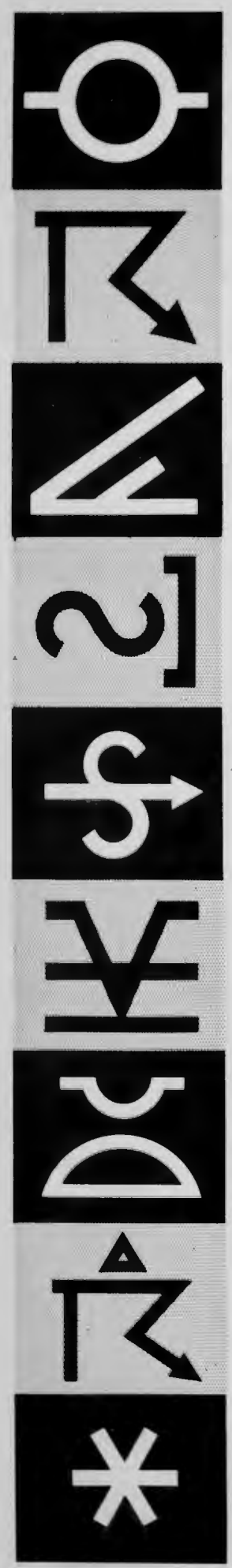

ZEPHYR

MAY 1974 MAI

Environment Canada
Environnement Canada

Atmospheric Environment
Environnement atmosphérique

ZEPHYR

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TORNADO WARNINGS

by

R.A. Hornstein

For those with good memories, the press uproar concerning the alleged lack of adequate warning of the so-called Windsor tornado of April 1974 brings to mind the situation of 14 July 1950 in Regina.

W.R. Fryers, Officer-in-Charge of the Regina Aviation Forecast Office at the time, prepared a report which forms the basis of this retrospect view.

At 1315 hours local DST, Saskatoon entered the following message on the regional teletype circuit: "TCA Flight 8 reports tornado and severe thunderstorm west Johnstone Lake heading west towards small town."

The Regina AFO swung into action to secure as much confirmatory information as possible. This involved contacting radio station CHAB at Moose Jaw, TCA radio at Saskatoon, TCA Flight 2 soon to pass over Moose Jaw, the release and computation of a special pilot balloon flight, a study of the most recent Glasgow and Williston pibals, an exact bearing of the storm centre visible from the airport, and an effort to contact the Winnipeg DPWO.

By 1415 hours preliminary calls were placed to the newspaper and the two Regina radio stations. Agreement was reached that great care would be exercised in handling the warning.

At 1430 hours the long-distance telephone call to Winnipeg was effected, and concurrence given that preliminary warnings should be publicized as the storm appeared to be heading towards Regina.

At 1600 hours the following bulletin was issued:

THE REGINA WEATHER OFFICE CONFIRMS THAT A SEVERE THUNDERSTORM IS APPROACHING AND IS EXPECTED TO PASS JUST SOUTH OF THE CITY ABOUT 5 P.M. LOCAL TIME. REGINA WILL EXPERIENCE GALE WINDS AND HEAVY RAIN. REPORTS THAT A MILD TORNADO ACCOMPANIES THE STORM ARE UNCONFIRMED AT THIS TIME.

At 1755 hours it was followed by:

THE REGINA WEATHER OFFICE REPORTS THAT A HEAVY THUNDERSTORM PASSED SOUTH OF THE CITY IN THE LATE AFTERNOON. HEAVY RAIN WAS EXPERIENCED IN REGINA AND DISTRICT AND WILL CONTINUE THROUGHOUT THE EVENING. ANTICIPATED HIGH WINDS HAVE NOT OCCURRED AND ARE NOT EXPECTED.

Subsequently reports of tornado activity were received from no fewer than eight communities.

During the days that followed, the Regina newspaper ran articles that contained the following:

> "Tornado and thunderstorm warnings Friday afternoon over Regina radio stations sent citizens into near panic . . .
>
> But the tornado failed to keep its appointment. . . "
>
> "Lost: One Tornado. Last seen in the vicinity of Johnstone Lake about 1 p.m. Friday. Finder please return to the weather bureau, Regina.
>
> Radio stations in Regina would also be glad to know the whereabouts of this tornado.
>
> Three hundred kids who were hustled home from Regina theatres when the storm warning was broadcast would like to know the whereabouts of the weatherman.
>
> When last seen the weatherman was hiding behind a cumulus cloud. He's not expected to emerge until the juvenile lynching party goes home or the tornado shows up . . . . . "

An editorial contained a more rational view of the incident.

> ". . . . The tornado failed to come off in Regina. Perhaps because of the feeling of sheepish letdown afterwards, there has been considerable criticism and razzing directed at local radio stations for helping to create public alarm Friday afternoon."

This is basically unfair. Radio, in cooperation with the weather bureau, does inestimable service in broadcasting storm warnings. The public has grown to expect pre-storm alerting. One of the advantages of living in an age when meteorological experts and men in earphones may bridge a gap from sky to earth is that storm warnings may be sounded well in advance. Had no warning been given Friday and had the unpredictable twister decided to light on Regina, the storm from the citizens afterwards would have outdone the tornado itself. Most people, giving honest thought to the matter, will admit that it was far, far better to have been prepared for a storm than to have been caught with shutters down entirely.

Radio stations have learned a lesson too in connection with this particular public service. They have learned that it is nearly impossible to broadcast a warning of danger without stirring up "panic" . . . . The nerve response to danger is so instinctive that the human ear hears only so much of a warning and the rest is lost.

This was true Friday afternoon. The broadcasts were carefully worded to meet the apparent situation. Stations carried the announcement of a "storm of tornado-like proportions." The public ear heard the word "tornado" and any moderating words to follow were lost to the listeners. Racing word of mouth alarm in garbled version of a warning only half-heard can easily whip up unfounded rumours in the city street.

But this is a situation radio has to accept. It suggests the need for great caution and careful moderation but the weather warnings are too necessary and too accepted a part of radio's routine community service now to consider withholding them entirely because of risk of alarming the public unduly . . . . "

COMPUTERIZED SUPPORT PROPOSED FOR BEAUFORT SEA PROJECT

As part of the DOE Beaufort Sea Project, the AES will be conducting three sub-projects. Two of the projects involved climatological studies of temperature, winds, ice conditions and storm-tracks in the south-eastern Beaufort Sea. The third and main project involves the design of a complete environmental prediction system. This design must meet two criteria. First, it must minimize the risk of accidental environmental damage due to offshore drilling. Secondly, it must be ready for operation by June 1976 if the planned drilling for that summer is to take place.

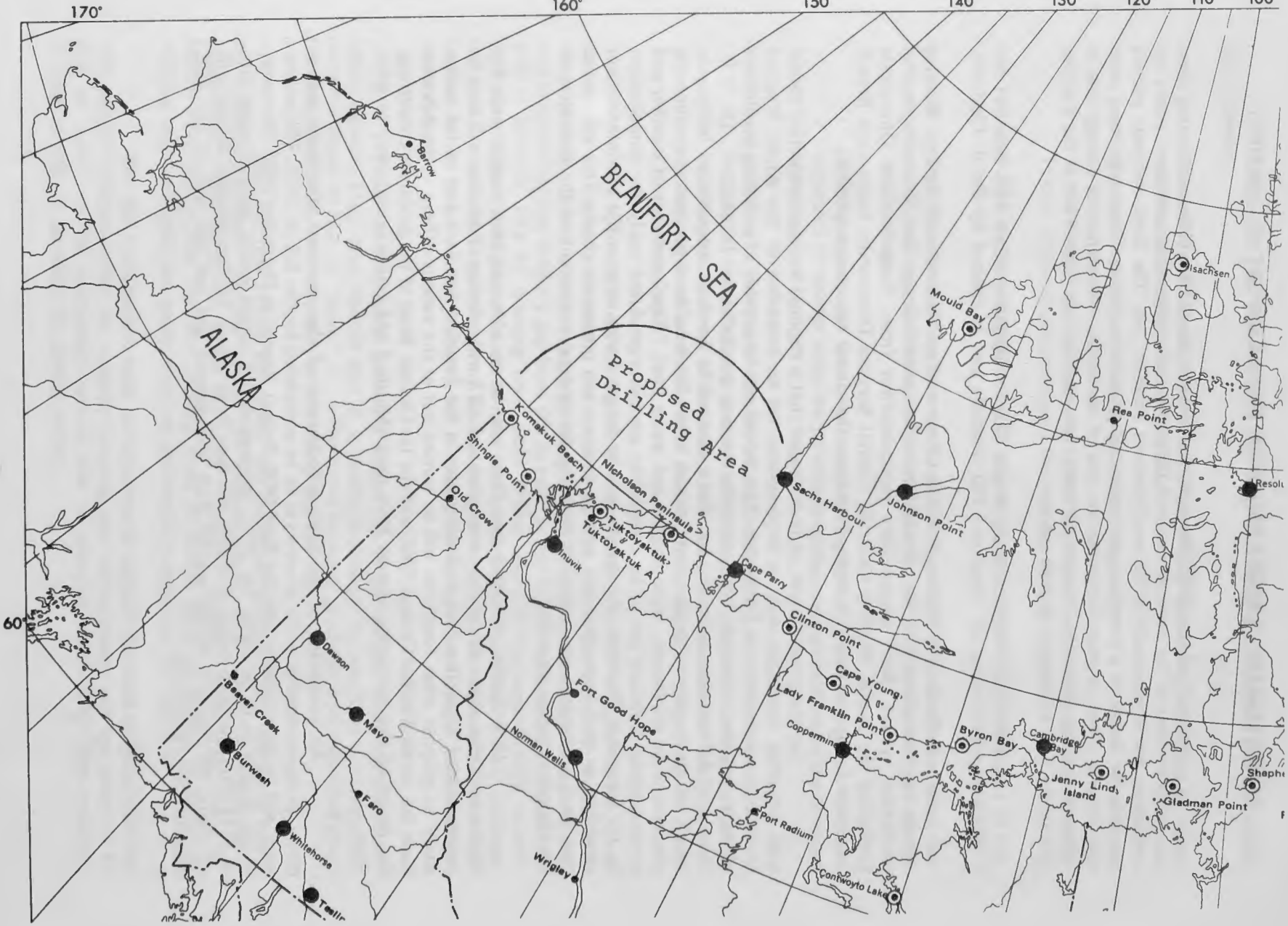
The AES sub-projects are under the coordination of an AES Beaufort Sea Committee representing all concerned HQ interests and is chaired by Dr. J. Clodman.

A Prediction System Working Group and an Observational System Working Group are proceeding with the development of an overall design for this environmental prediction system. Both groups have representatives from Field Services Directorate (including the Arctic Weather Central), Central Services Directorate, Instrument Branch and maintain liaison with the Arctic Petroleum Operators' Association (APOA).

At the present time, it is envisaged that a regional weather prediction model with updating capability will be implemented on an extension of the Arctic Weather Central's mini-computer in Edmonton. This model will be capable of providing predictions of mean sea-level pressure, wind, temperature and precipitation. In addition, Dr. M.B. Danard of Atmospheric Dynamics Inc. has a contract to develop computerized techniques which are to be driven by the above model to predict weather dependent environmental phenomena-ice movement, wave heights and water level. "Raw" elements of weather and environmental forecasts are to be completely computer-produced ready for modification by the forecaster. However, the system is to be designed with an interrupt and intervention capability so that forecasters can modify analyses and prognostic charts. This will ensure that final predictions are consistent with the forecasters' assessment of the evolution of the current synoptic situation.

It is further envisaged that there will be an advanced base located near the Mackenzie Delta where the drilling operators and AES will interface. Forecasts will then be communicated from this base to drilling sites in the Beaufort Sea. It is part of the design study to propose what functions will be carried out at the various offices – the Advance Base, the Arctic Weather Central, CMC and the Ice Central. Most of the problems concerning the design of the prediction system have been identified and action is underway to solve them.

An assessment of the likely effectiveness of the proposed prediction system (from an environmental point of view) is to be completed by the fall of 1975. This assessment will be incorporated into the final DOE Project Report in December 1975. However, if the system is to be ready for 1976, implementation action would have to begin late in 1974 after the main design concepts will have been solved. Implementation actions will of course be the task of the regular AES management and not the task of the AES Beaufort Sea Committee.


170°
160°
150
140
130
120
110
100
60°
BEAUFORT SEA
ALASKA
Proposed Drilling Area
Barrow
Komakuk Beach
Shingle Point
Old Crow
Nicholson Peninsula
Tuktoyaktuk
Tuktoyaktuk A
Inuvik
Sachs Harbour
Johnson Point
Cape Parry
Clinton Point
Mould Bay
Isachsen
Ree Point
Resolu
Dawson
Beaver Creek
Burwash
Mayo
Fort Good Hope
Norman Wells
Cape Young
Lady Franklin Point
Coppermine
Byron Bay
Cambridge Bay
Jenny Lind Island
Gladman Point
Shephe
Faro
Whitehorse
Port Radium
Wrigley
Contwoyto Lake

OBSERVATION

par

A.J. Bureau

Les prévisions publiques sont-elles pour le public?

Il est bien vrai que depuis plusieurs années déjà le Service Météorologique du Canada tente de sensibiliser le plus possible le public aux prévisions météorologiques. Malheureusement, ce n'est pas réussi tout à fait et c'est certainement regrettable. Il semble toutefois que la faute pourrait être imputée au vocabulaire utilisé ainsi qu'à des tournures de phrases difficiles à comprendre pour le profane, quelque soit sa formation scolaire.

La terminologie employée dans les prévisions pour l'usage du public s'approche souvent du ridicule et n'aide pas à vulgariser la météorologie. Il faut d'abord donner au public le produit qu'il veut et non pas un produit voulu par le S.M.C. Cette prévision publique qui se veut un renseignement au public doit être construite autour d'un thème principal en utilisant des mots et expressions compris de la majorité des usagers.

L'ambiguité de certains mots et expressions, bien français cependant, rend le texte inintelligible et le message que l'on voulait livrer n'est pas compris. Des puristes diront que l'on se doit d'utiliser les mots et expressions conformes aux langues, mais en vérité cela ne tient que pour des textes ou écrits spécialisés. Le bulletin atmosphérique est une source d'information nécessaire et utile et pour qu'il en soit ainsi il est impératif que le tout soit fait d'une façon claire, précise et qui évite les équivoques.

Les usagers de ces prévisions se font comprendre et il est juste et raisonnable qu'en retour les prévisions soient comprises. Pourquoi vouloir forcer des expressions sur le public tout simplement parce qu'il s'agit de mots bien français? ou encore parce qu'utilisé en France ou dans quelques dictionnaires? Pourquoi ne pas tout simplement utiliser des mots et expressions que le public utilise et comprend facilement? L'étude de McBoyle de l'Université de Waterloo le démontre bien ce problème et il est a espérer que très bientôt nous adopterons une attitude *plus informative* envers le public pour qui les prévisions sont faites.

THE SAINT JOHN REGIONAL STUDY

by

K. Anlauf & M.L. Phillips

The purpose of this study is to measure the present environmental conditions in the Saint John Region of New Brunswick with particular emphasis on the Lorneville area (about 13 km SW of Saint John).

A preliminary assessment of the effects of the proposed Coleson Cove power station on this region ("The Lorneville Environmental Impact Study, Volumes I and II") was published in 1973. This preliminary report recommended additional atmospheric studies, including meteorological observations with local radiosonde measurements of the vertical structure of the wind and temperature; an extensive program of continuous air-quality monitoring; construction of a multiple source mathematical model for the region to calculate dispersion of contaminants; monitoring of the scavenging of air contaminants by precipitation; monitoring the acidity and sulphate content of soils; and finally, the determination of the effects of air-quality changes on the local ecosystem.

The Atmospheric Dispersion Division (ARQT) at AES has initiated and coordinated a concentrated field study which will be carried out in July 1974. The Atmospheric Chemistry, Criteria and Standards Division (ARQA) is responsible for the chemical and ecological parts of the investigation. The ultimate reason for carrying out this type of study is to determine the impact of man on the environment. For this reason, a detailed investigation of the ecosystem especially in the Musquash Watershed area is planned.

The Air Chemistry Program will include:

(1) air quality monitoring for existing concentrations of sulphur dioxide (SO_2), hydrogen sulphide (H_2S), methyl mercaptan (CH_3SH), nitrogen oxides (NO_x) and ozone (O_3).

(2) the collection and analysis of precipitation samples for sulphates, nitrates, acidity, metals and other trace constituents,

(3) fog sampling to determine dissolved constituents in fog droplets, and

(4) the collection, identification and mapping of the lichen flora of the region. Lichens (simple plants comprised of a fungus and an alga growing together) which grow abundantly on the trees, rocks and soils of this area are particularly sensitive to air pollutants and will be used as indicators of changes in air quality. Both vegetation and soil samples will be collected and analyzed for acidity, buffering capacity, heavy metals and sulphur.

This information, together with the meteorological conditions monitored by ARQT will be used to document the background levels presently existing during the summer in the Saint John region and to provide information on possible long range transport of pollutants. In later years comparisons can be made with this background information and changes in air quality can then be evaluated.

CMS CONGRESS A SUCCESS

Lecture halls with standing room only and a banquet dinner at Ontario Place, highlighted the eighth annual congress of the Canadian Meteorological Society.

The Congress, held at York University from May 29 to May 31, boasted a registration of over 300 from Canada and the United States.

Phil Aber, special assistant to the Director of the Administration Branch, AES, and chairman of the Toronto centre of CMS, said the success of the Congress was due to the "expertise and hard work on the part of local chairmen and their committees." The 1974 Congress attracted over 100 more participants than last year's Congress in Halifax. This is probably because the Toronto centre has the largest membership of all nine CMS centres, explained Mr. Aber. The Toronto section is not only supported by members of AES but also people from the Universities of Toronto and York, including oceanographers, geographers, agronomists and foresters.

Attendance was high at sessions held during the three-day congress. Mr. Aber explained that dual sessions were necessary because of the large number of papers and varied interests of the participants. He hopes that in the future, CMS will be able to run special seminars staggered throughout the year. "But the specialized symposia will only occur when CMS is large, strong and affluent enough to handle it."

Social activities also played a major and successful part in the Congress. There was almost full attendance at Wednesday's luncheon, according to Gloria Miller of the Physical Arrangements Committee. She recalled that guest speaker, Laura Sabia, Chairman of the Ontario Status of Women Council, gave a humorous but well-substantiated talk on female discrimination in various fields of business and academics.

The highlight of the social activities was Thursday night's banquet at Ontario Place, hosted by the provincial government which was represented by Allan Grossman, Provincial Secretary, Resources Development Policies Field. Mr. Grossman had to leave the banquet because of a division call in the legislature, but the banquet continued and a special showing of three films at Cinesphere topped the evening.

The banquet was also the scene for the presentation of meteorological awards. Kenneth F. Hare became this year's recipient of AES' special prize, the Patterson Medal, for his outstanding contributions to meteorology over the past 25 years. J.R.H. Noble, Assistant Deputy Minister, AES, presented the award to Mrs. Hare in lieu of her husband, who was in Nairobi representing Environment Canada. Mrs. Hare thanked the Service for the award and commented on the families of meteorologists who participate, voluntarily or otherwise, in this particular field.

The Patterson Medal was instituted by AES in 1954 and is given to a resident of Canada for unique, outstanding achievement in meteorology or for sustained contributions to the field over several years of service. Fred Page, head of Atmospheric International Affairs at AES Headquarters, said he hopes the Patterson Medal will continue to be part of CMS Congresses, since this is a time when many meteorologists have occasion to come together.

Mr. J.R.H. Noble, Assistant Deputy Minister, AES, awards the Patterson Medal to Dr. Kenneth F. Hare. Mrs. Hare received the award for her husband who was in Nairobi representing Environment Canada, Left to right: Dr. Walter Hitschfeld, President CMS, Mrs. K.F. Hare and J.R.H. Noble.

Photo Courtesy:
A. De Blokhine

INTERCOMPARISON OF PYRANOMETERS AT MIAMI FOR GATE

In preparation of the operational phase of GATE the ISMG decided that wherever possible the radiation instruments which will be mounted on ships and aircraft should be intercompared.

The comparison of radiometers was conducted at the Atlantic Oceanographic and Meteorological Laboratories (AOML) of NOAA in Miami, Florida, during the period April 15 to April 30. The purpose of the Comparison was to provide first, a reference standard pyranometer with calibration traceability to the International Pyrheliometric Scale (IPS 1956), and second, to provide participants with data on the performance of their pyranometers when compared to this reference standard.

The reference standards were provided by the Atmospheric Environment Service of Canada. The standardization program was conducted by Mr. J.R. Latimer assisted by Mr. V. Marsh from April 8 to May 1.

There were representatives present from Canada, France, The Federal Republic of Germany, Mexico, The United Kingdom, The U.S.S.R. and The U.S.A. During the Comparison 67 pyranometers, 21 pypheliometers and 16 sunphotometers were calibrated.

La météorologie selon les Anciens

LA LUNE

Avienus (tiré de sa paraphrase des Pronostics d'Aratus)

Si donc à son troisième jour la lune brille d'un vif éclat, pure de toutes taches, elle présage que la sérénité sera durable. Mais si elle se lève avec un croissant aminci, le visage couvert d'un feu sombre, les Caurus déchaînés soulèveront les mers turbulentes. Si elle paraît ensuite avec une lueur terne, avec les pointes du croissant émoussées, et qu'à son quatrième lever elle ne fasse rendre qu'une ombre faible aux corps frappés de ses rayons, elle sera obscurcie par de noirs nuages ou par les Zéphyrs; elle présage que le Notus soufflera, qu'il pleuvra. Si Cynthie, poussant son char encore pour la troisième fois, tient son flambeau droit, et que les pointes brillantes du croissant se courbent à peine et ne décrivent pas un demi-cercle de lumière dans les airs, c'est un signe que le Zéphyr va se lever du côté de l'occident ou le Notus du côté de la Libye. Si pendant quatre jours Cynthie conduit son attelage en lançant des feux vifs d'un croissant dont les extrémités se prolongent sans mesure, une longue tempête troublera les flots, les Caurus impétueux tourmenteront toutes les mers, des vents furieux balayeront l'abîme. Si la pointe qui est tournée vers Boreas fléchit de côté comme pour s'incliner, elle présage au ciel le souffle cruel de l'Aquilon. Le même indice annoncera l'arrivée du Notus, alors que vous verrez la pointe méridionale du croissant se courber de ce côté et s'affaiser d'elle-même. Quand la lune à son troisième

lever porte autour de son disque un cercle rougeâtre, vous verrez bientôt sous le fracas de la tempête blanchir au loin la mer écumeuse: et le bouleversement des flots sera encore plus terrible, si le visage même de la lune est d'un rouge excessif.

Toutes les fois que la lune paraît environnée d'un cercle, ces trois signes peuvent se présenter: ou le cercle est triple, ou il est double, ou il la ceint d'une circonférence unique. S'il est simple, il présage tantôt une tempête certaine, tantôt un temps serein, par exemple, si la ligne est bien tranchée, elle annonce que les Eurus vont aussitôt se déchaîner; mais si elle se fond peu à peu dans un pâle brouillard et s'étend dans l'espace, elle nous apprend que les ondes seront paisibles. Quand deux anneaux embrasseront la lune, un ouragan violent bouleversera les terres. Si un troisième anneau étreint son disque rougissant, des tempêtes plus terribles encore soulèveront les ondes.

Enfin, si les cercles se détachent de la lune et jettent dans l'espace une traînée sombre, l'Auster furieux répandra plus que jamais l'épouvante, et la tourmente, au dernier degré de sa rage, ébranlera jusqu'au fond l'abîme des eaux.

Légende:

Cynthie	– la lune
Caurus	– vent du sud-ouest
Zéphyr	– vent de l'ouest
Notus (Ostria)	– vent du sud
Aquilan	– vent du sud-est
Boreas	– vent du nord
Eurus	– vent de l'est

GATE SEA-TRIALS AT STATION PAPA

The CCGS QUADRA sailed out of Esquimalt at 9:00 on the morning of March 29, 1974, enroute to Station Papa 1000 miles out in the Pacific Ocean. The purpose of the voyage was to test out equipment that would be used in the GARP Atlantic Tropical Experiment, GATE. The omega sonde system, the boundary layer tethered balloon system and the precipitation radar capability were all new to the ship and had to be thoroughly tested in actual at-sea conditions before GATE commenced. These trials were scheduled far enough ahead of the GATE sail-off (May 17) to allow for modifications and repairs to be made to the equipment.

The QUADRA relieved her sister ship, CCGS Vancouver, on April 1st and stayed at Station Papa until she was, in turn, relieved by CSS Parizeau on April 15. During that two week period all personnel on-board tested, retested and evaluated the equipment. The omega sonde system was of primary importance. This is an all-new system that will be the mainstay of the U.S., German and Canadian upper air program during GATE. Despite this, the trials conducted on the QUADRA were the first extensive field tests of the equipment. The other countries were anxiously awaiting to hear the results of these tests. The results were not all good. Of 70 sondes launched, only 42 operated successfully to above 100mb. However, most of the problems have since been rectified and a much higher

percentage of success is expected during GATE. The omega sonde team increased its frequency of launches from 2 per day at the beginning up to 8 per day for the last three days. This higher frequency is required for intensive observation periods in GATE and the Canadian team showed that it can be done (but not without extra effort by and hardship for the team). Except for a few wild readings, the wind data from the omega sonde agreed very well with the radar wind data.

The radar precipitation program was also checked out. The radar has about twice the range of any other radar to be used in GATE. Information from the radar will be telemetered to Dakar at regular intervals during GATE and will be continuously recorded on magnetic tape. The sea-trials allowed a few bugs to be detected and exterminated so we anticipate a successful program in this area.

The other major program to be checked out during the sea-trials was the boundary layer tethersonde program. This involves a 12m long, 4m in diameter blimp that is tethered to the ship. The tether line is controlled by a winch and allows the blimp to rise to heights of about 1km. Instrument packages are fastened on the tether line at well spaced intervals. The big problem at sea was to successfully inflate, launch and later recover the balloon. When the winds were about 15 knots or less this proved to be no problem provided the team of 6 or 7 worked well together. However, when the recovery was attempted in 20 knot winds the blimp jumped around in the complex wind flow around the ship and then dove into the deck of the ship, bursting on impact. The blimp has since been repaired but the experience showed that it will require great care in use of the blimp launch or recovery should be set at about 15 knots.

The instrument packages for the tethering line were found to work quite well with only a few minor problems. These have now been corrected and three packages will be run at different heights during GATE. These will measure wind speed and direction, temperature, humidity and pressure and telemetre the information back to the ship.

In retrospect the GATE sea-trials were a well worthwhile exercise. Equipment was tested, faults found and corrected, personnel were tried out at sea and all-in-all the sea-trials should make our GATE contribution significantly better.

CN Tower. Photo Courtesy CN

CN TOWER TO BE USED FOR RESEARCH

A new landmark can be seen on the horizon to the south of AES Headquarters – the CN tower. The 1805 foot tower, the first structure to be built in the Metro Centre development in downtown Toronto, will be the tallest freestanding structure in the world.

Construction on the 1500 foot concrete section of the tower is proceeding well. Tower-watchers are waiting to see the 300 foot transmission mast go on top, and the installation of the 140 foot diameter, 7-storey "Sky Pod" at the 1200 foot level.

AES interest in the CN tower is focused on wind and temperature sensors to be installed at four levels up to 1805 feet. This project is part of a joint study with the University of Toronto and the National Research Council. The wind and temperature data will be used for studies on the structure itself and for the measurement of vertical profiles in connection with air quality research. The tower affords a unique opportunity to study the atmosphere in an urban area, and later plans include the installation of air pollution monitors at several levels.

Here are some facts about the tower.

Elevator capacity	1,300 people per hour, each way
Dining room capacity	400 people
Observation area capacity	600 people
Main observation level	1,126 feet
Upper observation level	1,500 feet
Dining room level	1,140 feet
Total floor space (sky pod)	70,000 square feet
Total floor space (base)	25,000 square feet
Volume of concrete	106,000 tons
Total weight of tower	130,000 tons

THE COLOURED ATMOSPHERIC URBAN HAZE

by

R.D.S. Stevens

From time to time in the large urban areas of southern Ontario, as well as in other world urban centres, a coloured haze extending from ground level to heights of the order of 1 km can be seen. The haze varies in colour, depending upon conditions, from a brownish to a yellowish-brown shade.

Measurements that have been made during haze conditions have shown concurrent increased concentrations of O_3 (ozone), NO_2 (nitrogen dioxide), and the lachrymatory substance PAN (peroxyactyinitrate). Thus, the observed coloured haze was (in at least these instances) but the visual manifestation of photochemical smog formation.

It has been frequently observed in Metropolitan Toronto that even on days of a "strong" haze the air pollution index (API) published by the "Ontario Air Management Branch" is surprisingly low. However, in view of the fact that the API is a number dependent only upon the SO_2 (sulphur dioxide) concentration and particulate loading of the air, this apparent anomaly can be quite easily explained.

The actual cause of a coloured haze over a urban area can vary somewhat, depending upon local conditions. However, recent work shows that the cause in most urban areas is the presence of molecular species (such as NO_2) which are strong absorbers in the near ultra violet-blue region (350-450 nm) of the spectrum. This explains the poor correlation between the occurrence of a coloured haze in Toronto and the API.

Now, given that the most probable cause of the coloured haze is the presence of elevated levels (15-50 ppb) of NO_2 in the air, an obvious subsequent question is: "Where does it come from? " The answer lies in the fact that whenever O_2 (oxygen)and N_2 (nitrogen) are brought together at an elevated temperature (i.e. any combustion process involving air), NO (nitric oxide) will be produced in concentrations of the order of 2000 ppm (0.2%) and NO_2 at a level of about 5 ppm (0.0005%). However, the NO produced in the combustion process will at usual ambient temperatures (0 – 30°C) be oxidized almost completely to NO_2.

Thus, most of the NO_2 in the atmosphere has NO as its precursor, which is in turn produced by any anthropogenic or natural combustion process involving air.

Also, because of subsequent processes involving NO_2, the conversion of NO to NO_2 is self accelerating, i.e. the more NO_2 that is produced, the faster will be the conversion of NO to NO_2.

An emission inventory of the nitrogen oxides for Toronto for 1972 yielded the following approximate contribution on an annual basis:

R.L. Hearn and Lakeview generating stations	51%
Automobiles	21%
Industries and Commercial	16%
All other (home heating, railroads, etc.)	12%

However during the summer months the relative contribution would change to approximately 1/3 from the power generating stations; 1/3 from automobiles and 1/3 from all other sources.

From the above figures it can be seen that the major contributors to the formation of the coloured haze are most likely to be the power generating plants and the automobiles. In view of this, it appears that given the right meteorological conditions, the coloured haze often seen over Toronto and other urban areas will be with us for some time to come.

CF-NAY at CFB, Downsview.

The first group of AES visitors on leaving the aircraft (Left to right: L.T. Campbell, J.R.H. Noble, H. Cameron, R. Vockeroth).

ICE RECONNAISSANCE AIRCRAFT VISITS CFB DOWNSVIEW

With the kind co-operation of the Base Commander, CFB, Downsview, ice reconnaissance aircraft Nordair Ltd., Electra L188C, after an ice patrol over the Great Lakes on April 17, 1974, landed at CFB, Downsview for several hours.

The purpose of the short visit to Downsview was for those AES personnel to see the plane and its specialized ice observing equipment. Both the AES ice observer team, led by Field Ice Supervisor, Bill Webb, and the Nordair aircrew, led by Captain Bob McGrory, stood by to explain operation in detail to the AES visitors, most of whom had not seen the plane before even though they had been involved in the program. Staff specialists from the Ice Division were also available to augument the briefing team in Headquarters aspects of the program.

In spite of an 0600 operational departure from Montreal that day, all crew members, both Nordair and AES, were keen and alert and presented a "ship shape" appearance. Shortly after the visitors departed, the aircraft left for Montreal and on the following day re-deployed to Gander for Eastern Canadian Seaboard Ice Reconnaissance.

AES WELCOMES NEW COMPUTER

by

Susan Yellin

A new member of the family has been added to the Computing Centre of the Atmospheric Environment Service. The addition is the IBM Computer, System 370/135.

The new computer was described by B.V.S. Cudbird, Chief of the Computing Centre –Meteorological Applications Branch – as "much more of a baby" than other computers. Previously, when the power went off in the computing centre, the computer remembered the work that was put into it. Now, when the power goes off, the memory banks on the computer are cleared like a blank slate. Intelligence must be implanted into the computer every morning which takes abut three or four minutes.

Though this might seem a step in the wrong direction, the IBM 370 is an extreme improvement on the stand-point of cost and economics. The new computer is four to seven times faster than the older ones but with less than one-twelfth of the cost increase. This in turn will cause a rapid advance of technology with work accomplished in a much shorter time span.

The computing centre rents the IBM 370/135 at $14,850 a month rather than buying the device because technology is moving so fast that it would be both financially and scientifically unwise to give it a permanent home.

The opening ceremony for the IBM computer 370/135 was held in the Computer Room at AES Headquarters. From left to right: C.C. Boughner, J.R.H. Noble, B.V.S. Cudbird.

The IBM 370/135 is four to seven times faster than older models, with less than one-twelfth of the cost increase.

J.R.H. Noble cuts the ribbon at the official opening ceremony of the IBM computer.

Photos Courtesy:
A. De Blokhine

John Rogalsky, Head of Computer Systems and Service at AES Headquarters, has more hopes for the new computer other than setting up new hard- and soft-ware. With the increased efficiency produced by the IBM 370, Mr. Rogalsky would like an improved organizational set-up which would then ameliorate services to customers more effectively and in a more timely manner.

Mr. Rogalsky explained that as of now, the private sector makes use of 20 to 30 per cent of the AES computing centre's services. The centre has not been able to satisfy all of these people's requests – the ratio being three demands to every one the centre is able to comply with. It takes three to four months for a job to be completed for clients outside of AES, and up to twelve months for one to be finished for those inside the Service. Although the new computer is much more effective than the older ones, Mr. Rogalsky said that "demands might mushroom and the computer might not be able to keep up with these demands."

The ceremony for the opening of the IBM System 370/135 was held May 22 in the computer room at AES Headquarters.

J.R.H. Noble, Assistant Deputy Minister of Atmospheric Environment Service, cut the ribbon and pushed the "on" button of the new computer starting another era in effective computer operations.

Mr. Noble recalled that it has been almost a quarter of a century since AES acquired its first five hand-operated punches in the Admiral Road Office. "Since then the computing unit has developed for itself an effective and efficient activity in projects such as GATE (GARP Atlantic Tropical Experiment) where Canada has been involved in the data processing part of the experiment."

C.C. Boughner, former Director-General, Central Services Directorate, performed the cake-cutting ceremony after he quipped: "Don't you have it (the cake) programmed?"

The ceremony was headed by Mr. Cudbird and attended by L.T. Campbell, Director-General, Central Services Directorate, M.K. Thomas, Director of the Meteorological Applications Branch, as well as Mr. Rogalsky and almost seventy other members of AES.

PERSONNEL

The following transfers took place:

M.M. Horita	From: Prairie Weather Central To: Pacific Weather Central
R.W. Brown	From: W.O. Edmonton To: Pacific Weather Central
R.D. Paterson	From: AES HQ To: CFB Shearwater
E.A. Spira (nee Vale) (Mrs.)	From: CFB Summerside To: W.O. Toronto
D.E. Greig	From: AES HQ To: W.O. Toronto

The members of Course MT30 were posted as follows:

L.G. Bertolone	To: W.O. Toronto
S.E. Corbett (Miss)	To: CFB Trenton
D.A. Dueck	To: W.O. Toronto
J. Falkingham	To: Vancouver WO/WC
R.V. Horne	To: W.O. Halifax
K.A. Jensen (Miss)	To: CFB Winnipeg
K.H. Kirkwood	To: CFB Summerside
A.W. Macafee	To: CFB North Bay
R.M. Matton	To: CFB Greenwood
G.M. Rideout	To: W.O. Toronto
D.J. Russell	To: CFB Shearwater
G.M. Toth	To: CFB Cold Lake
G. Vachon	To: CFB North Bay
R. Wall (Miss)	To: W.O. Halifax

The following are on temporary duty or project assignment:

C.J. Brosch	From: W.O. Winnipeg To: AES HQ

The following have accepted positions as a result of competition:

73-DOE-TOR-CC-347	Meteorology (MT7) OIC, Prairie Hydrometeorological Office Regina, Sask. H.F. Cork
73-DOE-TOR-CC-378	Meteorology (MT10) Superintendent, Meteorological and Oceanographic Plans, Requirements and Training; Directorate of Meteorology and Oceanography National Defence HQ, Ottawa M.R. Morgan
74-DOE-TOR-CC-1	Meteorology (MT6) Instrument Design Meteorologist Design and Development Division AES HQ, Downsview C.E. Robinson
74-DOE-TOR-CC-13 (2 positions)	Meteorology (MT7) Supervising Prognostician-Analyst Shift Supervisor Meteorologist Arctic Weather Central Edmonton, Alberta S.M. Checkwitch J.C. Linton
74-DOE-TOR-CC-19	Meteorology (MT5) Supervising Forecaster Toronto Weather Office B.J. O'Donnell
74-DOE-TOR-CC-29	Meteorology (MT8) Acting Supervisor Research Project Instrumentation Unit Instrument Research and Development Section Instrument Branch AES HQ, Downsview V.R. Turner
74-DOE-TOR-CC-32 (2 positions)	Meteorology (MT9) Chief Instructor (1) Professional Training Division (2) Professional Development Division Training Branch, AES HQ, Downsview W.D. Lawrynuik M.W. Balshaw

73-DOE-ONT-CC-54	Meteorology (MT7) Scientific Support Officer Regional Office, Central Region Winnipeg, Manitoba E. Einarsson
72-AES-CC-309	Meteorology (MT9) Regional Superintendent General Weather Services Quebec Region Montreal, Quebec L.L. Primeau
Genot 006	Meteorology – 6-month T.D. Assignment Metric Conversion – Publicity Program AES HQ, Downsview N.B. Waller (Miss)

Meteorological Technicians, Joe Pacholik, Ottawa, Rich Poersch, Toronto, Gord McDonald, Calgary, were in attendance as delegates to the Canadian Labour Congress Convention which was held in Vancouver from May 13 to May 17. While on the west coast, they had an opportunity to meet with EG-ESS groups, Environment, in Victoria-Nanaimo and Vancouver.

They also took this opportunity to visit Ship Quadra, just prior to its departure on project GATE. The crew was most cooperative in giving a very informative and interesting tour.

NOAA IFYGL AWARD

Chief of Division T.L. Richards was the recent recipient of a citation and wall plaque "In appreciation for outstanding contributions to the success of the IFYGL" as a result of his efforts as Canadian Co-chairman of the IFYGL Steering Committee. The award was made by Dr. Robert M. White, Administrator of the United States National Oceanic and Atmospheric Administration.

Gilles Surprenant, third from left, receives his Certificate of Authority to take limited weather observations for purposes of Air Traffic Control, from A.S.T.S. Instructor Phil McLaughlin during the recent graduation ceremony of ATC Course 79. These certificates which were previously presented to the tower controller in the field upon completion of his "checking-out" are now being issued to the graduate students at A.S.T.S. Ottawa.

Gilles ranked high student in meteorology on his course with an overall average of 96%. Looking on are, left, Mr H.M. Hutchon, Director, Air Traffic Services and extreme right, Mr W.M. McLeish, Director General, Civil Aeronautics.

TRIVIA

Our Fame Spreads . . .

Saint Augustine
Roman Catholic School
Augustine
Mountain Pine Ridge
El Cayo District
Belize, C.A.

25th April, 1974

The Department of Transport
Meteorological Branch
Head Office, 315 Bloor Street West
Toronto 5, Ontario

Gentleman,

My Classes Std. IV, V & VI

Turned the pages of your Book Canada. A New Geography Written by Professor Ralph R. Krueger, etc. We were studying Weather and Climate; we started from Page 133 and ended at page 151. Presently Questions and answers came, suddenly a boy asked "How can we get more informations about this lesson," He said.

On page 135 there is a transport Department we can write them, all opened their Books and turned to the above mentioned Address: Please favour our school Free without obligation a few sets of weather Maps and some Manuals.

Thank You Gentlemen
We beg to remain Yours Truly,
IV, V & VI.

To 'language up' an opponent is, according to Symes' *Dictionary of Lifemanship and gameswords*, 'to confuse, irritate and depress by the use of foreign words, fictitious or otherwise, either singly or in groups'.

Cleanliness once lived next door to godliness but both tenants vacated some time ago.

Second thoughts are best but we seldom get a chance to use them.

Another thing we all seem to be saving for our old age is the national debt.

IDIOMES

par

Elsa Strutt

à quoi bon	(what is the use)	A quoi bon sortir puisqu'il pleut.
au cours de	(during)	Il a fait plusieurs erreurs au cours de la journée.
au pis aller	(at the worst)	Au pis aller, vous perdrez votre argent.
au train dont il y va	(at the rate he goes)	Au train dont il y va, il perdra sa santé.
avoir envie de	(to desire)	J'ai envie d'aller en vacances.
avoir l'air	(to look)	Vous avez l'air fâché.
avoir lieu	(to take place)	La cérémonie aura lieu demain.
cela saute aux yeux	(it is obvious)	Il n'aime pas son travail, cela saute aux yeux.
connaître de vue	(to know by sight)	C'est un gentil bonhomme, je le connais de vue.
de son vivant	(during his lifetime)	De son vivant, il travaillait beaucoup.
en vouloir à	(to have a grudge against)	Il ne faut pas m'en vouloir, ce n'est pas ma faute.
être au courant de	(to be up to date)	Je suis au courant de cette affaire.
être en train de	(to be busy with)	Je suis en train de taper une lettre.
faire des courses	(to go out shopping)	Je fais des courses tous les samedis.
se passer de	(to do without)	Je ne peux pas me passer de nourriture.
se rendre compte de	(to realize)	Il ne se rend pas compte du mal qu'il a fait.
se tirer d'affaire	(to manage)	Vous vous tirerez d'affaire, croyez-moi.
s'il ne tient qu'à cela	(if that is all)	S'il ne tient qu'à cela, je le fais.
sur-le-champ	(at once)	Faites ceci sur-le-champ.
valoir la peine	(worth the trouble)	Croyez-vous que cela vaut la peine?
valoir mieux	(to be better)	Il vaut mieux rester à la maison.
quoi qu'il en soit	(be that as it may)	Quoi qu'il en soit, je ne viendrai pas.
qu'importe	(what does it matter)	Qu'importe, la police sera là bientôt.
se faire à	(to grow accustomed to)	Sois patient, tu t'y feras.
à tort et à travers	(at random)	Il parle à tort et à travers.
à tout prix	(at all costs)	Il faut à tout prix assister au club français.
tenir à	(to value)	Je tiens beaucoup à revoir cette amie.
tenir de	(to resemble)	Il tient de son père.
tout au plus	(at the most)	Elle a quarante ans tout au plus.
venir à bout	(to succeed)	Nous sommes venus à bout de ce projet.
bon gré, mal gré	(willingly or not)	Il faut le faire, bon gré, mal gré.
être bien mis	(to be well dressed)	Cette fille est toujours bien mise.
faire la connaissance de	(to meet)	Je voudrais faire la connaissance de cette personne.
il est têtu comme un âne	(he is stubborn as a mule)	N'insistez pas, il est têtu comme un âne.
où voulez-vous en venir?	(what are you driving at)	Je ne comprends pas, où voulez-vous en venir?