifestation of climatic change, such as the flooding of our coastal cities, or the burying of Toronto under ice, be reassured that it will not happen in our era. However, we must realize that effects of relatively minor climatic fluctuations are becoming very important as the world's population continues to grow rapidly and as we continue to consume our natural resources at an alarming rate. In time we will have climatic forecasts, science and technology will see to that. But what about beyond climatic forecasting – how will we respond socially? As we develop our knowledge of climate and of climatic forecasting, we must acquire a better understanding of our global responsibilities than we sometime exhibit today. Canadians in the future will be forced to make decisions about international food stockpiles, the sharing of land, increased immigration, and all the other problems of our global village. Climatic forecasts will be of great assistance in tomorrow's decision making, but there is much beyond meteorology. The major life giving or life taking decisions will be social and political rather than scientific. Those of us in meteorology can, however, contribute significantly towards those decisions that will have to be made in business and government by our contemporaries and by our descendants.

(From a luncheon address given at the 66th meeting of the Ontario Municipal Electrical Association and the Association of Municipal Electrical Utilities, Toronto, March 5, 1975).

PRÉVISION DU CLIMAT ET CONSÉQUENCES

par

MORLEY K. THOMAS

Au Canada, presque tout le monde connaît le temps et les prévisions météorologiques tous les jours. Nous sommes un peuple très sensible au temps; à notre su ou à notre insu, le temps réel et le temps prévu se reflètent beaucoup sur notre humeur, notre façon de nous habiller et, dans bien des cas, déterminent ce que nous faisons chaque jour. Nous nous préoccupons moins du climat que du temps, mais tout Canadien possède une connaissance fondamentale du climat de sa région et des changements saisonniers auxquels s'attendre. Peu de gens estiment nécessaires les prévisions ou aperçus climatiques et encore moins s'attendent à recevoir un tel service. Et c'est tant mieux parce que les météorologues ne connaissent pas encore suffisamment les phénomènes atmosphériques pour tenter de prévoir scientifiquement le climat de l'été prochain, de l'hiver prochain ou de la décennie prochaine.

Comment les météorologues pourraient-ils essayer d'établir des prévisions pour l'année prochaine alors qu'ils rencontrent tant de difficultés à prévoir le temps de demain? Etant donné l'effarante explosion démographique mondiale et les graves préoccupations qui en découlent au sujet de la production alimentaire mondiale au cours des prochaines décennies, sachant que nos ressources naturelles sont limitées, étant donné la demande croissante d'énergie et la conscience grandissante d'avoir à sauvegarder l'environnement atmosphérique, il nous faut, plus que jamais, tirer parti de notre climat et de ses variations réelles et prévues. Presque chaque jour, nous comptons sur les prévisions météorologiques pour réduire les risques de nous laisser surprendre par la pluie, d'attraper des coups de soleil ou de prendre froid faute de vêtements appropriés. De la même manière, si l'on prévoyait pour l'été prochain une saison longue, chaude et sèche, on pourrait faire des projets particuliers; si, au contraire, on savait qu'elle serait courte, froide et pluvieuse, on ferait des projets de travail et de loisirs tout-à-fait différents.

Pourquoi ne peut-on prévoir le climat tout comme on prévoit le temps qu'il fera demain? Pour prévoir le temps qu'il fera demain, on s'appuie sur des observations météorologiques effectuées plusieurs fois par jour, en général toutes les heures, dans un réseau de stations situées au Canada, aux Etats-Unis et partout dans le monde. Les données, transmises aux bureaux de prévision par des circuits de communication très rapides, permettent de dresser des cartes météorologiques et d'établir les prévisions. Avant l'ère des ordinateurs, les météorologues analysaient les cartes directement en faisant appel à leurs connaissances théoriques en physique et en météorologie; il est désormais possible de prévoir la carte météorologique de demain en programmant les lois physiques de l'atmosphère afin qu'un ordinateur effectue l'opération. A partir de ces cartes, les météorologues établissent les prévisions que l'on distribue ensuite à tous les journaux et à toutes les stations de radio et de télévision du pays.

Pourquoi n'existe-t-il pas de programme national pour la prévision des tendances et des anomalies climatiques? Malheureusement, ni les méthodes que l'on utilise pour prévoir le temps qu'il fera demain ni même celles qu'utilise le U.S. National Weather Service pour établir les moyennes de 30 jours, ne donnent aucun résultat quand on essaie de prévoir les anomalies climatiques concernant la saison prochaine ou l'année prochaine. Evidemment, l'échelle temporelle est tout autre. En outre, on n'a pas une connaissance suffisante de la circulation générale de l'atmosphère et de ce qui la fait varier pour pouvoir

fournir toute espèce de prévision valable à si longue échéance. Dans bien des pays du monde, la recherche sur cette question se poursuit à un rythme accéléré. Le but le plus important consiste certainement à mettre au point des méthodes permettant de prévoir le temps de 6 mois à un an à l'avance. Alors que les méthodes utilisées dans la prévision du temps du lendemain et du jour suivant reposent sur la dynamique des fluides et sur la thermodynamique de l'atmosphère, les prévisions climatiques tiendront sans doute davantage de la statistique et emploieront probablement les données sur les températures en surface des océans, des renseignements sur la couverture de neige et de glace et des renseignements précis concernant le bilan thermique de la terre et de son atmosphère, toutes données dont ne disposent pas encore régulièrement les météorologues.

Si nous disposions de prévisions sûres concernant les tendances et les anomalies climatiques, autrement dit, si nous connaissions dès maintenant quelle sorte de temps nous aurions l'été prochain, chacun d'entre nous pourrait imaginer bien des façons de mettre en pratique ces renseignements. On veillerait à prévoir ses vacances au bon moment; les responsables des lieux de villégiature pourraient planifier l'augmentation ou la diminution du personnel et organiser des activités d'intérieur ou d'extérieur selon le cas; les cultivateurs pourraient mieux déterminer quelles superficies accorder aux différents types de récoltes et peut-être aussi jongler avec le calendrier afin de profiter du beau temps pour faire les travaux des champs. Les pouvoirs publics et l'Hydro Ontario pourraient mieux déterminer quelle quantité d'eau garder dans les réservoirs s'ils savaient avec quelle intensité les pluies tomberaient la saison suivante. L'industrie pétrolière pourrait mieux évaluer quelle quantité de mazout raffiner et stocker dans les différentes régions du pays. Si l'on prévoyait de mauvaises conditions météorologiques, les autorités gouvernementales pourraient décider quelle proportion des stocks de céréales et d'autres produits alimentaires on devrait exporter plutôt que mettre en réserve dans le pays. La liste des possibilités est infinie. La plupart des gens ne se rendent pas compte jusqu'à quel point les prévisions météorologiques journalières font partie de leurs décisions quotidiennes. S'il existait des prévisions saisonnières et annuelles, de la même manière, chacun d'entre nous s'en servirait dans une telle mesure que nous nous demanderions comment nous avions pu nous en passer jusque-là. Mais certains problèmes surgiraient.

Si vous saviez dès aujourd'hui quelles seraient, l'été prochain, les deux semaines les plus favorables aux vacances, vous essaieriez de prendre votre congé, de voyager et d'organiser vos vacances pendant cette même période. Malheureusement, tout le monde en ferait autant! Quelle sorte de réaction en chaîne se déclencherait si nous savions que le temps, l'année prochaine, serait défavorable à l'agriculture et à la production alimentaire? Outre les problèmes à l'échelle nationale, qu'adviendrait-il de nos relations et de nos obligations internationales s'il nous était possible de prévoir le climat plusieurs années à l'avance? Profiterions-nous de cette connaissance pour établir des monopoles et des cartels alimentaires et en tirer d'énormes profits? Et si nous avions une connaissance suffisante des fluctuations climatiques pour être en mesure de les prévoir, quelle distance resterait encore à franchir avant de pouvoir modifier et contrôler le climat? Si nous parvenons jamais au stade du contrôle ou de la modification du climat, qui décidera de la règlementation à adopter et qui la mettra à exécution? Le Canada n'est pas plus isolé sur le plan climatique que sur le plan politique! Nous faisons partie d'un ensemble mondial et à mesure que s'accroît notre capacité de comprendre et de prévoir le climat, notre compréhension sociale doit s'accroître et devenir beaucoup plus grande que celle dont nous faisons preuve à l'heure actuelle. Le progrès scientifique et le progrès social doivent aller de pair à l'échelle nationale et internationale.

La prochaine fois que vous entendrez parler de la possibilité que se manifeste un changement climatique sensationnel ou que vous lirez un article à ce sujet, telle que la

submersion de nos villes du littoral ou encore la disparition de Toronto sous la glace, rassurez-vous, rien de tel n'arrivera pendant notre ère. Cependant, il nous faut comprendre que les effets de fluctuations climatiques relativement secondaires deviennent très importants à mesure que la population mondiale continue de s'accroître rapidement et que nous continuons de consommer nos ressources naturelles à un rythme alarmant. Nous aurons des prévisions climatiques à la longue, la science et la technologie y veilleront. Mais quand nous serons parvenus au stade des prévisions climatiques, quelle sera notre attitude sociale? À mesure que progresse notre connaissance du climat et des prévisions climatiques, il nous faut parvenir à une compréhension de nos responsabilités mondiales plus grande qu'aujourdhui. À l'avenir, les Canadiens devront prendre des décisions au sujet des stocks alimentaires internationaux, du partage des terres, de l'immigration accrue et de tous les autres problèmes de notre village à l'échelle mondiale. Les prévisions climatiques seront d'un grand secours pour les prises de décision de demain, mais le problème déborde largement le cadre de la météorologie. Les grandes décisions qui influent sur la vie et la mort seront d'ordre social et politique plutôt que scientifique. Ceux d'entre nous qui travaillent en météorologie peuvent toutefois contribuer, de façon importante, à ces décisions que nos contemporains et nos descendants devront prendre dans le domaine des affaires et au gouvernement.

(Extrait d'un discours prononcé à Toronto, le 5 mars 1975, lors du déjeuner de la 66ème Assemblée de l'Ontario Municipal Electrical Association et de l'Association of Municipal Electrical Utilities.)

WORLD METEOROLOGICAL DAY ACTIVITIES – WESTERN REGION

The activities of the Western Region Headquarters were spread over the week of March 21 – 31, 1975. Included were two radio talks and a display in the main branch of the Edmonton Public Library.

On Friday, March 21, Ken Daly spoke with Jennie Dimant on the CBX morning program "Edmonton AM". The topics were the World Meteorological Organization and the Beaufort Sea Project. Then on Monday, March 31, C.E. (Celsius) Thompson, the RSGWS, spoke on the same program. The topic was the Celsius temperature scale.

The library display consisted of panels showing the various activities of the AES and a model of the B-MARS that was constructed by Bristol Aerospace. In addition, a supply of weather and metric pamphlets were available.

The B-MARS consists of two stations – a data gathering station and a power generating station.

WESTERN REGION DISPLAY

THE DESIGN OF AN AUTOMATIC WEATHER STATION FOR THE ARCTIC OCEAN

by

R.J. Grauman and R.G. Catlin

Canada's Meteorological Service has a history of placing meteorological stations in areas ahead of the main thrust of interest in these areas. Indeed, the meteorological stations often serve as base camps for further exploration and scientific activities. This has been particularly true in the last few years, as the search for minerals has led further and further north. Canada, however, is not a seafaring nation, and has tended to be content with overland exploration. Exploration for oil has recently been extended to the offshore areas in the Beaufort Sea, and our lack of knowledge about the Arctic Maritime environment has become evident.

In order to insure safe drilling operations in the Beaufort Sea, a Beaufort Sea Project was started to design a real time environmental prediction system, amongst other things. This project, funded by the oil industry, included the design of data collection platforms to be placed on the pack ice of the Beaufort Sea. The environmental factors most strongly affecting the safety of the drilling activities were wind-waves, ice conditions and other weather phenomena mainly affecting aviation support. Early in the project, it was determined that measurements of wind speed and direction, atmospheric pressure and temperature from the Beaufort Sea would be the minimum measurements required. Although exact locations and station spacing has not yet been determined, these factors would have little influence on the final design of the data collection platforms, and the design was started.

Communications with the data collection platform was thought to be a critical factor influencing the design of the station. A study was commissioned which would investigate the various methods of communicating the data from the Beaufort Sea to Canada's Arctic Weather Central in Edmonton, Alberta, as quickly as possible. This study, made by Bristol Aerospace Limited, Winnipeg, Manitoba, concluded that the Geostationary Operational Environmental Satellite (GOES), together with existing land communications would be the best method for relaying the data.

In July of 1974, a contract was issued to the Rocket and Space Division of Bristol Aerospace Limited for the construction of a prototype ice station. At this time, the design is proceeding from the conceptualization stage to the implementation stage, the form of the station is quite clear.

The meteorological station will be supported by three aluminum pylons 11 feet (3.4 m) long and 8.63 inches (22 cm) in diameter. The pylons will be sunk to a depth of 8 feet (2.4 m) in holes drilled in the ice at a radius 10 feet (3.1 m) from the centre of the station. The pylons will be joined to the centre structure of the station by means of an aluminum spider which will support an antenna in the shape of a truncated cone 26 feet (8 m) long. The antenna will be constructed of fibreglass, with four radiating elements spirally wound into the fibreglass during construction. The antenna structure will support a standard cup wheel anemometer of the contacting type as well as a radiation shield for the temperature sensor. The pylons will be water-tight, and will contain the electronics ballast, and, hopefully, the batteries. The total weight of the station, including ballast, is 607 lbs. (273 kg). The design survival wind speed of the station when locked in the ice is 90 knots (46 m/s) and at that speed the wind loading is 460 pounds (207 kg) acting at a height of 10 feet (3.1 m) above the surface of the ice. When floating freely in open water, the station will survive the wind speeds of 26 knots (13 m/s) but would likely be crushed by the pack ice if it should find itself in open water between floes.

A vertical axis wind powered turbine will be mounted on a similar pylon structure near the meteorological station. The rotor of the wind turbine which consists of three constant chord blades curved into a catenary form, is approximated by six straight sections. The blades sweep a radius of 8 feet (2.4 m) and are governed to about 500 rpm. A drive train will drive a generator alternator to charge the batteries used to power the station. The station has been designed to operate from the batteries for a two month period without charging. If the wind turbine does not prove successful, additional batteries will be added on future stations so that the six month operating period requirement can be met. Tests to date, however, indicate that the turbine shows promise of satisfactory performance.

A modular system of electronics has been designed for the Beaufort Sea stations using as guidelines a study of modular electronics for automatic weather stations made for the Atmospheric Environment Service. The wind speed and direction transducer interface model accepts the input from an Atmospheric Environment Service type 45B anemometer. The atmospheric pressure transducer interface accepts the output from a vibrating diaphragm pressure transducer, counts the oscillations for a fixed period of time and presents the count serially to the programmer upon request. The atmospheric temperature signal conditioner is included as part of the analog data interface module. A thermistor is used as the temperature transducer. Several other signals for diagnostic purposes are switched to the analog-to-digital converter. Included in this group of analog voltages are the outputs of a pair of flux gate magnetometers which provide a north reference for the station, battery temperature and voltage, electronics pile temperature, tower tilt, etc. All

data from the analog data interface module are presented serially to the programmer module upon request. The self-timed radio set is a commercially available 20 watt 403 mHz unit developed for satellite data collection systems. The navigation system is under development at this time. The phase of VLF stations will be used to determine the position of the stations.

Land based tests on the prototype are planned upon completion and will continue until installation in the Fall of 1975. At that time, the station will be installed in the Arctic ice pack and serious testing will begin.

WAVE CLOUD

K.E. Johnston, Presentation Technician, photographed this fine example of a wave cloud formation on January 13, 1975, at the Regina Airport. The specific topographic feature responsible for the formation is not certain since:

(a) The Cypress Hills are 150 to 200 nautical miles to the west-southwest,

(b) The Bear Paw Mountains (Montana) are 245 nautical miles to the southwest, and

(c) The Rockies are 375 nautical miles to the west.

The direction of flow at 500 mb was estimated as southwest.

Additional details are:

Time of photograph – 1330 CST
Weather at 1300 CST
Temperature - 15°C
Wind SE 10 mph
Depth of snow 4 inches.

ACTIVITIES IN HYDROMETEOROLOGY AND MARINE APPLICATIONS HEADQUARTERS

Arctic Weather Central Workshop on the Beaufort Sea – March 17-21

The Lakes and Marine Applications Section was represented at this Workshop in Edmonton by J.A.W. McCulloch and M.E. Lalande. With the assistance of M. Blake, OIC of the Pacific METOC Centre at Esquimalt, this team presented the wave portion of the Workshop to staff at the Arctic Weather Central. This portion was presented twice, on the 17th and the 20th, so that all staff there could participate. On each of these days lectures on the theoretical background and practical application were presented by Messrs. McCulloch and Blake in the morning, and the afternoons were given to laboratory exercises developed by Messrs. McCulloch and Lalande.

Hydrometeorological Services

Storm Rainfall: About one man-month was spent on organizing the Storm Rainfall in Canada series; preparing outstanding storms for publication, and preparing lists of all storms for inclusion in an index for this continuing series.

Gull Island Project: A request was received from the Newfoundland Power Corporation for the AES to undertake a major study of dam design criteria for Labrador below the Churchill Falls power development. A search for all recent major rainstorms has been conducted and computer time reserved for a Hershfield analysis of the PMP and for maximum persisting dew point analysis. Details of the study will be discussed with the consultants, Acres Limited.

Hydrometeorological Projects

Familiarization Visit to Office of Hydrology: The section head, W.I. Pugsley, paid a visit to the Headquarters of the Office of Hydrology, National Weather Service, in Silver Spring, Maryland, March 11-13. Outside of the many useful personal contacts established, valuable discussions of current studies were made with many of the project leaders and division Chiefs. Some interesting points were made regarding the development of the new X-3 heated evaporation pan as an all-wave radiation integrator, and testing of snow lysimeters in New England and elsewhere. The NWS is currently implementing a new river forecast system at 12 centres. At present two centres have the operational model running. Some of the problems encountered in this phase were discussed and explained. The all-too-short visit of three days did provide an overview and familiarity with the specialists and their work.

Snowmelt Study: L. Mapanao has begun a study to improve estimates of snowmelt runoff using mean monthly parameters. He is comparing estimates using the degree day approach to a Thornthwaite-Mather technique to one developed in the USSR. The best method is to be incorporated into the benchmark basin water budget model.

Lakes and Marine Applications

Sailing Olympics: The data from the Kingston Tower for the second half of July, 1974 were finally processed and a second supplement to CDS2-73. "Background Climatological Information for the 1976 Olympic Sailing Events" was prepared. The document is now being varityped and duplicated for distribution to potential competitors.

On March 26, Mr. McCulloch met with the Director-General of Central Services, the Director of AES Ontario Region and Dr. C.D. Holtz of Training Branch to discuss what services would be required in support of these events. This followed a March 18 meeting in Kingston between officials of AES Headquarters and Ontario Region, and the Yachting Division of COJO '76. It was decided at the March 26 meeting to distribute to the Yachting associations of all potential competing nations copies of the basic background data and the two supplements.

Art (Airborne Radiation Thermometer) Program: The contract for charter of aircraft for the ART program during fiscal year 1975 was awarded to Millardair Limited. This year the contract is all-inclusive, i.e. all ART surveys, on the Great Lakes and the St. Lawrence Seaway.

A new IR thermometer (Barnes PRT-5) was purchased; and a long-awaited part, needed for repairs to another PRT 5, finally arrived from West Germany. Hopefully, the spring survey program will get off to a good start with two operational PRT-5's.

On March 25, Dr. Andre Caille of services de Protection de l'environnement du Québec and one of his assistants arrived for a meeting with J.A.W. McCulloch and G. Irbe. Discussions were held on the feasibility of conducting an ART survey program on the St. Lawrence Seaway between Cornwall and Quebec City. The purpose of the program would be to study the mixing patterns of the tributary river plumes with the main channel flow of the St. Lawrence.

A proposed flight track and approximate cost per survey for this project have been completed and will be submitted to Dr. Caille for consideration.

A Lake Ontario ART survey was completed on March 27. This was the last flight under the contract with MEP company.

Hurricane Agnes: A comprehensive study of the meteorological and hydrological conditions in the Lake Ontario Basin attending Hurricane Agnes in June, 1972, has been completed by B.J. O'Donnell of the Toronto Weather Office and D.W. Phillips. The manuscript is currently under review.

IFYGL Shoreline Station Data Management: The first tape containing data from the first six months of IFYGL from Port Weller, Burlington and Toronto Headland is being translated to 7-track for submission to the IFYGL Data Banks. It now appears that further submissions, each consisting similarily of 18 station months of data will be made at approximately monthly intervals.

COMPUTER INSTALLATION – EDMONTON

Hewlett Packard delivered the HP 2100S system to the Arctic Weather Central/Edmonton Weather Office right on schedule on January 15, 1975. Unfortunately it was supposed that delivery would be to Hewlett Packard in Edmonton and not directly to the International Airport. The Ministry of Transport came to our aid by providing a "dump truck" for interim storage until arrangements could be made to uncrate and move the equipment to A.E.S. offices located on the fifth floor.

Mr. Erryl Johnson of Hewlett Packard presented a formal course on the Real-time Executive and File Manager from February 3-12, which was officially attended by five Arctic Weather Central and three Edmonton Weather Office staff members. Representatives from the Prairie Weather Central and Pacific Weather Central along with several other Edmonton meteorologists attended the course as observers. This latter group was welcome at lectures but did not take part in laboratory exercises.

This machine is the third one to be installed in A.E.S. Regional Offices, one was installed in Winnipeg in 1972 and then in Vancouver in 1973. With these facilities much of the drudgery will be removed from such tasks as Tephigram plotting and transferring field observations onto weather maps. In time an integrated system should evolve with computers in each Regional Office and direct exchange possible between regional systems and the hemispheric plotting system at CMC.

Mr. E. Johnson, H.P. instructor, at laboratory session.

SUMMER OF '42

Back Row – *H.P. Wilson, E.A. Barks, A.H. Mason*
Second Row – *S.W. Dewar, D.E. Day, N.N. Powe, A. Gibb, F.H. Patterson, J.G. Potter*
Front Row – *W.W. Allen, H.L. Cameron, J. Wright, R.L. Titus, D.B. Currie.*

W.W. Allen:	Forecaster, Halifax Weather Central; retired.
E.A. Barks:	O.I.C., Goose Bay; Regional Director, Atlantic; now with Treasury Board.
H.L. Cameron:	Director, Program Development and Evaluation Branch, Headquarters.
D.B. Currie:	O.I.C., Edmonton Weather Office; retired, living in Nanaimo, B.C.
D.E. Day:	Forecast Superintendent, Halifax Weather Central; retired, 1974.
S.W. Dewar:	Head, Systems Planning and Coordination Section, Instruments Branch, Headquarters.
A. Gibb:	Meteorologist; resigned, 1946, now Associate Dean, Faculty of Education, University of Calgary.
A.H. Mason:	Toronto International Airport Weather Office; Training Division; resigned, now teaching in Etobicoke.
F.H. Patterson:	Chief of Personnel; retired, 1970, now living in Sunderland, Ontario.
J.G. Potter:	Chief, Networks Standards Division, Central Services Directorate, Headquarters.
N.N. Powe:	Superintendent, Montreal Weather Office; retired, 1974.
R.L. Titus:	Head, Data Quality Section; retired, 1973.
H.P. Wilson:	O.I.C., Edmonton Weather Office; retired, 1973.
J. Wright:	Head, Scientific Support Unit, Vancouver Regional Office; retired, 1974.

CANADA – U.S. BILATERAL WEATHER MODIFICATION AGREEMENT

A bilateral international Weather Modification Agreement between Canada and the United States was signed in Washington, D.C. on March 26, 1975, by the Honourable Madame Jeanne Sauvé, Minister of the Environment, and Mr. Christian A. Herter, Jr., Deputy Assistant Secretary of State for the U.S. Environmental and Population Affairs.

As man extends his ability to manipulate and control his environment, the international consequences of new technologies become increasingly important. International consultation and cooperation are required to assure that the full effects of such technologies are taken into account. Even though the technology of weather modification is as yet in a rudimentary state, Canada and the United States recognize the desirability of the further development of the technology and international law relating to weather modification activities. In the signing of this Agreement they have taken a first step towards ensuring that weather modification activities with possible transboundary effects will be carried out in a consultative and cooperative spirit.

This Agreement takes the form of an exchange of notes between the U.S. and Canada relating to information on weather modification activities taking place within the two countries. The intent of the Agreement is to provide for "advance notification and consultation" regarding weather modification activities which are proposed within 200 miles of the international boundary. In the case of a weather modification activity which is more than 200 miles from the international border, advance notification is not required unless in the judgement of the proponent nation, this activity may significantly affect the composition, behaviour or dynamics of the atmosphere over the territory of the other nation.

The Agreement recognizes that the source of the information to be exchanged will be the existing domestic weather modification legislation, which in Canada is the Weather Modification Information Act. The Atmospheric Environment Service in Canada and the National Oceanic and Atmospheric Administration of the U.S.A. are the responsible agents for administering the agreement. Information on activities will be exchanged within a specified time period (5 days) and shall include copies of reports on activities, notwithstanding information considered proprietary or prohibited by law from disclosure.

THE GRAUMANS GO WEST

On March 21, 1975, the staff of the Ontario Area Personnel Office held a luncheon at the Holiday Inn – Yorkdale in honour of Barbara Grauman.

Barbara came to the Personnel Office from the Regional Services Office, Supply and Services, in April 1972. She has been a valued member of our Pay and Benefits Section.

Barbara is transferring to Edmonton where she and Bob hope to set up a permanent home. Her new job will be with the DOE, Area Personnel Office in Edmonton.

Bob Grauman joined the Service in 1957, and served at several locales throughout Canada before joining Instruments Branch in 1963. He worked on many different projects, in the development and testing of sensors and instruments and was for some time the supervisor of the Calibration Unit. In his new position, Bob will head the first regionally located field development station of the Atmospheric Instruments Branch, the Northern Instrument Development Station near Edmonton. This facility will be used to examine cold weather instrumentation problems, to evaluate the performance of meteorological equipment under operational conditions in a cold weather environment and to develop new or improved instruments. Bob's first project there will be to continue his work as project leader for the Beaufort Sea Instrumentation.

Members of the Instrument Branch held a luncheon on March 25, when this photo was taken.

WEATHERMAN'S CURLING BONSPIEL

Forty-eight curlers from the Atmospheric Environment Service gathered at Chinguacousy Curling Club in Brampton for a day of keen competition and merriment on March 22. The occasion was the 2nd Weatherman's Mixed Curling Bonspiel sponsored by the Recreation Association, AES Headquarters.

First-time leads, experienced seconds, budding vices and seasoned skips were grouped into 12 closely matched teams competing for the coveted Molson silver trays.

First Prize Winners
(left to right) Norm Dressler (skip), Ann Bishop, Devon Spencer and Orest Shewchuk. Kneeling Anna Martyniuk, RA President.

Second Prize Winners
(left to right) John Sandilands (skip), Ray Sorokowsky, Clarence Spelchuk and Nancy Waller.

Third Prize Winners
(left to right) Gary Teeter (skip), Mary Anne Simonetta, David Phillips and Joe Kovalick.

It was not all curling!

Prizes were awarded on a point system. The following were major prize winners:

MOLSON'S TROPHY (Three Win High)

Norm Dressler (skip)
Ann Bishop
Orest Shewchuk
Devon Spencer

PSAC (Environment Component)

John Sandilands (skip)
Ray Sorokowsky
Nancy Waller
Clarence Spelchuk

METEOROLOGICAL EMPLOYEES (Toronto) CREDIT UNION

Gary Teeter (skip)
Joe Kovalick
David Phillips
Mary Anne Simonetta

A number of consolation prizes were donated by Gooderham & Worts, Carling Breweries, Canadian Schenley, Corby's Distillers, FBM Distillery Co., Cutting Ltd., Burke-Wallace, and Electrosonic.

CONFERENCE

OIC'S OF FORECAST OFFICES

The first conference of OIC's of forecast offices to be held for over 15 years took place February 25-27 in the auditorium at AES Headquarters. The sessions were chaired by Mr. G.L. Pincock, and in addition to the OIC's of forecast offices across the country, there was also a considerable representation from Field Meteorological Systems Branch and other Headquarters units. Total attendance at most sessions exceeded 35.

Over the three day period of the meetings, 27 papers were presented covering a wide range of topics. The subjects discussed were technical in nature, ranging from the use of mini computers in forecast offices and reports on the performance of the RUM model, to the future role of CMC in the forecast system and support to service outlets.

It was generally agreed that the meeting was very successful, especially in providing a forum for an exchange of views on the operation of the national system of forecast production. A number of recommendations arising from the meeting are being prepared for consideration of the Regional Directors.

LONG SERVICE AWARDS

During the month of January, three staff members of the Calgary Weather Office received Long Service Awards. Recipients of certificates and pins in recognition of over 25 years service with the Government of Canada and the Atmospheric Environment Service were Mary Krigovsky, George Godard, and Robert Porter.

Mary joined the "Civil Service" in 1948 with the Department of Veterans Affairs. In 1951, she transferred to the Meteorological Branch as secretary to the O.I.C., Calgary Weather Office, a position she has filled ever since.

Bob joined the Service as a meteorological technician in 1949. During his career his postings have included Fort Nelson, Baker Lake, Ship Papa, Fort Churchill, Port Hardy, Smith River, Inuvik, Grande Prairie, and of course Calgary.

George began his career as a meteorological technician in 1948. Before Calgary, he worked in Vancouver, Comox, Kleena Kleene, Grande Prairie, Whitehorse and Edmonton.

Thank you all for your contributions to the success of the Atmospheric Environment Service.

Mary Krigovsky

Robert Porter

George Godard

AN OLD EDITORIAL

On September 26, 1949, the first issue of "News on the DOT" appeared. This was at a time when the AES was a part of the Department of Transport. On the occasion of the first publication the editor appealed to their readers with an editorial. Today we reprint this editorial in Zephyr. Though the details may have changed the message is the same.

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IT'S YOUR PAPER

The long-awaited house organ of our Department is finally a reality. This paper intends to cover and report on all activities of the Department and of the Departmental staff, in a friendly and very thorough manner, but in order to make this a success, everyone, from office boy to senior executive, must pitch in and help.

The distribution of "NEWS ON DOT" will be as wide, if not wider, than any newspaper in Canada. But, if it is to be newsy and informative, if it is to give a complete coverage from Langara, B.C., to Cape Spear, Nfld., from the United States border to Eureka Sound, on the 80th Parallel, correspondents who will literally pounce on any item appearing to have newsworthiness, or anything it is felt the rest of the "boys" would like to hear, are needed badly. These reporters should be willing to promptly write up stories and forward them to the head of their service in Ottawa.

These correspondents are you! You are the ones who will fill your newspaper with articles, stories, pictures and jokes. You are the ones who will keep "NEWS ON THE DOT" a livewire newspaper. We want to hear from everyone, everywhere; from the smallest radio beacon station to the largest airport; from the tiniest light to the most extensive marine agency; and from the smallest to the largest canal structure. Everyone should contribute.

Readers will realize, of course, that this first issue is made up largely of material and information gathered in the Head Office of the Department, but it is fervently hoped that in the future the greatest part of the make-up of this organ will come from outside sources; you, the readers, should be its contributors.

No newspaper can exist on good intentions alone; concrete operation is essential. News cannot be published on the stories that you only intend to send. Don't let George do it! Jot down a few notes and if you haven't the time to write out the full story sign it and send it in anyway; the editors will be glad to assign a rewrite man to complete it for you. It is only with your active help that we can keep "NEWS ON THE DOT" going.

Only in this way can your newspaper achieve the purpose of being a truly representative house organ. All branches and divisions, whether at HQ or in the field, must do their share – so, if you have a story, a picture or anything you think might be of interest to your fellow employees, send it in! These should be addressed to the head of your particular service in Ottawa, who will in turn forward it to the editors.

This cooperation from you, and this cooperation alone, will insure that "NEWS ON THE DOT" will not only survive, but will grow and continue to be written for, and by, its readers.

(From News on the Dot, Sept. 26, 1949.)

PERSONNEL

The following have accepted positions as a result of competitions:

75-DOE-WPNA-CC-12	Western Region Officer-in-Charge EG-ESS 3 Fort Simpson J.C. Walton
UNKNOWN	MOTTI Instructor EG-ESS 6 J.S. Metcalf
74-DOE-WIN-CC-632	Central Region Technical Administrative Co-ordinator Arctic AS 1 T.B. Goalen
74-DOE-WIN-CC-626	Central Region Surface Inspector EG-ESS 6 A.T. Piska
74-DOE-WIN-CC-626	Central Region Surface Inspector EG-ESS 6 K.L. Leek
73-DOE-TOR-CCID-260	Administration Branch, AES, HQ Head, Office Services, CR 6 U. Telle
74-DOE-TOR-CCID-94	Administration Branch, AES, HQ Security, Fire, Bomb Threat, Safety & Health Officer, AS 3 J. Keith
74-T-334	Administration Branch, AES, HQ Assistant Supply Officer, PG 2 G. Hewett

74-DOE-TOR-CC-392	Training Branch, AES, HQ Instructor, MT 8 Dr. S.F. Woronko

Appointments:

A.L. Lukawesky	Western Region Observer Presenter EG-ESS 5 Yellowknife, N.W.T.
F. Woodley	Western Region Communicator CM 5 Arctic Weather Central

Separations:

B.R. Brown	Central Region Officer-in-Charge Lansdowne House
M. Greenwood	Central Region U/A Technician Resolute
G. McCarthy	Central Region U/A Technician Resolute
G.E. Payne	Western Region Officer-in-Charge Fort Simpson

The following transfers took place:

M. Shewel	From: Edmonton Weather Office To: Winnipeg
L. Taylor	From: Central Services Directorate To: Toronto Int'l. Airport

RECENT 1975 M.Sc. GRADUATES IN METEOROLOGY

University of Alberta

Alexander, J.D. Hume, W.D. Raddatz, R. Vickers, G.G.

McGill University

Ducharme, P. Hollett, S. Spagnol, J.C. Thomas, J.
Winstone, L.

University of Toronto

Donegani, J.E. Hudak, D. King, P.S. Koolwine, T.
Stanski, H. Swail, V.R.

TRIVIA

Whenever money is tight, we make mortgage prayments every month.

One of the most difficult things to give away is kindness for it is usually returned.

All you have to do to get the world to beat a path to your door is decide you want to take a nap.

Have you discovered yet that where the steak is tender the check is likely to be tough?

* * * *

VIEUX DICTONS SUR LA TEMPÉRATURE

La brume sur la montagne
Va-t'en dans ta cabane;
La brume dans la coulée
Va prendre ta journée.

Arc-en-ciel du matin
Met la pluie en chemin:
Arc-en-ciel du soir
Met la pluie à couvert.

(le soleil)
Rouge le soir:
Bon espoir.
Rouge le matin:
Trompe le voisin.

Une liste d'expressions diverses comprenant des proverbes, des locutions, des dictons, des gallicismes, des canadianismes, des régionalismes, des anglicismes et même des barbarismes.

Expression	Signification ou équivalent
S'attirer des bosses . . .	S'attirer des reproches
Tu n'es pas passé par là!	Tu n'as pas vécu cette expérience
A côté de sa femme . . .	Comparé à sa femme
Rire jaune	Gêné et honteux
Ça fait mon affaire!	Ça coïncide avec mes besoins
Se montrer la fraise	Apparaître
Il est en beau joual vert!	Il est fâché
Tu viens de te faire avoir!	Tu viens de te faire rouler
Etre dans le bain	Etre dans une situation contraignante; être impliqué
Ce n'est pas de la petite bière	C'est pas rien