

Environment Canada Imaging Cover Page

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Environment
Canada

Environnement
Canada

Atmospheric
Environment
Service

Service
de l'environnement
atmosphérique

ATMOSPHERIC ENVIRONMENT SERVICE

PROGRAM DIGEST

1981 - 1982

PROGRAM DIGEST 1981-82

Atmospheric Environment Service

Department of the Environment

July 1981

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Introduction

Budget Digests have been prepared over the years in order to present a concise overview of the Atmospheric Environment Service (AES) by organization and budget. In 1979/80, the focus of planning and budgeting in AES was changed from the organizational structure to the Program Activity Structure (PAS). One of the results of this change was that a Budget Digest was not produced that year. In 1980/81, the budgets were prepared and displayed in the Program Digest by PAS for the first time (for the top two levels of the PAS only).

The Program Activity Structure has been revised since the 1980/81 Digest was produced and the new PAS is displayed in Appendix A. Budgets for 1981/82 are displayed according to this new PAS and appear in Appendix C for the first 2 levels. Major revisions to the PAS are as follows:

- a) The sub-activity "Weather and Sea State Services" has been renamed "Weather Services."
- b) The sub-activity "Meteorological Research and Development and Air Quality" is now called "Air Quality Services and Atmospheric Research."
- c) A 6th sub-activity called "Departmental Integrated Programs" has been added.
- d) The budgets of the Meteorological Services Research Branch and Training Branch are now included in the "Weather Services" sub-activity budget. (Last year, their budgets were part of the "Meteorological Research and Development and Air Quality" and "Management and Common Support Services" sub-activities respectively.)

An addendum to this Program Digest is planned for limited circulation to AES Management Committee members. This will contain a number of appendices which will display the budget data down to the third level of the PAS.

Any errors in or suggestions to improve this Program Digest should be directed to the Chief, Program Development and Integration Division (ADEC) at AES Downsview.

Atmospheric Environment Service
Responsibilities

Atmospheric Environment Service Responsibilities

The federal responsibility for atmospheric science and meteorology is discharged by the Atmospheric Environment Service of the Department of the Environment. The Meteorological Service of Canada was organized in May, 1871 when it became part of the Department of Marine and Fisheries. In 1936, it became the Meteorological Division (later the Meteorological Branch) of the new Department of Transport where the responsibility for meteorological services remained until the Department of the Environment was formed as a result of the Government Organization Act 1970 and PCO 1970-2047. At this time the Meteorological Branch was transferred from Transport to Environment and became the Atmospheric Environment Service. Subsequently, the Government Organization Act of 1979 stated that

"The duties, powers and functions of the Minister of the Environment extend to and include

- (a) all matters over which the Parliament of Canada has jurisdiction, not by law assigned to any other department, board or agency of the Government of Canada relating to
 - (1) the preservation and enhancement of the quality of the natural environment, including water, air, and soil quality,
 - (11) renewable resources,
 - (111) water,
 - (iv) meteorology,
 - (v) notwithstanding paragraph 5(f)
 - (vi) the coordination of the policies and programs of the Government of Canada respecting the preservation and enhancement of the quality of the natural environment; and
- b) such other matters over which the Parliament of Canada has jurisdiction relating to the environment as are by law assigned to the Minister

In addition, the Act directed that.

"The Minister of the Environment, in exercising his powers and carrying out his duties and functions (under the above quoted paragraphs) shall

- a) initiate, recommend and undertake and coordinate programs of the Government of Canada, that are designed
 - (1) to promote the establishment or adoption of objectives or standards relating to environmental quality, or control pollution
 - 11) to ensure that
 - 111) to provide to Canadians environmental information in the public interest "

Though meteorological services are recognized as being the Federal Government's responsibility, in some specific areas AES shares this responsibility with the provinces. In addition, AFS is involved in co-operative international programs. AES is also the lead scientific agency responsible for the Long Range Transport of Airborne Pollutants Program, and is jointly responsible with other Services of the Department for such programs as Toxic Chemicals, Environmental Emergencies, Baseline Studies, Environmental Assessment and Review Process, and Great Lakes Water Quality

Atmospheric Environment Service

Objectives

Atmospheric Environment Service - Objectives

Governed by its legal mandate, the purpose of Environment Canada is to

-foster harmony between society and the environment for the benefit of present and future generations of Canadians.

To achieve this, the department pursues four principal objectives

1. Conserve and enhance Canada's renewable resources for sustained economic and social benefit
2. Protect the environment from the adverse impact of human activities
3. Facilitate the adaptation of human activities to the environment
4. Safeguard, and foster public understanding and enjoyment of, Canada's natural and historic heritage.

AES objectives reflect both long standing and newly-assigned responsibilities compatible with Environment Canada's objectives. They are:

1. To contribute through the full application of meteorological and other environmental services, to
 - a) the safety and security of life and property,
 - b) the improvement of the national economy,
 - c) the enhancement of the environment, and
 - d) the raising of the quality of life of Canadians.
2. To advance knowledge and understanding of the nature and behaviour of the atmosphere, atmospheric constituents, and atmosphere/water and atmosphere/land interface relationships, in areas which will contribute to the long-term improvement of national, social, environmental and economic conditions.
3. To promote Canada's meteorological and other environmental interests in their international dimensions and the science and practice of meteorology within Canada.

While working towards these objectives, the AES must respond to the general objectives of the federal government and the Department, and must promote public awareness of meteorology, other environmental disciplines and the AES.

More details on AES objectives may be found in the publication "AES Priorities, Objectives and Goals 1981-1986."

ATMOSPHERIC ENVIRONMENT SERVICE
ORGANIZATION CHART

Organizational Structure

The Atmospheric Environment Service is organized functionally into 4 directorates and 2 Branches

Field Services Directorate
Research Directorate
Canadian Climate Centre
Central Services Directorate
Administration Branch
Program Development and Evaluation Branch

All four directorates and the Administration Branch have their headquarters at Downsview, Ontario, while the Assistant Deputy Minister and the Program Development and Evaluation Branch have their offices primarily in Hull, but also maintain support staff at Downsview

On the organization chart, the lines of reporting are clearly defined, with Directors reporting to Directors General who in turn report to the Assistant Deputy Minister. The Field Services Directorate is by far the largest AES directorate and is responsible for providing weather services for all of Canada. To accomplish this, it maintains 6 regional offices across the country with each office managed by a Director.

The Atmospheric Environment Service provides weather and sea-state services to the Department of National Defence as provided for in a Memorandum of Understanding between the 2 parties. The DND maintains a Canadian Forces Weather Service headed by the Director of Meteorology and Oceanography (DMetOc) in Ottawa. DMetOc reports functionally to a higher level DND authority on administrative matters while on technical matters, he reports to the ADM of the Atmospheric Environment Service in liaison with Field Services Directorate.

Finally, the Ontario Area Personnel Office and the Information Directorate which are both located at Downsview report directly to the ADM.

ATMOSPHERIC ENVIRONMENT SERVICE
ORGANIZATION CHART

July 1981

ASSISTANT DEPUTY MINISTER
J Bruce

FIELD SERVICES DIRECTORATE
J A W McCulloch

Field Meteorological Systems Branch
P I Johns

Canadian Meteorological Centre
F Lemire

RESEARCH DIRECTORATE
Dr W L Godson

Atmospheric Processes Research Branch
Dr. A J Chisholm

Air Quality Research Branch
H L Ferguson

Meteorological Services Research Branch
Dr I Rutherford

CANADIAN CLIMATE CENTRE
M K Thomas

Climatological Applications Branch
G A McKay

Research
Dr P E Merilees

CENTRAL SERVICES DIRECTORATE
D K Smith

Training Branch
P G Aber

Ice Branch
W E Markham

Data Acquisition Services Branch
Dr J Kruss

Computer Services Branch
Dr K. Dawson

ADMINISTRATION BRANCH
R Lee

PROGRAM DEVELOPMENT AND EVALUATION BRANCH
G M Shimizu

ONTARIO AREA PERSONNEL
J. Boll

INFORMATION SERVICES
Y Baldachin

DMetOc
Dr J R Asselin

PACIFIC REGION
Vancouver, B C
J R Mathieson

WESTERN REGION
Edmonton, Alta
B Burns

CENTRAL REGION
Winnipeg, Man
M W Balshaw

ONTARIO REGION
Toronto, Ont
G A. McPherson

QUEBEC REGION
St-Laurent, Que
R J. Fichaud

ATLANTIC REGION
Bedford, N S
H B Kruger

ATMOSPHERIC ENVIRONMENT SERVICE
PROGRAM COMPONENTS

Atmospheric Environment Service Activity Structure

The Department of the Environment has three Main Estimates Programs: Administration, Environmental Services and Parks Canada. The Environmental Services Program is divided into four activities - Environmental Protection Service, Environmental Conservation Service, Canadian Forestry Service and Atmospheric Environment Service. The AES, in turn, is broken down into six sub-activities, which are as follows:

- Weather Services
- Climate Services
- Ice Services
- Air Quality Services and Atmospheric Research
- Departmental Integrated Programs
- Management and Common Support Services

While there is a close relationship between the two, the organizational structure of AES does not correspond directly to its six sub-activities. The Administration Branch is included in Management and Common Support Services; the Canadian Climate Centre is in Climate Services, and the Research Directorate is in Air Quality Services and Atmospheric Research. The Central Services Directorate is divided between all six sub-activities. Further, though most of the Field Services Directorate is within Weather Services, portions of the Regional Scientific Services Divisions lie within the Climate Service sub-activity. As these units become more involved with air quality and research, it is anticipated that parts of their activities will fall within the Air Quality Services and Atmospheric Research and Departmental Integrated Programs sub-activities.

Sub-Activity: WEATHER SERVICES (1853 PY and \$92,085 2 K)

Objective

To provide present and predicted weather and marine data and advice for the safety of Canadians, the security of their property, the support of economic activities and the protection of the environmental quality in Canada, and to acquire the basic understanding of atmospheric properties and behaviour needed to maintain and enhance such services

Description

The Weather Services sub-activity has the following sub-sub-activities:

- Public Weather Services
- Marine Weather Services
- Aviation Weather Services
- Economic Weather Services
- Canadian Forces Weather Service
- Data
- Weather Services Support Systems

Public, Marine, Aviation, Economic and Canadian Forces Weather Services

The activities of these sub-sub-activities involve a commitment to provide, on a 24-hour basis, year-round, real-time information on current and predicted weather for all areas of Canada. Services include:

- providing weather and sea-state forecasts, advisories and warnings for all Canada (including our adjacent waters) for the public as well as for marine, transportation, agriculture, tourism, utilities and other interests,
- providing consultation and advice on the use of weather, climatological and sea-state data and information,
- providing aviation weather services in Canada according to a Memorandum of Understanding between the Departments of the Environment and Transport;
- providing weather and oceanographic services to the Canadian Forces operating both in Canada and abroad, according to Memoranda of Understanding between the Departments of the Environment and National Defence

Seven Weather Centres located at Vancouver, Edmonton (Arctic and Alberta), Winnipeg, Toronto, Montreal and Halifax conduct a detailed study of meteorological factors in their respective areas of responsibility. They provide weather and sea-state forecasts to the public and other clients. In addition they provide professional guidance to Weather Service Offices which are also responsible for dissemination in designated areas of responsibility.

Weather forecasts, advisories and information services are provided for the general public, marine interests, aviation, agriculture, forestry and other specialized users through sixty-three Weather Service Offices (see Appendix G)

The services provided vary, depending on the needs of the users. For example, surface wind and visibility are emphasized in marine forecasts while weather conditions at airports, significant en route weather and winds and temperatures at flight levels are emphasized in the aviation weather forecasts. Both marine and aviation forecasts are exchanged internationally. Weather forecasts for other users such as agriculture and forestry interests serve activities such as frost prevention, crop spraying and forest fire control. In addition, support is provided for air quality services and environmental assessment programs through the Weather Service Offices and the Scientific Services Units.

Warnings of hazardous weather conditions are important services in the AES program. They are issued, as appropriate, for the general public and for marine and other interests.

A system of special radio stations called "Weatheradio" is now operating, 24 hours a day, in many Canadian urban centres. Weatheradio provides up to the minute weather forecasts and reports and satisfies most of the needs of the general public. The broadcasts, over VHF-FM radio, also include transmission of a special signal which will alert users that a weather warning has been issued.

Data

Surface weather observations are provided by a network of about 330 principal weather stations and supplemented by voluntary observing programs undertaken by over 280 ships operating on the Great Lakes and the Atlantic, Pacific and Arctic Oceans. Weather reports are also obtained from 58 automatic reporting stations. An upper air network of 33 stations, provides temperatures, pressures, relative humidities and wind velocities in the free atmosphere to heights of 35,000 metres. Both surface and upper air observations are taken at regular intervals and made available in real-time for weather analysis and advisory purposes. They are also fed into an international communications network for use by the weather services of other countries. In return, AES receives worldwide surface and upper air data.

A network of 230 synoptic weather stations and 2341 climatological stations provides information to define the Canadian climate, and to make a data source available for meteorological applications and climatological services work. Some of the climatological stations are jointly operated through agreements with some of the provinces.

In addition, special networks provide additional information to support operations and research. A weather radar network, with units strategically located at 10 sites across Canada, provides information on the presence and movement of severe storms and precipitation areas. Satellite readout stations at four Canadian locations (at Vancouver, Edmonton, Downsview, Halifax) and a joint Canadian-Danish station at Sondre Stromfjord provide pictorial data on North American weather systems which are distributed to operational offices.

Many of the weather stations carry out special observational programs such as seasonal freeze-up and break-up of water bodies, evaporation, sunshine, and total ozone. Five weather stations take seismic observations for the Department of Energy, Mines and Resources. Air quality measurements are being carried out at 56 locations, and monitoring for atmospheric radioactivity is done at 25 stations for the Department of National Health and Welfare.

Weather Services Support Systems

This sub-sub-activity provides many of the support services necessary for the efficient functioning of a modern weather service

The Canadian Meteorological Centre (CMC) in Montreal employs advanced computer techniques and sophisticated mathematical models of the atmosphere to generate prognoses of meteorological conditions on a synoptic scale for periods of up to 72 hours. These numerical weather predictions are used as a major support for all other forecast offices in the AES network.

Research in Downsview and in Montreal is carried out to improve the forecast service and related data acquisition and processing activities described previously. This work includes numerical prediction research which concentrates on synoptic-scale model development. Local forecasting methods are also developed and implemented to support regional local forecasting. In the Arctic and offshore areas, emphasis is being given to atmosphere related environmental prediction (ice, wind-wave, oil slick motion, etc.). Meteorological satellite research and development is being accelerated and weather radar development continues to receive attention, both in relation to its integrated use with satellite data and its direct application to short-range severe storm forecasting.

Another support system is the AES Communications System. This is required for the rapid collection and dissemination of national and international data and information and is achieved by a computer-controlled teletype system and a national facsimile system. The Communications System was reviewed in 1980-81 and a plan for its upgrading has been finalized. A number of implementation projects are in progress.

Training Branch develops and conducts advanced and refresher training courses for professional meteorologists at AES Downsview and at the major weather offices across the country. Technical training courses are provided in both official languages, by AES staff at the Transport Canada Training Institute in Cornwall. Similar courses are also given at the USAF Dewline Training establishment in Colorado Springs, Colo., U.S.A. Training Branch also holds discussions and negotiations with Canadian Universities regarding the development of programs in meteorology.

The Data Acquisition Services Branch of Central Services Directorate develops, designs and evaluates meteorological instruments to determine the optimum instrumentation required for the Weather Services sub-activity. It is also responsible for the procurement, testing, installation and maintenance of field instruments.

Sub-Activity: CLIMATE SERVICES (222 PY and \$8,747 2 K)

Objectives

- 1 To provide the climate data and advice required to assist in meeting Canadian social, economic and environmental objectives.
- 2 To increase and enhance the utility and actual application of climate knowledge in support of Canadian social, economic and environmental objectives
- 3 To improve the knowledge and understanding of the climate as a physical system interacting with ecosystems so as to develop the ability to anticipate and react to climate changes both natural and man made
4. To monitor the climate system so as to provide timely advice on its present state and probable projections of its evolution on monthly, seasonal and annual time scales.
- 5 To be the Canadian focus for the scientific, organizational and educational activities related to Climate
6. To promote Canada's international climate interests

Description

The Climate Services Program consists of all activities of the Canadian Climate Centre (CCC), some activities of the Atmospheric Research and Central Services Directorates and specific services provided by the Regional Scientific Services Divisions. The CCC provides a central focal point for, and plays a leading role in, integrating all climate related activities in Canada. A national Canadian Climate Program will be presented to Cabinet this year that will allow for liaison and cooperation amongst DOE services, other federal government departments and with provincial governments in the provision of climate and climate related services.

The Research divisions are responsible for determining the extent to which climate can be predicted, the extent of mans' impact on climate, and for developing an understanding of cause and effect relationships within the climate system. The Applications divisions provide expertise on the analysis and interpretation of climate data and on the understanding of man/climate interactions, apply climate data and theory to hydrological and marine problems; and conduct research in the field of hydrometeorology. Most services in applied climatology are supplied in the AES Regions with the CCC acting as back up for complex, national or subject specific projects. The CCC provides climate data, information and guidance along with applications services and consultations to federal government departments, to national private sector organizations, to AES Regions and on referral to the general public. Finally, the CCC is responsible for data management including the documentation, quality control and archiving of Canadian climate data.

Sub-Activity ICE SERVICES (51PY and \$10,298 6K)

Objective

To provide ice data and advice for the safety of Canadians, the security of their property, the support of economic activities and the protection of the environmental quality in Canada

Description.

This sub-activity includes developing and maintaining acquisition systems for ice data, provision of predictions on the formation, growth, movement and nature of ice in Canadian and adjacent waters for periods of up to one year in advance, and consultation and advice on ice data to the Canadian public and specialized users such as energy, marine and fisheries interests over the 200-mile economic zone

Ice Observations

Ice observation programs are conducted from aircraft, ship and shore stations in support of shipping in the ice congested waters of Canada during the appropriate seasons. Aerial ice reconnaissance is carried out every month of the year in one or more areas of the Eastern Canadian Seaboard, Canadian Inland Waterways, Hudson Bay, Hudson Strait and Canadian Arctic Waters. Satellite observations are being integrated into the data acquisition system.

Ice Forecasts

From the Ice Forecast Centre in Ottawa, forecasts of the extent and characteristics of ice in the form of short-range tactical forecasts and longer-range strategic forecasts are provided for the lower St. Lawrence River, Gulf of St. Lawrence, coastal waters of Newfoundland and Labrador, Hudson Bay and its approaches, and the waters of the Canadian Arctic, including the Beaufort Sea.

Ice Climatology

The need for ice climatology and its application to Arctic development and winter time industrial development along Canada's east coast is growing. Ice climatological services are being provided and the supporting data base is being expanded.

Sub-Activity AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH
(106 PY and 5,637 4 K)

Objectives

- 1 To advance knowledge and understanding of the nature and behaviour of the atmosphere and its constituents and their interactions with man, his activities and other components of the natural environment
2. To provide information and predictions of air quality conditions for areas of Canada and adjacent waters.
- 3 To develop, operate, and maintain systems for acquiring data on the quality of the atmospheric environment and on the deposition from the atmosphere of contaminants, in Canada and adjacent areas

Description

The nature of the AES responsibilities, and specifically because of accelerating advances in science, technology, and automation, makes it imperative that AES have a research and development capability to advance the quality of its service. This capability includes:

- theoretical and applied research to improve our understanding of meteorological processes and atmospheric physics and chemistry
- research on the long-range transport of air pollutants, including the cause-effect relationship between pollutants and receptors; on the impact of man's activities on the atmosphere, the air/land and air/water interface; on uptake by land, sea (water) and air of man-made and natural environmental pollutants
- research on air quality, development of air quality criteria and national ambient air quality standards
- research, development, and implementation of meteorological instrumentation not only to improve the quality and quantity of meteorological and related data, but also as a means to improve our understanding of the basic processes of meteorological physics

An Inter-Service program to study long-range transport of air-borne pollution is now in operation (see Departmental Integrated Programs, pg 17). The AES, as lead agency for the Scientific part of the Program, is co-ordinating activities with the other Services of the Department, with other agencies in Canada, and with study groups in the United States.

The computer requirements of the Research Directorate are met by a terminal to the Control Data CYBER in Montreal, by terminals to the new AS 6 in the Central Services Directorate, as well as by a number of local Hewlett-Packard mini-computers.

Sub-Activity DEPARTMENTAL INTEGRATED PROGRAMS (4 PY and \$956 0 K)

Description.

This sub-activity includes five programs, the responsibility for which is shared jointly among the various Services of the Department. However, for each program a lead agency role is assigned to a particular Service. For instance, the AES has the lead scientific agency role for the Long Range Transport of Airborne Pollutants (LRTAP) Program. The five programs are Environmental Assessment and Review, Long Range Transport of Airborne Pollutants, Toxic Chemicals; Great Lakes Water Quality and Baseline Studies

1 Federal Environmental Assessment and Review Process (EARP)

The purpose of EARP is to ensure that the environmental effects of federal projects, programs and activities are considered early in their planning before irrevocable decisions are made. Federal projects are considered to be those initiated by federal agencies, those for which federal funds are solicited and those involving federal property. DOE as a participant in EARP may assume one or more of the following roles at various stages in the Process: initiator, regulator, advisor, reviewer, or intervenor. These roles are dependent upon the involvement with a proposed development. AES as a DOE Service participates in matters related to the AES mandate.

2 LRTAP

DOE, and within it, AES, has been designated as the lead agency for the Scientific Program. This function is carried out by ADMA as the Program Manager and in his role as Chairman of the Interdepartmental Steering Committee. Two offices - the LRTAP Liaison Office (LLO) and the LRTAP Scientific Co-ordination Office (LSCO) located at AES Downsview are responsible for the day to day co-ordination of the Program. In addition, AES is responsible for the Atmospheric Sector of the total LRTAP Program. Within AQRB, a large program of atmospheric monitoring, physical and chemical processes research and transport, transformation and deposition modelling is carried out.

3 Toxic Chemicals

The AES, along with other DOE Services, participates in this integrated Departmental program. ADMA is a member of the Toxic Chemicals Steering Committee which is responsible for providing direction and guidance to this program within the framework of DOE. AES is also represented on the joint DOE/NHEW Toxic Chemicals Committee. AES scientific efforts are expected to focus on atmospheric measurements of toxic chemicals of concern with a view towards elucidating their major atmospheric pathways, including transport, transformation and deposition mechanisms.

4 Water Quality Program

The AES component of the Great Lakes Water Quality study is comprised of two research projects related to atmospheric loading of the Lakes. In the first project, an attempt is being made to develop optimal methodology for monitoring of particulate dry deposition as would be required for a Great Lakes surveillance program. The second project is concerned with estimating the atmospheric input of phosphorous, nitrogen, mercury, lead and PCB to the Great Lakes and with examining the relative importance of various sources through a comprehensive modelling effort.

5. Baseline Studies

The overall program is managed by the ADM, ECS. The DOE Regions are invited to participate by submitting project proposals which ensure that adequate environmental information is available early in the conceptual stage of major, predominantly energy related, resource developments. Subsequently, regional allocations are administered by the Office of the RDG. AES Regions submit mandate related proposals, e.g. atmospheric, wind/wave, sea ice, to the respective RDG's who in turn allocate resources to the various DOE Services in the Region. In 1981/82 AES Atlantic Region received \$60K for sea ice, wind/wave climatological analyses.

Sub-Activity MANAGEMENT AND COMMON SUPPORT SERVICES (100 PY and \$11,933 4K)

Objectives

- 1 To set overall goals and objectives for the AES
- 2 To provide continuous policy guidance and leadership for the Service
- 3 To ensure that the Service attains its goals and objectives in an effective and efficient manner
- 4 To provide common administrative support to the Atmospheric Environment Service in the areas of general administration including finance, library services, materiel management, and official languages
- 5 To co-ordinate participation in international programs in accordance with Canada's commitment to the World Meteorological Organization and as a contribution to the development of the scientific and technological base required to support the AES mandate
6. To promote and foster the science and public awareness of meteorology and other environmental disciplines in Canada in
 - (a) supporting organizations concerned with the advancement of meteorology and other environmental disciplines,
 - (b) supporting meteorological and other environmental research in Canadian universities;
 - (c) encouraging the development of meteorological and other environmental services in the private sector within Canada

Description

This sub-activity includes those common services which support AES in the areas of administration, personnel, facilities, library, and material and financial management Also included is

- the management function related to the development and maintenance of overall goals and objectives for the AES, policies, and program development and evaluation
- information services
- participation in international meteorological affairs

APPENDIX A
Atmospheric Environment Service
Program Activity Structure

The AES Program Activity Structure

The following 9 pages provide an overview of the AES Program Activity Structure. It shows the 6 main sub-activities (SA 1's) broken down to the SA 4 activity-element level.

This Program Activity Structure provides the basis for the budget data presented in Appendix C. Appendix C shows the contribution of all the AES organizations to the SA 1 and SA 2 levels.

An addendum to this Program Digest is planned which will contain a number of appendices. These will

- a) display organizational budgets at the SA 2 and SA 3 levels
- b) display the organizations (and their budgets) which contribute to each of the 6 main AES sub-activities

Overview of AES Program Activity Structure

Activity. Atmospheric Environment

<u>Sub-Activity</u>	<u>Sub-Sub-Activity</u>
100 Weather Services	110 Public Weather Services
	120 Marine Weather Services
	130 Aviation Weather Services
	140 Economic Weather Services
	150 Canadian Forces Weather Service
	200 Data
	300 Weather Services Support Systems
400 Climate Services	410 Services and Applications
	450 Climate Research
	460 Climate Services Support Systems
500 Ice Services	510 Ice Reconnaissance
	520 Ice Forecasting
	530 Ice Climate Services
	540 Ice Services Support Systems
600 Air Quality Services and Atmospheric Research	610 Air Quality Services
	630 Air Quality Research
	660 Atmospheric Research
	670 Air Quality and Research Support Systems
700 Departmental Integrated Programs	710 Environment Assessment and Review
	720 LRTAP
	730 Toxic Chemicals
	740 Great Lakes Water Quality
	750 Baseline Studies
800 Management and Common Support Services	810 Management
	830 Common Support Services

PROGRAM ACTIVITY STRUCTURE
ACTIVITY: ATMOSPHERIC ENVIRONMENT

SA-1	SA-2	SA-3	SA-4	DESCRIPTION
100				Weather Services
	110			Public Weather Services
		111	111	Forecast Operations
		112	112	Provision of Services
	120			Marine Weather Services
		121	121	Forecast Operations
		122	122	Provision of Services
	130			Aviation Weather Services
		131	131	Forecast Operations
		132		Provision of Services
			133	Presentation
			134	Inspection
		138	138	Aviation Observations
	140			Economic Weather Services
		141	141	Forecast Operations
		142	142	Provision of Services
	150			Canadian Forces Weather Service
		151		Forecasting and Briefing
			152	Atmospheric
			153	Marine
			154	ODIT
	160			Data
			161	Upper Air
			162	Surface
			163	Ships
			164	Experimental
	170			Consultation and Coordination
			171	Scientific
			172	Operational
			173	Aircrew Training
	180			CFWS Support Systems
			181	EDP Services
			182	Communications
			183	Training and Development
			184	Management
			185	Management Support

PROGRAM ACTIVITY STRUCTURE
ACTIVITY- ATMOSPHERIC ENVIRONMENT

SA-1	SA-2	SA-3	SA-4	DESCRIPTION
100				Weather Services (Cont'd)
	200			Data
		210		Surface Weather Observations
			211	Manned Stations
			212	Manned/Automatic Stations
			213	Automatic Stations
			214	CMTA Stations
			215	Dewline Stations
			216	Contract Stations
		220	220	Upper Air Stations
		230		Other Observations
			231	Satellite
			232	Radar
	300			Weather Services Support Systems
		301		Canadian Meteorological Centre
			302	Operations
			303	Operational Development
			304	CMC Administration
		310		Forecast Operations Support
			311	Systems Support
			312	ODIT
			313	Special Projects
		320		Forecast Production Research
			321	Numerical Prediction Research
			322	Weather Forecasting Research
			323	Systems Design
			324	Environmental Prediction Research
			325	Energy Transport
		330		Data Acquisition Research
			331	Satellite/Radar Applications
			332	Satellite Data Lab Operations
			333	Observing Networks R & D
			334	Weather Radar

PROGRAM ACTIVITY STRUCTURE
ACTIVITY- ATMOSPHERIC ENVIRONMENT

SA-1	SA-2	SA-3	SA-4	DESCRIPTION
	300			Weather Services Support Systems (Cont'd)
		340	340	Planning and Coordination
		350		Communications
			351	Weather Facsimile System
			352	Satellite Facsimile System
			353	Teletype System
			354	Radar Communications
			355	OMC Communications
			356	Communications Operations
			357	Weatheradio Communications
		360		EDP Services
			361	OMC Computer Services
			362	RPN Computer Services
			363	Region Computer Operations
			364	Planning and Systems Support
		370	370	Training
		380		Data Acquisition Services
			381	Instrument Planning and Development
			382	Inspection and Maintenance
			383	Equipment and Observation (T & E)
			384	Facilities (Airports)
			385	Observational Systems Support
			386	Facilities (AES)
			387	Major Capital Projects
		390	390	Management
		395	395	Management Support

PROGRAM ACTIVITY STRUCTURE
ACTIVITY- ATMOSPHERIC ENVIRONMENT

SA-1	SA-2	SA-3	SA-4	DESCRIPTION
400				Climate Services
	410			Services and Applications
		411		Data Services
			412	Climate Stations
			413	Information Services
			414	Data Management
			415	Data Acquisition Services
		420	420	Regional Consultation and Applications
		430		National Consultation and Development
			431	Hydrometeorology and Marine
			432	Applications & Impacts
			433	Energy
			434	Monitoring
			435	Environmental Assessment
	450			Climate Research
		451	451	Numerical Modelling
		452	452	Diagnostics
		453	453	Processes
	460			Climate Services Support Systems
		461	461	EDP Services
		462	462	Management
		463	463	Management Support

PROGRAM ACTIVITY STRUCTURE
ACTIVITY ATMOSPHERIC ENVIRONMENT

SA-1	SA-2	SA-3	SA-4	DESCRIPTION
500				Ice Services
	510	510	510	Ice Reconnaissance
	520			Ice Forecasting
		521	521	Ice Forecasting Central
		522	522	Forecast Development
	530	530	530	Ice Climate Services
	540			Ice Services Support Systems
		541	541	Communication/Computers
		542	542	Data System Development & Maintenance
		543	543	Research
		544	544	Management
		545	545	Management Support

PROGRAM ACTIVITY STRUCTURE
ACTIVITY ATMOSPHERIC ENVIRONMENT

SA-1	SA-2	SA-3	SA-4	DESCRIPTION
600				Air Quality Services & Atmospheric Research
	610	610	610	Air Quality Services
	630			Air Quality Research
		631	631	Dynamics
			632	Boundary Layer
			633	Atmospheric Dispersion
		635		Air Quality Monitoring
		640		Impacts and Criteria
			641	Impact Assessment and Technology Transfer
			642	Air Quality Criteria
			643	Impact Assessment - Observational
		650		Processes
			651	Hazardous Substances
			652	Regional Transport and Transformation
			653	Removal and Deposition
			654	Oxidants
			655	Cycles and Balances
	660			Atmospheric Research
		661	661	Stratospheric Pollution
		662	662	Atmospheric Radiation
		663	663	Ozone Monitoring
		664	664	Solar Energy
		665	665	Wind Energy
		666	666	Cloud and Precipitation Physics
		667	667	Weather Modification
	670			Air Quality and Research Support Services
		671	671	Management
		672	672	Management Support
		673	673	Instrument Support to Research
		674	674	PHD Leave
		675	675	EDP Services
		676	676	Visiting Fellowships

PROGRAM ACTIVITY STRUCTURE
ACTIVITY ATMOSPHERIC ENVIRONMENT

SA-1	SA-2	SA-3	SA-4	DESCRIPTION
700				Departmental Integrated Programs
	710	710	710	Environmental Assessment and Review
	720	720	720	LRTAP
	730	730	730	Toxic Chemicals
	740	740	740	Great Lakes Water Quality
	750	750	750	Baseline Studies

PROGRAM ACTIVITY STRUCTURE
ACTIVITY ATMOSPHERIC ENVIRONMENT

SA-1	SA-2	SA-3	SA-4	DESCRIPTION
800				Management & Common Support Services
	810			Management
		811	811	Departmental Management
		820		Management Support
			821	Liaison & Coordination
			822	Policy, Planning & Evaluation
			823	Activity Support Management
	830			Common Support Services
		831		Personnel Services
			832	Official Languages
			833	Management Training & Development
		840	840	Financial Services
		850		General Administration
			851	Office Services
			852	Graphic Arts and Audio Visual Services
			853	Material Management
			854	Physical Facilities
		860	860	Public Information
		870	870	Publications
		880	880	Library Services
		890	890	Grants and Contributions

APPENDIX B
Atmospheric Environment Service
Responsibility Centres
and
Related
Program Activity Elements

Responsibility Centres and Related Program Activity Elements

During the preparations of budgets, it was necessary that Responsibility Centres select the correct activity element against which to code their budgets. The following 4 pages describe the Responsibility Centres and a suggested list of activity elements for preparing their budgets.

As experience is gained in budgetting against the Program Activity Structure, it is anticipated that this listing will be updated annually.

	<u>RESPONSIBILITY CENTRE</u>	<u>SUGGESTED ACTIVITY ELEMENTS</u>
<u>ATMOSPHERIC ENVIRONMENT SERVICE</u>		
Assistant Deputy Minister	- 501	720, 811, 821, 822, 823, 833
Central Services		
Director-General	- 502	823, 833
Computer Centre - Downsview	- 503	461, 675
Computer Centre - Dorval	- 507	361, 362
Director Computer Services	- 506	364
Director Training Branch	- 505	370, 832, 833, 852, 870
Ice Branch		
Director	- 509	521, 522, 530, 541, 542, 543, 544, 545
Ice Reconnaissance	- 510	510
Data Acquisition Services		
Director-General	- 530	823, 853
Maintenance	- 531	382, 415
Engineering	- 532	381, 415, 673
Development	- 533	381, 415, 673
Network Planning and Standards	- 504	381
Canadian Climate Centre		
Director	- 513	462, 463, 451, 452, 453, 860, 833
Climatological Application	- 514	413, 414, 415, 431, 432, 433, 434, 435
Administration		
Director	- 515	823, 833, 880, 860,
Finance	- 516	840, 890
Material Management	- 517	853
General Administration	- 518	851, 852, 854, 870
Special Finance	- 520	840
Field Services		
Director-General	- 521	390, 395, 387, 860, 833
Field Met. Systems	- 522	390, 340, 385, 311, 351, 352, 353, 354, 355, 356, 364
Director Canadian Met Centre	- 523	302, 303, 304
Atmospheric Research		
Director-General	- 526	671, 672, 860, 833, 674, 676
Atmospheric Processes	- 527	334, 661, 662, 663, 664, 666, 667, 720, 730, 671
Air Quality & Environmental Research	- 528	632, 633, 635, 641, 642, 643, 651, 652, 653, 654, 655, 665, 710, 720, 730, 671
Meteorological Services Research	- 529	390, 395, 321, 322, 323, 324, 325, 331, 332, 333, 665
Meteorology and Oceanography	- 534	152 through 185

<u>ATMOSPHERIC ENVIRONMENT SERVICE (Cont,d)</u>	<u>RESPONSIBILITY CENTRE</u>	<u>SUGGESTED ACTIVITY ELEMENTS</u>
21		
<u>Atlantic Region</u>		
Regional Director	- 540	390, 395, 833, 383, 384
Chief, Scientific Services	- 541	413, 414, 420, 462, 370, 860
General Weather		
Chief	- 542	340, 370, 386
Weather Office Standards	- 543	112, 122, 133, 142, 340, 232
Gander Weather Office -	- 544	111, 121, 131, 141, 311, 312, 356, 363
Data Acquisition		
Chief	- 545	385, 370, 386, 382
Station Operations - Upper Air	- 546	220
Station Operations - Surface	- 547	211, 212, 213, 214, 216, 341, 232, 138, 412, 412, 134, 382
Maritimes Weather Center - Bedford	- 599	111, 121, 131, 141, 311, 312, 356, 363, 370, 357
<u>Quebec Region</u>		
Regional - Director	- 550	390, 395, 833, 383, 384
Chief, Scientific Services	- 551	413, 414, 420, 462, 370, 860
General Weather		
Chief	- 552	340, 370, 386
Weather Office Standards	- 553	112, 122, 133, 142, 340
Quebec Weather Center	- 554	111, 121, 131, 141, 311, 311, 312, 356, 363, 370, 357
Data Acquisition		
Chief	- 555	385, 370, 386, 382
Station Operations - Upper Air	- 556	220
Station Operations - Surface	- 557	211, 212, 213, 214, 216, 231, 232, 138, 412
Observational Standards	- 558	134, 382

	<u>RESPONSIBILITY CENTRE</u>	<u>SUGGESTED ACTIVITY ELEMENTS</u>
<u>ATMOSPHERIC ENVIRONMENT SERVICE (Cont,d)</u>		
Ontario Region		
Regional - Director	- 559	390, 395, 833, 383, 384
Chief, Scientific Services	- 560	413, 414, 420, 462, 370, 860
General Weather		
Chief	- 561	340, 370, 386
Weather Office Standards	- 594	112, 122, 133, 142, 340, 232
Ontario Weather Center	- 562	111, 121, 131, 141, 311, 312, 356, 363, 370, 357
Data Acquisition		
Chief	- 563	385, 370, 386, 382
Station Operations	- 564	220, 211, 212, 213, 214, 216, 231, 232, 138, 412
Observational Standards	- 565	134, 382
Central Region		
Regional - Director	- 566	390, 395, 833, 383, 384
Chief, Scientific Services	- 567	413, 414, 420, 462, 370, 860
General Weather		
Chief	- 568	340, 370, 386
Weather Office Standards	- 569	112, 122, 133, 142, 340, 232
Data Acquisition		
Chief	- 571	385, 370, 386, 382
Station Operations - South of 60°N	- 572	220, 211, 212, 213, 214, 216, 231, 232, 138, 412
Station Operations - North of 60°N	- 573	220, 211, 212, 213, 214, 216, 231, 232, 138, 412
Observational Standards	- 574	134, 382
Climat, Contract Operations	- 575	412
Prairie Weather Center	- 576	111, 121, 131, 141, 311, 312, 315, 356, 363, 370, 357

	<u>RESPONSIBILITY CENTRE</u>	<u>SUGGESTED ACTIVITY ELEMENTS</u>
<u>ATMOSPHERIC ENVIRONMENT SERVICE (Cont,d)</u>		
Western Region		
Regional - Director	- 577	390, 395, 833, 383, 384
Chief, Scientific Services	- 578	413, 414, 420, 462, 860
General Weather		
Chief	- 579	340, 370, 386
Weather Office Standards	- 580	112, 122, 133, 142, 340, 232
Data Acquisition		
Chief	- 582	385, 382
Station Operations	- 583	220, 211, 212, 213, 214, 216, 138, 412, 386
Technical Services	- 584	134, 382
Forecast Operations	- 585	111, 121, 131, 141, 311, 312, 313, 356, 363 357, 231
Pacific Region		
Regional - Director	- 586	390, 395, 833, 383, 384
Chief, Scientific Services	- 589	413, 414, 420, 462, 370, 860
General Weather		
Chief	- 588	340, 370, 386
Weather Office Standards	- 589	112, 122, 133, 142, 340
Data Acquisition		
Chief	- 590	385, 370, 386, 382
Station Operations	- 591	220, 211, 212, 213, 214, 216, 231, 412, 138 232
Observational Standards	- 592	134, 382
Pacific Weather Center	- 593	111, 121, 131, 141, 311, 312, 356, 363, 370, 357

NOTE Departmental Integrated Programs -SA-1-700 Not Reflected In Listings

APPENDIX C

Atmospheric Environment Service
1981-82 Organizational Budgets by
Sub-Activity and Sub-Sub Activity

ATMOSPHERIC ENVIRONMENT SERVICE
1981-82 Budget of Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)
(Nearest \$000)

ORGANIZATION ATMOSPHERIC ENVIRONMENT SERVICE

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services	464	12500 7	732 6	---	13233 3
120 Marine Weather Services	11	362 0	---	---	362 0
130 Aviation Weather Services	127	3317 1	569 5	---	3886 6
140 Economic Weather Services	16	482 4	24 4	---	506 8
150 Canadian Forces Wx Service	101	3407 0	1340 0	---	4747 0
200 Data	305	8610 2	11871 9	29 0	20511 1
300 Wx Services Support Systems	829	23750 2	15732 8	9355 4	48838 4
100 TOTAL(SA-1)	1853	52 429 6	30 271 2	9 384 4	92 085 2
400 CLIMATE SERVICES					
410 Services and Applications	144	3724 8	1429 2	142 0	5296 0
450 Climate Research	17	618 8	59 7	13 0	691 5
460 Climate Services Sup Sys.	61	1454 2	1289 3	16 2	2759 7
400 TOTAL(SA-1)	222	5797 8	2778 2	171 2	8747 2
500 ICE SERVICES					
510 Ice Reconnaissance	28	902 2	7751 6	---	8653 8
520 Ice Forecasting	14	432 5	54 9	---	487 4
530 Ice Climate Services	4	140 9	19 5	---	160 4
540 Ice Services Support System	5	181 0	806 0	10 0	997.0
500 TOTAL(SA-1)	51	1656 6	8632.0	10 0	10 289 6
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research	59	1848 4	563 2	246 0	2630 6
660 Atmospheric Research	28	937 3	829 0	362 0	2128 3
670 Air Qua & Res Sup Sys	19	523 6	311 5	43 4	878 5
600 TOTAL(SA-1)	106	3309 3	1676.7	651 4	5637 4
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP	4	110 0	752 0	94 0	956 0
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL	4	110 0	752 0	94 0	956 0
800 MANAGEMENT AND COMMON SUPPORT					
810 Management	22	922 8	244 6	---	1167 4
830 Common Support Services	78	5778 2	4866 8	121 0	10766.0
800 TOTAL(SA-1)	100	6701 0	5111 4	121 0	11 933 4
GRAND TOTAL	2336	70 004 3	49 221 5	10 432 0	129 657 8

ATMOSPHERIC ENVIRONMENT SERVICE
1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
(Nearest \$000)

ORGANIZATION: ASSISTANT DEPUTY MINISTER'S OFFICE

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine Weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces Wx Service					
200 Data					
300 Wx Services Support Systems					
100 TOTAL(SA-1)					
400 CLIMATE SERVICES					
410 Services and Applications					
450 Climate Research					
460 Climate Services Sup Sys					
400 TOTAL(SA-1)					
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP	2	60 0	25 0	---	85 0
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL	2	60 0	25 0	---	85 0
800 MANAGEMENT AND COMMON SUPPORT					
810 Management	15	733 4	150 1	---	883 5
830 Common Support Services					
800 TOTAL(SA-1)	15	733 4	150 1	---	883 5
GRAND TOTAL	17	793 4	175 1	---	968 5

ATMOSPHERIC ENVIRONMENT SERVICE
 1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
 (Nearest \$000)

ORGANIZATION. ADMINISTRATION BRANCH

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces Wx Service					
200 Data					
300 Wx Services Support Systems	17	939 8	53 0	---	992 8
100 TOTAL(SA-1)	17	939 8	53 0	---	992 8
400 CLIMATE SERVICES					
410 Services and Applications					
450 Climate Research					
460 Climate Services Sup Sys					
400 TOTAL(SA-1)					
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management	3	88 1	55 0	---	143 1
830 Common Support Services	75	5763 3	4793 5	121 0	10677 8
800 TOTAL(SA-1)	78	5851 4	4848 5	121 0	10820 9
GRAND TOTAL	95	6791 2	4901 5	121 0	11813 7

ATMOSPHERIC ENVIRONMENT SERVICE
1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
(Nearest \$000)

ORGANIZATION FIELD SERVICES DIRECTORATE (HEADQUARTERS AND REGIONS)*

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services	464	12500 7	732 6	---	13233 3
120 Marine Weather Services	11	362 0	---	---	362 0
130 Aviation Weather Services	127	3317 1	569 5	---	3886 6
140 Economic Weather Services	16	482 4	24 4	---	506 8
150 Canadian Forces Wx Service					
200 Data	305	8610 2	11871 9	29 0	20511 1
300 Wx Services Support Systems	521	14128 0	12313 0	8478.5	34919 5
100 TOTAL(SA-1)	1444	39400 4	25511 4	8507 5	73419 3
400 CLIMATE SERVICES					
410 Services and Applications	51	1354 2	746 4	6 5	2107 1
450 Climate Research					
460 Climate Services Sup. Sys	12	324 1	29.9	8 0	362 0
400 TOTAL(SA-1)	63	1678 3	776 3	14 5	2469 1
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management	---	---		---	
830 Common Support Services	---	---	45 0	---	45 0
800 TOTAL(SA-1)	---	---	45 0	---	45 0
GRAND TOTAL	1507	41078 7	26332 7	8522 0	75933 4

* Does not include Canadian Forces Weather Service

ATMOSPHERIC ENVIRONMENT SERVICE
1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
(Nearest \$000)

ORGANIZATION FIELD SERVICES DIRECTORATE - HEADQUARTERS

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine Weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces Wx Service					
200 Data					
300 Wx Services Support Systems	79	2270 4	5164 6	7121 0	14556 0
100 TOTAL(SA-1)	79	2270 4	5164 6	7121 0	14556 0
400 CLIMATE SERVICES					
410 Services and Applications					
450 Climate Research					
460 Climate Services Sup Sys					
400 TOTAL(SA-1)					
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services					
800 TOTAL(SA-1)					
GRAND TOTAL	79	2270 4	5164 6	7121 0	14556 0

ATMOSPHERIC ENVIRONMENT SERVICE
 1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
 (Nearest \$000)

ORGANIZATION. FIELD SERVICES DIRECTORATE - CANADIAN METEOROLOGICAL CENTRE

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine Weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces Wx Service					
200 Data					
300 Wx Services Support Systems	67	2264 6	112 2	9 0	2385 8
100 TOTAL(SA-1)	67	2264 6	112 2	9 0	2385 8
400 CLIMATE SERVICES					
410 Services and Applications					
450 Climate Research					
460 Climate Services Sup Sys					
400 TOTAL(SA-1)					
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup. Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services					
800 TOTAL(SA-1)					
GRAND TOTAL	67	2264 6	112 2	9 0	2385 8

ATMOSPHERIC ENVIRONMENT SERVICE
 1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
 (Nearest \$000)

ORGANIZATION FIELD SERVICES DIRECTORATE - ATLANTIC REGION

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services	103	2590 6	150 3	---	2740 9
120 Marine Weather Services	4	125 0	---	---	125 0
130 Aviation Weather Services	16	454 0	---	---	454 0
140 Economic Weather Services					
150 Canadian Forces Wx Service					
200 Data	38	926 7	910 8	---	1837 5
300 Wx Services Support Systems	61	1522 7	865 8	242 0	2630 5
100 TOTAL(SA-1)	222	5619 0	1926 9	242 0	7787.9
400 CLIMATE SERVICES					
410 Services and Applications	11	310 1	60 2	---	370 3
450 Climate Research					
460 Climate Services Sup Sys	2	58 9	2 1	---	61 0
400 TOTAL(SA-1)	13	369 0	62 3	---	431 3
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management	---	---	38 0	---	38 0
830 Common Support Services					
800 TOTAL(SA-1)	---	---	38 0	---	38 0
GRAND TOTAL	235	5988 0	2027 2	242 0	8257 2

ATMOSPHERIC ENVIRONMENT SERVICE
1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
(Nearest \$000)

ORGANIZATION FIELD SERVICES DIRECTORATE - QUEBEC REGION

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services	60	1846 9	135 6	---	1982 5
120 Marine Weather Services					
130 Aviation Weather Services	27	676 0	74 6	---	750 6
140 Economic Weather Services	6	132 0	4 0	---	136 0
150 Canadian Forces Wx Service					
200 Data	53	1470 5	1359 9	---	2830 4
300 Wx Services Support Systems	55	1469 5	1148 4	161 5	2779 4
100 TOTAL(SA-1)	201	5594 9	2722.5	161 5	8478 9
400 CLIMATE SERVICES					
410 Services and Applications	5	160 0	445 0	3 5	608 5
450 Climate Research					
460 Climate Services Sup Sys	1	36.8	0 8	---	37 6
400 TOTAL(SA-1)	6	196 8	445 8	3 5	646 1
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services					
800 TOTAL(SA-1)					
GRAND TOTAL	207	5791 7	3168.3	165 0	9125 0

ATMOSPHERIC ENVIRONMENT SERVICE
1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
(Nearest \$000)

ORGANIZATION FIELD SERVICES DIRECTORATE - ONTARIO REGION

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services	76	1475 9	8 0	—	1483 9
120 Marine Weather Services	4	137 0	—	—	137 0
130 Aviation Weather Services	17	843 6	—	—	843 6
140 Economic Weather Services	4	125 0	—	—	125 0
150 Canadian Forces Wx Service					
200 Data	15	438 4	215 0	9 0	662 4
300 Wx Services Support Systems	48	1197 9	708 0	140 0	2045 9
100 TOTAL(SA-1)	164	4217 8	931 0	149 0	5297 8
400 CLIMATE SERVICES					
410 Services and Applications	9	242 0	42 6	3 0	287 6
450 Climate Research					
460 Climate Services Sup Sys	2	60 2	6 4	8 0	74 6
400 TOTAL(SA-1)	11	302 2	49 0	11 0	362 2
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services					
800 TOTAL(SA-1)					
GRAND TOTAL	175	4520 0	980 0	160 0	5660 0

ATMOSPHERIC ENVIRONMENT SERVICE
1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
(Nearest \$000)

ORGANIZATION FIELD SERVICES DIRECTORATE - CENTRAL REGION

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services	78	2197 3	206 8	---	2404 1
120 Marine Weather Services					
130 Aviation Weather Services	10	289 0	2 0	---	291 0
140 Economic Weather Services					
150 Canadian Forces wx Service					
200 Data	86	2676 1	3133 5	---	5809 6
300 Wx Services Support Systems	84	2077 0	1630 1	320 0	4027 1
100 TOTAL(SA-1)	258	7239 4	4972 4	320 0	12531.8
400 CLIMATE SERVICES					
410 Services and Applications	10	278 8	62 9	---	341 7
450 Climate Research					
460 Climate Services Sup Sys	2	58 8	5 0	---	63.8
400 TOTAL(SA-1)	12	337 6	67 9	---	405 5
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
-810 Management					
830 Common Support Services					
800 TOTAL(SA-1)					
GRAND TOTAL	270	7577 0	5040 3	320 0	12937 3

ATMOSPHERIC ENVIRONMENT SERVICE
1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
(Nearest \$000)

ORGANIZATION FIELD SERVICES DIRECTORATE - WESTERN REGION

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services	86	2762 0	166 8	---	2928.8
120 Marine Weather Services	3	100 0	---	---	100 0
130 Aviation Weather Services	37	566 5	37 0	---	603 5
140 Economic Weather Services	5	190 4	---	---	190 4
150 Canadian Forces Wx Service					
200 Data	61	1946 9	1056 1	---	3003 0
300 Wx Services Support Systems	79	2029 9	1874 9	320 0	4224 8
100 TOTAL(SA-1)	271	7595 7	3134 8	320 0	11050 5
400 CLIMATE SERVICES					
410 Services and Applications	7	167 8	65 2		233 0
450 Climate Research					
460 Climate Services Sup Sys	3	62 5	10 8		73 3
400 TOTAL(SA-1)	10	230 3	76 0		306 3
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services					
800 TOTAL(SA-1)					
GRAND TOTAL	281	7826 0	3210 8	320 0	11356 8

ATMOSPHERIC ENVIRONMENT SERVICE
 1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
 (Nearest \$000)

ORGANIZATION FIELD SERVICES DIRECTORATE - PACIFIC REGION

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services	61	1628 0	65 1	---	1693 1
120 Marine Weather Services					
130 Aviation Weather Services	20	488 0	455 9	---	943 9
140 Economic Weather Services	1	35 0	20 4	---	55 4
150 Canadian Forces Wx Service					
200 Data	52	1151 6	5196 6	20 0	6368 2
300 Wx Services Support Systems	48	1296 0	809 0	165 0	2270 0
100 TOTAL(SA-1)	182	4598 6	6547 0	185 0	11330 6
400 CLIMATE SERVICES					
410 Services and Applications	9	195 5	70 5	---	266 0
450 Climate Research					
460 Climate Services Sup Sys	2	46.9	4 8	---	51 7
400 TOTAL(SA-1)	11	242 4	75 3	---	317 7
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services	--	---	7 0	---	7 0
800 TOTAL(SA-1)	--	---	7 0	---	7 0
GRAND TOTAL	193	4841 0	6629 3	185 0	11655 3

ATMOSPHERIC ENVIRONMENT SERVICE
1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
(Nearest \$000)

ORGANIZATION ATMOSPHERIC RESEARCH DIRECTORATE

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine Weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces Wx Service					
200 Data					
300 Wx Services Support Systems	66	2259 0	679 2	376 0	3314 2
100 TOTAL(SA-1)	66	2259 0	679 2	376 0	3314 2
400 CLIMATE SERVICES					
410 Services and Applications					
450 Climate Research					
460 Climate Services Sup Sys					
400 TOTAL(SA-1)					
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research	59	1848 4	536 2	246 0	2630 6
660 Atmospheric Research	28	937 3	829 0	362 0	2128 3
670 Air Qua & Res Sup Sys	15	441 0	311 5	43 4	795.9
600 TOTAL(SA-1)	102	3226 7	1676 7	651 4	5554 8
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP	2	50 0	727 0	94 0	871 0
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL	2	50 0	727 0	94 0	871 0
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services					
800 TOTAL(SA-1)					
GRAND TOTAL	170	5535 7	3082 9	1121 4	9740 0

ATMOSPHERIC ENVIRONMENT SERVICE
 1981-82 Budget by Sub-Activity and Sub-Sub-Activity
 (Nearest \$000)

ORGANIZATION ATMOSPHERIC RESEARCH DIRECTORATE-
 METEOROLOGICAL SERVICES RESEARCH BRANCH

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine Weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces Wx Service					
200 Data					
300 Wx Services Support Systems	63	2112 3	532 9	356 0	3001 2
100 TOTAL(SA-1)	63	2112 3	532 9	356 0	3001 2
400 CLIMATE SERVICES					
410 Services and Applications					
450 Climate Research					
460 Climate Services Sup Sys					
400 TOTAL(SA-1)					
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research	2	72 0	65 8	6 0	143.8
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)	2	72 0	65 8	6 0	143 8
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services					
800 TOTAL(SA-1)					
GRAND TOTAL	65	2184 3	598 7	362 0	3145 0

ATMOSPHERIC ENVIRONMENT SERVICE
 1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
 (Nearest \$000)

ORGANIZATION ATMOSPHERIC RESEARCH DIRECTORATE -
 ATMOSPHERIC PROCESSES RESEARCH BRANCH

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine Weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces Wx Service					
200 Data					
300 Wx Services Support Systems	3	146 7	146.3	20 0	313.0
100 TOTAL(SA-1)	3	146 7	146 3	20 0	313 0
400 CLIMATE SERVICES					
410 Services and Applications					
450 Climate Research					
460 Climate Services Sup Sys					
400 TOTAL(SA-1)					
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research	26	865 3	763 2	356 0	1984 5
670 Air Qua & Res Sup Sys	2	70 4	25 5	4 0	99 9
600 TOTAL(SA-1)	28	935 7	788 7	360 0	2084 4
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services					
800 TOTAL(SA-1)					
GRAND TOTAL	31	1082 4	935 0	380 0	2397 4

ATMOSPHERIC ENVIRONMENT SERVICE
 1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
 (Nearest \$000)

ORGANIZATION ATMOSPHERIC RESEARCH DIRECTORATE -
 AIR QUALITY AND INTER-ENVIRONMENTAL RESEARCH BRANCH

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine Weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces Wx Service					
200 Data					
300 Wx Services Support Systems					
100 TOTAL(SA-1)					
400 CLIMATE SERVICES					
410 Services and Applications					
450 Climate Research					
460 Climate Services Sup Sys					
400 TOTAL(SA-1)					
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research	59	1848 4	536 2	246 0	2630 6
660 Atmospheric Research					
670 Air Qua & Res Sup Sys	6	179 0	122 2	24 0	325 2
600 TOTAL(SA-1)	65	2027 4	658 4	270 0	2955 8
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP	2	50 0	727 0	94 0	871 0
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL	2	50 0	727 0	94 0	871 0
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services					
800 TOTAL(SA-1)					
GRAND TOTAL	67	2077 4	1385 4	364 0	3826 8

ATMOSPHERIC ENVIRONMENT SERVICE
 1981-82 Budget by Sub-Activity and Sub-Sub-Activity
 (Nearest \$000)

ORGANIZATION ATMOSPHERIC RESEARCH DIRECTORATE - DIRECTOR GENERAL'S OFFICE

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine Weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces Wx Service					
200 Data					
300 Wx Services Support Systems					
100 TOTAL(SA-1)					
400 CLIMATE SERVICES					
410 Services and Applications					
450 Climate Research					
460 Climate Services Sup Sys					
400 TOTAL(SA-1)					
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys	7*	191 6	163 8	15 4	370 8
600 TOTAL(SA-1)	7*	191 6	163 8	15 4	370 8
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services					
800 TOTAL(SA-1)					
GRAND TOTAL	7*	191 6	163 8	15 4	370 8

* Three PY's are for post M Sc project meteorologists
 PY's are held by the DG's office but salaries are budgetted by Branches

ATMOSPHERIC ENVIRONMENT SERVICE
1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
(Nearest \$000)

ORGANIZATION CENTRAL SERVICES DIRECTORATE

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine Weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces wx Service					
200 Data					
300 Wx Services Support Systems	225	6423 4	2687 6	500 9	9611 9
100 TOTAL(SA-1)	225	6423 4	2687 6	500 9	9611 9
400 CLIMATE SERVICES					
410 Services and Applications					
450 Climate Research					
460 Climate Services Sup Sys	40	882 7	1040 4	---	1923 1
400 TOTAL(SA-1)	40	882 7	1040 4	---	1923 1
500 ICE SERVICES					
510 Ice Reconnaissance	28	902 2	7751 6	---	8653 8
520 Ice Forecasting	14	432 5	54 9	---	487 4
530 Ice Climate Services	4	140 9	19 5	---	160 4
540 Ice Services Support System	5	181 0	806 0	10 0	997 0
500 TOTAL(SA-1)	51	1656 6	8632 0	10 0	10298 6
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys	4	82 6	---	---	82 6
600 TOTAL(SA-1)	4	82 6	---	---	82 6
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management	4	101 3	39 5	---	140 8
830 Common Support Services	3	14 9	28 3	---	43 2
800 TOTAL(SA-1)	7	116 2	67 8	---	184 0
GRAND TOTAL	327	9161 5	12427 8	510 9	22100 2

ATMOSPHERIC ENVIRONMENT SERVICE
 1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
 (Nearest \$000)

ORGANIZATION CENTRAL SERVICES DIRECTORATE - ICE BRANCH

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine Weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces wx Service					
200 Data					
300 Wx Services Support Systems					
100 TOTAL(SA-1)					
400 CLIMATE SERVICES					
410 Services and Applications					
450 Climate Research					
460 Climate Services Sup Sys					
400 TOTAL(SA-1)					
500 ICE SERVICES					
510 Ice Reconnaissance	28	902 2	7751 6	---	8653 8
520 Ice Forecasting	14	432 5	54 9		487 4
530 Ice Climate Services	4	140 9	19 5		160 4
540 Ice Services Support System	5	181 0	706 0	10 0	897.0
500 TOTAL(SA-1)	51	1656 6	8532 0	10 0	10198 6
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services					
800 TOTAL(SA-1)					
GRAND TOTAL	51	1656 6	8532 0	10 0	10198 6

ATMOSPHERIC ENVIRONMENT SERVICE
 1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
 (Nearest \$000)

ORGANIZATION CENTRAL SERVICES DIRECTORATE - TRAINING BRANCH

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine Weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces Wx Service					
200 Data					
300 Wx Services Support Systems	76	2268 5	417 7	50 0	2736 2
100 TOTAL(SA-1)	76	2268 5	417 7	50 0	2736 2
400 CLIMATE SERVICES					
410 Services and Applications					
450 Climate Research					
460 Climate Services Sup Sys					
400 TOTAL(SA-1)					
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services					
800 TOTAL(SA-1)					
GRAND TOTAL	76	2268 5	417 7	50 0	2736 2

ATMOSPHERIC ENVIRONMENT SERVICE
 1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
 (Nearest \$000)

ORGANIZATION CENTRAL SERVICES DIRECTORATE - DATA ACQUISITION SERVICES BRANCH

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine Weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces Wx Service					
200 Data					
300 Wx Services Support Systems	104	2957 4	634 2	341 9	3933 5
100 TOTAL(SA-1)	104	2957 4	634 2	341 9	3933 5
400 CLIMATE SERVICES					
410 Services and Applications					
450 Climate Research					
460 Climate Services Sup Sys					
400 TOTAL(SA-1)					
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTFGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services	3	14 9	28 3	---	43 2
800 TOTAL(SA-1)	3	14 9	28 3	---	43 2
GRAND TOTAL	107	2972 3	662 5	341 9	3976 7

ATMOSPHERIC ENVIRONMENT SERVICE
 1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
 (Nearest \$000)

ORGANIZATION CENTRAL SERVICES DIRECTORATE - COMPUTING SERVICES BRANCH

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine Weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces Wx Service					
200 Data					
300 Wx Services Support Systems	44	1180 3	1635 7	109 0	2925 0
100 TOTAL(SA-1)	44	1180 3	1635 7	109 0	2925 0
400 CLIMATE SERVICES					
410 Services and Applications					
450 Climate Research					
460 Climate Services Sup Sys	40	882 7	1040 4	---	1923 1
400 TOTAL(SA-1)	40	882 7	1040 4	---	1923 1
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys	4	82 6	---	---	82 6
600 TOTAL(SA-1)	4	82 6	---	---	82 6
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services					
800 TOTAL(SA-1)					
GRAND TOTAL	88	2145 6	2676 1	109 0	4930 7

ATMOSPHERIC ENVIRONMENT SERVICE
1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
(Nearest \$000)

ORGANIZATION CENTRAL SERVICES DIRECTORATE - DIRECTOR GENERAL'S OFFICE

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine Weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces Wx Service					
200 Data					
300 Wx Services Support Systems	1	17 2	---	---	17 2
100 TOTAL(SA-1)	1	17 2	---	---	17 2
400 CLIMATE SERVICES					
410 Services and Applications					
450 Climate Research					
460 Climate Services Sup Sys					
400 TOTAL(SA-1)					
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System	--	---	100 0	---	100 0
500 TOTAL(SA-1)	--	---	100 0	---	100 0
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management	4	101 3	39 5	---	140 8
830 Common Support Services					
800 TOTAL(SA-1)	4	101 3	39 5	---	140 8
GRAND TOTAL	5	118 5	139 5	---	258 0

ATMOSPHERIC ENVIRONMENT SERVICE
 1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
 (Nearest \$000)

ORGANIZATION CANADIAN CLIMATE CENTRE

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine Weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces Wx Service					
200 Data					
300 Wx Services Support Systems					
100 TOTAL(SA-1)					
400 CLIMATE SERVICES					
410 Services and Applications	93	2370 6	682 8	135 5	3188 9
450 Climate Research	17	618 8	59 7	13 0	691 5
460 Climate Services Sup Sys	9	247 4	219 0	8 2	474 6
400 TOTAL(SA-1)	119	3236 8	961 5	156 7	4355 0
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services					
800 TOTAL(SA-1)					
GRAND TOTAL	119	3236 8	961 5	156 7	4355 0

ATMOSPHERIC ENVIRONMENT SERVICE
1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
(Nearest \$000)

ORGANIZATION CANADIAN CLIMATE CENTRE - CLIMATOLOGICAL APPLICATIONS BRANCH

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine Weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces Wx Service					
200 Data					
300 Wx Services Support Systems					
100 TOTAL(SA-1)					
400 CLIMATE SERVICES					
410 Services and Applications	88	2246 6	675 8	125 5	3047 9
450 Climate Research	2	71 9	23 7	10 0	105 6
460 Climate Services Sup Sys	2	63 6	9 5	---	73 1
400 TOTAL(SA-1)	92	2382 1	709 0	135 5	3226 6
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services					
800 TOTAL(SA-1)					
GRAND TOTAL	92	2382 1	709 0	135 5	3226 6

ATMOSPHERIC ENVIRONMENT SERVICE
 1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
 (Nearest \$000)

ORGANIZATION CANADIAN CLIMATE CENTRE - DIRECTOR GENERAL'S OFFICE

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine Weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces Wx Service					
200 Data					
300 Wx Services Support Systems					
100 TOTAL(SA-1)					
400 CLIMATE SERVICES					
410 Services and Applications	5	124 0	7 0	10 0	141 0
450 Climate Research	15	546 9	36 0	3 0	585 9
460 Climate Services Sup Sys	7	183 8	209 5	8 2	401 5
400 TOTAL(SA-1)	27	854 7	252 5	21 2	1128 4
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services					
800 TOTAL(SA-1)					
GRAND TOTAL	27	854 7	252 5	21 2	1128 4

ATMOSPHERIC ENVIRONMENT SERVICE
1981-82 Budget by Sub-Activity (SA-1) and Sub-Sub-Activity (SA-2)
(Nearest \$000)

ORGANIZATION CANADIAN FORCES WEATHER SERVICE

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
100 WEATHER SERVICES					
110 Public Weather Services					
120 Marine Weather Services					
130 Aviation Weather Services					
140 Economic Weather Services					
150 Canadian Forces Wx Service	101	3407 0	1340 0	---	4747 0
200 Data					
300 Wx Services Support Systems					
100 TOTAL(SA-1)	101	3407 0	1340 0	---	4747 0
400 CLIMATE SERVICES					
410 Services and Applications					
450 Climate Research					
460 Climate Services Sup Sys					
400 TOTAL(SA-1)					
500 ICE SERVICES					
510 Ice Reconnaissance					
520 Ice Forecasting					
530 Ice Climate Services					
540 Ice Services Support System					
500 TOTAL(SA-1)					
600 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
610 Air Quality Services					
630 Air Quality Research					
660 Atmospheric Research					
670 Air Qua & Res Sup Sys					
600 TOTAL(SA-1)					
700 DEPARTMENTAL INTEGRATED PROGRAMS					
710 Environmental Assess & Rev					
720 LRTAP					
730 Toxic Chemicals					
740 Great Lakes Water Quality					
750 Baseline Studies					
700 TOTAL					
800 MANAGEMENT AND COMMON SUPPORT					
810 Management					
830 Common Support Services					
800 TOTAL(SA-1)					
GRAND TOTAL	101	3407 0	1340 0	---	4747 0

APPENDIX D

Atmospheric Environment Service

1981-82 Budget by

Organizational Unit and Authority Code

Atmospheric Environment Service Budget

1981-82

Displayed by Organizational Unit and Authority Code

	Assistant Deputy Minister	Admin- istration	Field Services Directorate	Atmospheric Research Directorate	Central Services Directorate	Canadian Climate Centre	Canadian Forces Weather Service	TOTAL
Salary	\$793,400	\$6,791,200	\$41,078,700	\$5,535,700	\$9,161,500	\$3,236,800	\$3,407,000	\$70,004,300
Other O & M	\$175,100	\$3,936,300	\$26,332,700	\$3,082,900	\$12,427,800	\$961,500	\$1,340,000	\$48,256,300
Capital		\$121,000	\$8,522,000	\$1,121,400	\$510,900	\$156,700		\$10,432,000
Grants & Contributions		\$965,200*						\$965,200
Total	\$968,500	\$11,813,700	\$75,933,400	\$9,740,000	\$22,100,200	\$4,355,000	\$4,747,000	\$129,657,800
Person Years	17	95	1,507	170	327	119	101	2,336

*This includes \$590 0K contribution to the World Meteorological Organization

Field Services Directorate Budget

1981-82

Displayed by Organizational Unit and Authority Code

	Field Services HQ	Canadian Meteorological Centre	ATLANTIC	QUÉBEC	ONTARIO	CENTRAL	WESTERN	PACIFIC	TOTAL
Salary	\$1,988,000	\$2,547,000	\$5,988,000	\$5,791,700	\$4,520,000	\$7,577,000	\$7,826,000	\$4,841,000	\$41,078,700
Other O&M	\$5,133,800	\$143,000	\$2,027,200	\$3,168,300	\$980,000	\$5,040,300	\$3,210,800	\$6,629,300	\$26,332,700
Capital	\$7,120,000	\$10,000	\$242,000	\$165,000	\$160,000	\$320,000	\$320,000	\$185,000	\$8,522,000
Grants and Contributions									
Total	\$14,241,800	\$2,700,000	\$8,257,200	\$9,125,000	\$5,660,000	\$12,937,300	\$11,356,800	\$11,655,300	\$75,933,400
Person-Years	68	78	235	207	175	270	281	193	1,507

Atmospheric Research Directorate Budget

1981-82

Displayed by Organizational Unit and Authority Code

	Meteorological Services Research Branch	Atmospheric Processes Research Branch	Air Quality Research Branch	Director General	TOTAL ARD
Salary	2,184,300	1,082,400	2,077,400	191,600	5,535,700
Other O&M	598,700	935,000	1,385,400	163,800	3,082,900
Capital	362,000	380,000	364,000	15,400	1,121,400
Grants & Contributions					
Total	3,145,000	2,397,400	3,826,800	370,800	9,740,000
PY's	65	31	67	7	170

Central Services Directorate Budget

1981-82

Displayed by Organizational Unit and Authority Code

	Ice Branch	Training Branch	Data Acquisi- tion Services Branch	Computing Services Branch	Director General	TOTAL
Salary	1,656,600	2,268,500	2,972,300	2,145,600	118,500	9,161,500
Other O&M	8,532,000	417,700	662,500	2,676,100	139,500	12,427,800
Capital	10,000	50,000	341,900	109,000		510,900
Grants & Contributions						
TOTAL	10,198,600	2,736,200	3,976,700	4,930,700	258,000	22,100,200
PY's	51	76	107	88	5	327

Canadian Climate Centre Budget

1981-82

Displayed by Organizational Unit and Authority Code

	Climate Applications Branch	Director General	TOTAL
Salary	2,382,100	854,700	3,236,800
Other O&M	709,000	252,500	961,500
Capital	135,500	21,200	156,700
Grants & Contributions			
Total	3,226,600	1,128,400	4,355,000
PY's	92	27	119

Atmospheric Environment Service Budget

1981-82

Displayed by Organizational Unit and Authority Code

	Assistant Deputy Minister	Adminis- tration	Field Services Directorate	Atmospheric Research Directorate	Central Services Directorate	Canadian Climate Centre	Canadian Forces Weather Service	TOTAL
Minor Capital		116 8	1886 0	921 4	510 9	96 7		3531 8
Furniture		4 2	15 0	106 0				125 2
Stores			124 0					124 0
Energy						60 0		60 0
Mars II			269 0					269 0
PADS			3620 0					3620 0
Marine			575 0					575 0
Cellometer			462 0					462 0
Medium Radar			1571 0					1571 0
LRTAP				94 0				94 0
TOTAL		121 0	8522 0	1121 4	510 9	156 7		10432 0

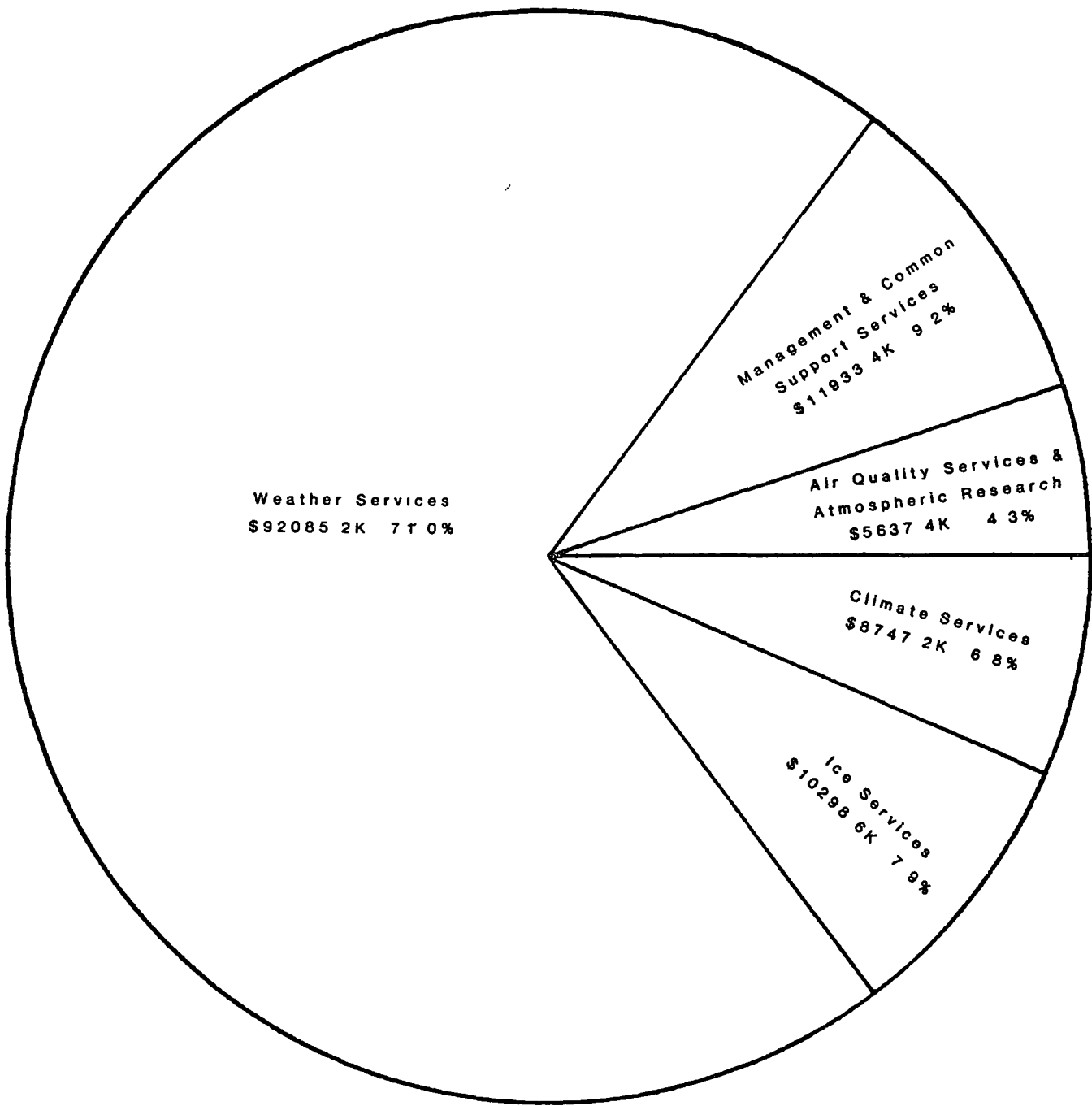
* Includes Regions

APPENDIX E

Atmospheric Environment Service

1981-82 Budget and Person Years

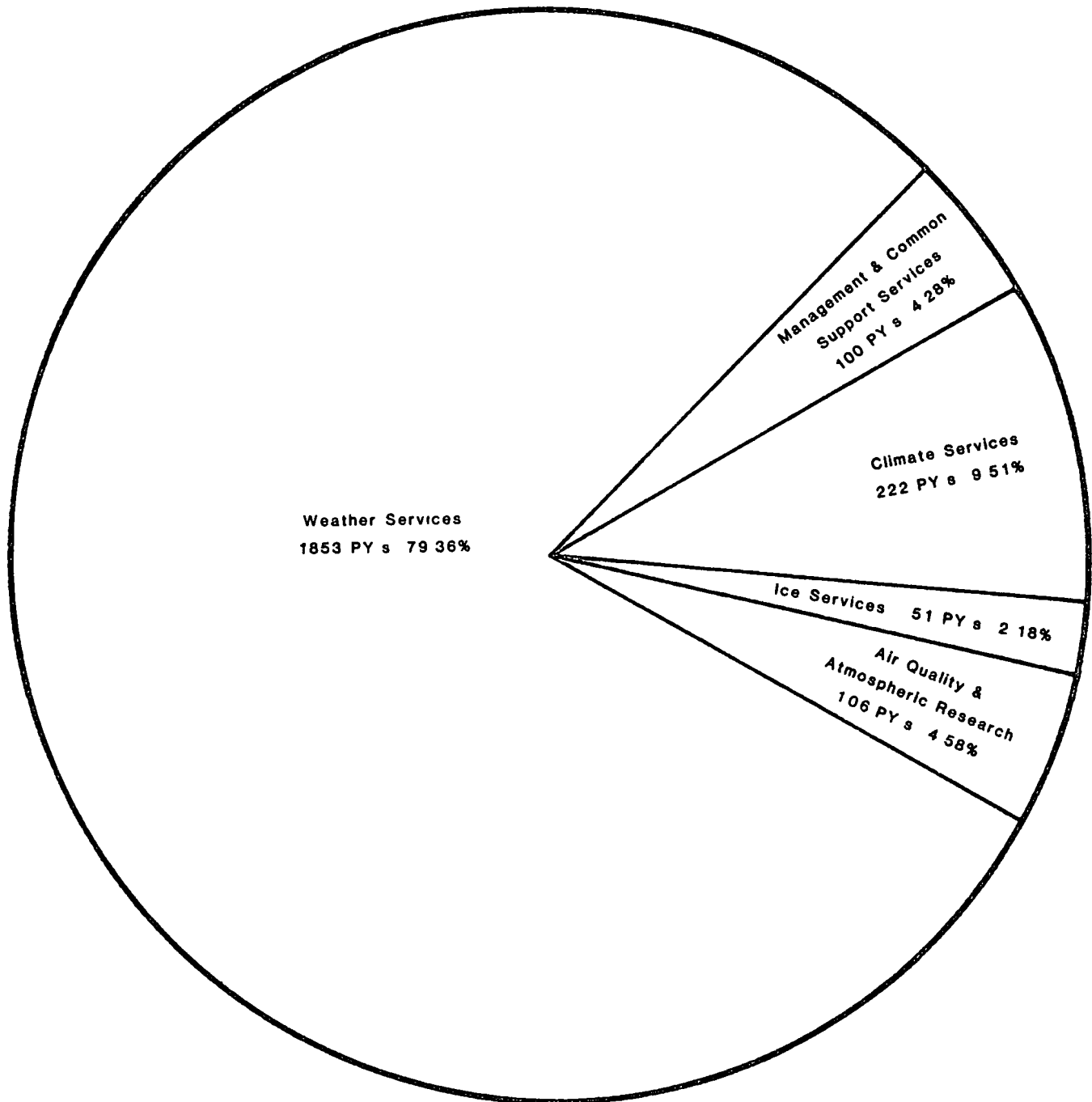
By Sub-Activity



AES 1981-82 BUDGET BY SUB-ACTIVITY

(Departmental Integrated Programs \$956.0K = 0.8% Not Shown)

AES TOTAL BUDGET · \$129,657.8



AES PERSON-YEARS BY SUB-ACTIVITY

(Departmental Integrated Programs 4 PY's = 0.2% Not Shown)

AES TOTAL PERSON-YEARS : 2336

APPENDIX F

Atmospheric Environment Service
1981-82 AES Person-Years by Location
and Organizational Unit

Atmospheric Environment Service

Person-Years by Location and Organization

ADMA			
	Downsview, Ont	6	
	Hull, P.Q	<u>11</u>	<u>17</u>
	Total		
ADMINISTRATION BRANCH			
	Downsview, Ont.	<u>95</u>	<u>95</u>
	Total		
ATMOSPHERIC RESEARCH DIRECTORATE			
	Dorval, P Q	21	
	Downsview, Ont	<u>149</u>	<u>170</u>
	Total		
CANADIAN CLIMATE CENTRE			
	Downsview, Ont	<u>119</u>	<u>119</u>
	Total		
CENTRAL SERVICES DIRECTORATE			
	Colorado Springs, Colo, U S A	2	
	Cornwall, Ont	28	
	Dorval, P Q	31	
	Downsview, Ont.	246	
	Ottawa, Ont	<u>20</u>	<u>327</u>
	Total		
FIELD SERVICES DIRECTORATE			
	FSD Headquarters		
	Downsview, Ont	<u>79</u>	<u>79</u>
	Total		
Atlantic Region			
	Charlo, N B	5	
	Charlottetown, P E.I	2	
	Churchill Falls	4	
	Fredericton, N B	9	
	Gander, Nfld.	50	
	Goose Bay, Nfld	13	
	Halifax (and Bedford), N.S	98	
	Moncton, N B.	11	
	Sable Island, N S	6	
	Saint John, N B	5	
	Shelburne, N S	4	
	St John's, Nfld	16	
	Stephenville, Nfld	5	
	Sydney, N S	5	
	Truro, N.S.	<u>2</u>	<u>235</u>
	Total		

Quebec Region		
Baie Comeau, P.Q	5	
Cape Dyer, N W T	5	
Chibougamau, P Q	5	
Clyde River, N W T	8	
Dorval, P Q	19	
Frobisher Bay, N W T	9	
Inoucdjouac, P.Q	9	
Kuujuak, P Q	6	
Maniwaki, P Q	5	
Mirabel, P Q	13	
Montreal (Ville St -Laurent)	87	
Nitchequon, P Q	4	
Quebec, P Q	6	
Sept-Iles, P Q	7	
Sherbrooke, P Q	3	
St Hubert, P Q	5	
Ste Agathe des Monts, P Q	5	
Trois Rivieres, P Q	1	
Val d'Or, P Q	5	
Total		<u>207</u>

Ontario Region		
Hamilton, Ont	4	
Kingston, Ont	3	
London, Ont	5	
Moosonee, Ont	4	
Mt Forest, Ont	2	
Ottawa, Ont	11	
Niagara Falls, Ont	2	
North Bay, Ont	7	
Peterboro, Ont	2	
Sarnia, Ont	2	
Sault Ste Marie, Ont	7	
Simcoe, Ont	3	
St. Catharines, Ont	1	
Sudbury, Ont	3	
Toronto (and Malton), Ont	110	
Waterloo/Wellington, Ont	2	
Windsor	7	
Total		<u>175</u>

Central Region		
Alert, N.W T	3	
Armstrong, Ont	2	
Atikokan, Ont	4	
Baker Lake, N W T	3	
Bissett, Man	1	
Brandon, Man	1	
Broadview, Sask	4	
Churchill, Man	9	
Coral Harbour, N W T	2	
Cree Lake, Sask	4	
Dauphin, man	1	
Estevan, Sask	4	

Eureka, N W T	7	
Gillam, Man	1	
Gimli, Man	2	
Hall Beach, N W T	5	
Hudson Bay, Sask	2	
Island Lake, Man	2	
Kindersley, Sask	1	
Lansdowne House, Ont	2	
Mould Bay, N W T	7	
Pickle Lake, Ont	1	
Prince Albert, Sask	3	
Regina, Sask	12	
Resolute, N W.T	8	
Saskatoon, Sask.	7	
The Pas, Man	7	
Thompson, Man	1	
Thunder Bay, Ont	6	
Trout Lake, Ont	7	
Winnipeg, Man.	149	
Wynyard, Sask.	2	
	<hr/>	<hr/>
Total		270

Western Region

Banff, Alta	3	
Calgary, Alta	16	
Cambridge Bay, N W T	6	
Cape Parry, N W.T	3	
Coronation, Alta	3	
Edson, Alta	4	
Edmonton, Alta	151	
Fort McMurray, Alta	3	
Fort Nelson, B C	8	
Fort Reliance, N W T	3	
Fort Smith, N W T	4	
Fort St John, B.C.	4	
Grande Prairie, Alta	4	
Hay River, N W T	1	
Inuvik, N W T	9	
Jasper, Alta	3	
Lethbridge, Alta	5	
Norman Wells, N W T	4	
Pincher Creek, Alta	2	
Rocky Mountain House, Alta	3	
Sachs Harbour, N W T	6	
Slave Lake, Alta	4	
Stony Plain, Alta	5	
Whitehorse, Yukon	21	
Yellowknife, N W T	6	
	<hr/>	<hr/>
Total		281

Pacific Region

Cape St James, B C	3	
Castlegar, B C	3	
Dease Lake, B C	2	
Hope, B C	3	
Kamloops, B C	4	
Kelowna, B C	6	
Lytton, B.C	3	
Penticton, B C.	2	
Port Alberni, B C	2	
Port Hardy, B C.	9	
Prince George, B C	11	
Revelstoke, B C	3	
Terrace, B C	2	
Vancouver, B C.	127	
Vernon, B C.	4	
Victoria, B C	9	

Total 193

Canadian Meteorological Centre

Dorval, P Q

67

Total 67

Canadian Forces Weather Service

101

Total 101

AES GRAND TOTAL 2336

APPENDIX G

AES Service and Data Acquisition Units

WEATHER OFFICES/WEATHER CENTRES
1981/82

REGION TYPE	PACIFIC	WESTERN	CENTRAL	ONTARIO	QUEBEC	ATLANTIC	TOTAL
W O 1 Forecast Office	Pacific Weather Centre	Alberta Weather Centre Arctic Weather Centre Yukon Weather Office	Prairie Weather Centre	Ontario Weather Centre	Quebec Weather Centre	Atlantic Weather Centre Newfoundland Weather Office	9
W O 3 Weather Service Office with Professional Consultation Available	Victoria	Yellowknife	Regina Resolute Saskatoon				5
W.O 4 Weather Service Office	Castlegar Kamloops Kelowna Penticton Port Hardy Prince George Terrace Vancouver International Vancouver Aviation	Alberta Weather Centre Calgary Edmonton Edmonton Municipal Fort Nelson Fort St John Grande Prairie Inuvik Lethbridge (Banff - opening in 81/82)	Brandon Churchill Dauphin Prince Albert Thompson Thunder Bay Winnipeg Int'l	Hamilton Kingston London Niagara Dist St Catherines North Bay Ottawa Peterborough Sarnia Sault Ste Marie Sudbury Toronto W O Waterloo- Wellington Windsor	Frobisher Montreal/ Mirabel Montreal/Dorval Québec Sept Iles Sherbrooke St Hubert Trois Rivieres Val D'Or	Atlantic Weather Centre Charlottetown Fredericton Goose Bay Halifax International Moncton Saint John St John's Sydney Gander	58

Continued

WEATHER OFFICES/WEATHER CENTRES
1981/82

REGION TYPE	PACIFIC	WESTERN	CENTRAL	ONTARIO	QUEBEC	ATLANTIC	TOTAL
Canadian Forces Weather Offices	Comox Esquimalt	Cold Lake Edmonton	Moose Jaw Portage la Prairie Winnipeg	North Bay Ottawa Trenton	Bagotville St Hubert	Chatham Gagetown Greenwood Halifax (METOC) Shearwater Summerside	18
TOTAL ^c	13	16	14	17	12	18	90

CANADIAN METEOROLOGICAL DATA ACQUISITION STATIONS
1981/82

REGION TYPE	PACIFIC	WESTERN	CENTRAL	ONTARIO	QUEBEC	ATLANTIC	TOTAL
Automatic Stations	9	8	13	12	7	9	58
Upper Air Stations	Vernon Port Hardy Prince George	Fort Smith Norman Wells Fort Nelson Whitehorse Cambridge Bay Inuvik Sachs Harbour Edmonton (Stony Plain)	Alert Eureka Hall Beach Mould Bay The Pas Trout Lake Baker Lake Coral Harbour Churchill Resolute	Moosonee	Fort Chimo Maniwaki Frobisher Bay Inoucdjouac Nitchequon Sept Iles	Sable Island Shelburne Goose Bay St John's Stephenville	33
Synoptic Stations	83	25	33	30	25	34	230
Climate Stations	414	480	371	388	470	218	2341
Weather Radar	Abbotsford	Edmonton	Winnipeg	Carp Woodbridge Exeter	Villeroy St Anne de Bellevue	Halifax Trepassey	10
Satellite Stations		Edmonton		Downsview		Halifax	3
Seismic Stations	Port Hardy	Inuvik Whitehorse	Churchill		Frobisher Bay		5

CANADIAN METEOROLOGICAL DATA ACQUISITION STATIONS
1981/82

REGION	PACIFIC	WESTERN	CENTRAL	ONTARIO	QUEBEC	ATLANTIC	TOTAL
Air Quality	Cape St James Fort Nelson Fort St John Kelowna Port Hardy Prince George Terrace Vancouver	Alert Coronation Edson Fort McMurray Fort Reliance Fort Simpson Hay River Inuvik Lethbridge Mould Bay Rocky Mountain House Whitehorse	Big Trout Lake Atikokan Bissett Churchill Cree Lake Dauphin Experimental Lakes Kindersley Pickle Lake The Pas Wynard	Dorset Harrow Kapuskasing Kingston Moosonee Mt Forest Peterborough Simcoe	Chibougamau Fort Chimo Maniwaki Nitchequon Quebec Sept Iles St Hubert	Acadia Charlo Gander Goose Bay Kejimikujik Park Sable Island Saint John Shelburne Stephenville Truro	56
Radiation	Vancouver	Calgary Coral Harbour Edmonton (Stony Plain) Hay River Inuvik Resolute Whitehorse Yellowknife	Churchill Regina Saskatoon Thunder Bay Winnipeg	Moosonee Ottawa Sault Ste Marie Toronto Is Windsor	Montreal (Dorval) Quebec	Fredericton Goose Bay Shearwater St John's	25

APPENDIX H
Atmospheric Environment Service
Network Charts
and
Regional Boundaries

ATMOSPHERIC ENVIRONMENT SERVICE
 ENVIRONMENT CANADA
 SERVICE DE L'ENVIRONNEMENT ATMOSPHERIQUE
 ENVIRONNEMENT CANADA

CANADA

SYNOPTICS AND HOURLIES
 OBSERVING STATIONS

DECEMBER 1980

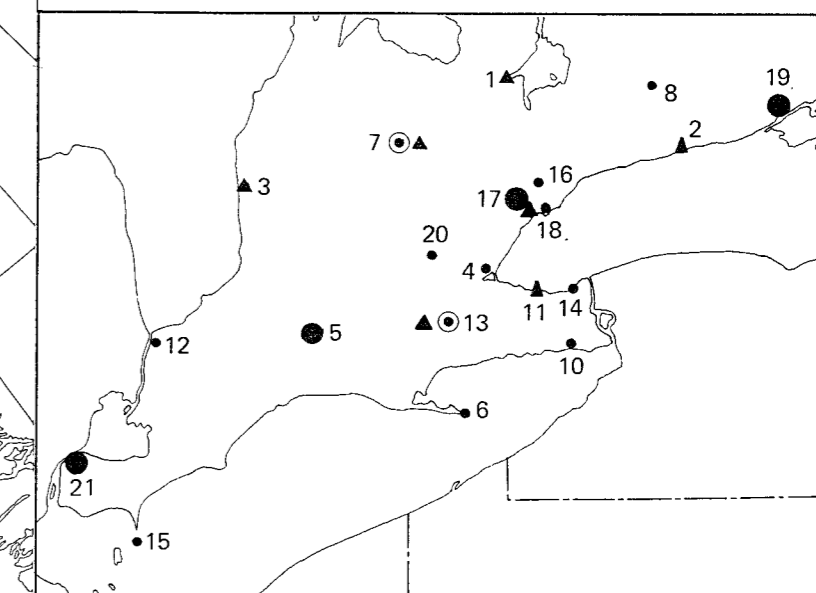
For Observing Programme See METSTAT

STATIONS

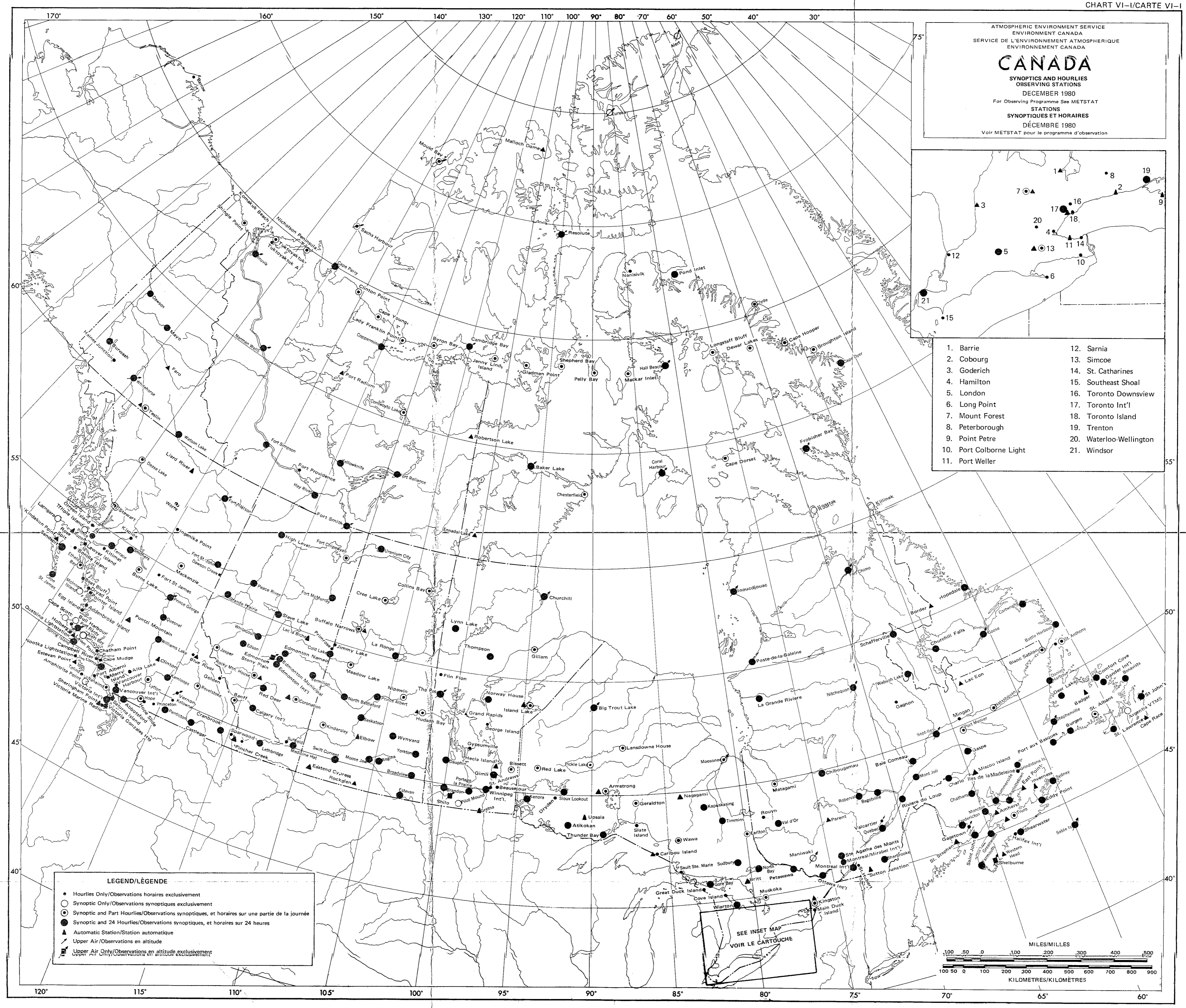
SYNOPTIQUES ET HORAIRES

DÉCEMBRE 1980

Voir METSTAT pour le programme d'observation



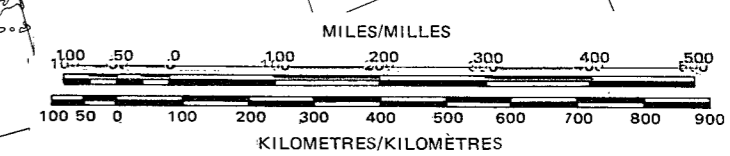
- | | |
|-------------------------|-------------------------|
| 1. Barrie | 12. Sarnia |
| 2. Cobourg | 13. Simcoe |
| 3. Goderich | 14. St. Catharines |
| 4. Hamilton | 15. Southeast Shoal |
| 5. London | 16. Toronto Downsview |
| 6. Long Point | 17. Toronto Int'l |
| 7. Mount Forest | 18. Toronto Island |
| 8. Peterborough | 19. Trenton |
| 9. Point Petre | 20. Waterloo-Wellington |
| 10. Port Colborne Light | 21. Windsor |
| 11. Port Weller | |



LEGEND/LÉGENDE

- Hourlies Only/Observations horaires exclusivement
- Synoptic Only/Observations synoptiques exclusivement
- ◐ Synoptic and Part Hourlies/Observations synoptiques, et horaires sur une partie de la journée
- ◑ Synoptic and 24 Hourlies/Observations synoptiques, et horaires sur 24 heures
- ▲ Automatic Station/Station automatique
- ▽ Upper Air/Observations en altitude
- ◻ Upper Air Only/Observations en altitude exclusivement

SEE INSET MAP
 VOIR LE CARTOUCHE



CANADIAN WEATHERFAX SYSTEM

ATMOSPHERIC ENVIRONMENT SERVICE
DEPARTMENT OF FISHERIES AND THE ENVIRONMENT - CANADA
1977

NOTES 1801

Circuit 1801 designates the entire National System, comprising all the Regional Circuits as well. When in the Circuit 1801 configuration, CMC Montreal has full control and becomes the only transmitting station. CMC, by activating a tone-switching signal, can pre-empt the entire system so that its transmissions may simultaneously be copied at all stations shown in the diagram. At specified times CMC releases the circuit, so that it may be broken into separate regional sections. At these times each Regional transmitting station may transmit charts which will be received only at those locations within their respective regions.

CIVIL STATIONS

Edmonton Briefing Office, Intern'l Airport
Edmonton WO, Municipal Airport
Calgary WO
Ft. St. John WO
Ft. Nelson WO
Inuvik WO
Lethbridge WO
Peace River WO
Whitehorse WO
Yellowknife WO

OTHER USERS

Alta. Hail Project, Penhold (May-Sept)
Alta. Forestry, Edmonton
Ft. Smith Lands & Forest, Ft. Smith (May-Oct)
Yukon Lands & Forest, Whitehorse, (May-Aug)

(Relay over MOT radio station 'FE to Resolute WO, Frobisher WO, and ships in Arctic Waters).

1812
EDMONTON WC

DND STATIONS

Edmonton (Namao) CFWO
Suffield DND
Cold Lake CFWO

(Note: Regional transmissions by Vancouver are received at Edmonton and can be switched to Circuit 1812)

VANCOUVER WC
1810

CIVIL STATIONS

Vancouver Briefing Office
Castlegar WO
Kamloops WO
Kelowna WO
Penticton WO
Port Hardy WO
Prince George WO
Terrace WO
Victoria WO

DND STATIONS

Comox CFWO
Esquimalt
Metoc

OTHER USERS

B.C. Hydro, Vancouver
B.C. Forest Service, Williams Lake, (Apr-Oct)
B.C. Forest Service, Nelson, (Apr-Oct)
B.C. Forest Service, Prince Rupert, (Apr-Oct.)
B.C. Forest Service, Prince George, (Apr-Oct)

LEGEND

⊕ Recording and Transmitting Station
○ Recording Station

ABBREVIATIONS

WO Weather Office
CFWO Canadian Forces Weather Office
WC Weather Centre
CMC Canadian Meteorological Centre
METOC Meteorological & Oceanographic Centre (DND)
MOBCOM Mobile Command HQ (DND)
TCTI Transport Canada Training Institute
CEGEP College d'Enseignement Général et Professionnel
NNRWC Northern Norad Regional Weather Centre

CIVIL STATIONS

Winnipeg Briefing Office
Brandon WO
Churchill WO
Dauphin WO
Prince Albert WO
Regina WO
Saskatoon WO
Thunder Bay WO
Thompson WO

DND STATIONS

Winnipeg CFWO
Winnipeg School of Met
Moose Jaw CFWO
Portage la Prairie CFWO

DND STATIONS

Bagotville CFWO
Ottawa CFWO
Petawawa CFWO
St. Hubert MOBCOM
Valcartier MOBCOM

CIVIL STATIONS

Montreal WO, Dorval
Montreal WO, Mirabel
Ottawa WO
Ottawa Ice Central
Ottawa TCTI
Quebec WO
St. Hubert WO
Sherbrooke WO
Sept Iles WO
Val d'Or WO

OTHER USERS

Ottawa MOT Flight Dispatch
Ottawa National Museum of Science
Chicoutimi CEGEP
Quebec, Ministère des Richesses Naturelles
Noranda/Rouyn, Noranda Mines
Montreal, Alden Electronics
Montreal, Quebec Hydro
Montreal, McGill University
Montreal, University of Quebec
Montreal, Nordair
Montreal, Exeaire
Montreal, Quebecaire

CIVIL STATIONS

Halifax WO (Airport)
Goose WO
Gander WO
Fredericton WO
Moncton WO
Saint John, N.B. WO
St. John's, Nfld. WO
Sydney WO
Charlottetown WO

DND STATIONS

Halifax METOC
Chatham CFWO
Gagetown DND
Greenwood CFWO
St. Margaret's (Call-up)
Summerside CFWO
Shearwater CFWO

OTHER USERS

St. John's, MOT Canadian Marine Administration
St. John's, Eastcan Exploration
Dartmouth, Marine Aids Information Centre

1820
WINNIPEG WC

MONTREAL WC
1830

HALIFAX WC
1835

MONTREAL CMC
CIRCUIT 1801

CIRCUIT 1805
WEATHER CHARTS
AND SATELLITE PICTURES

Note: United States National Weather Service Supplies Charts to CMC on Circuit 1803 and these charts can be sent on either Circuit 1801 or 1805 by C.M.C.

TORONTO WC
1825

CIVIL STATIONS

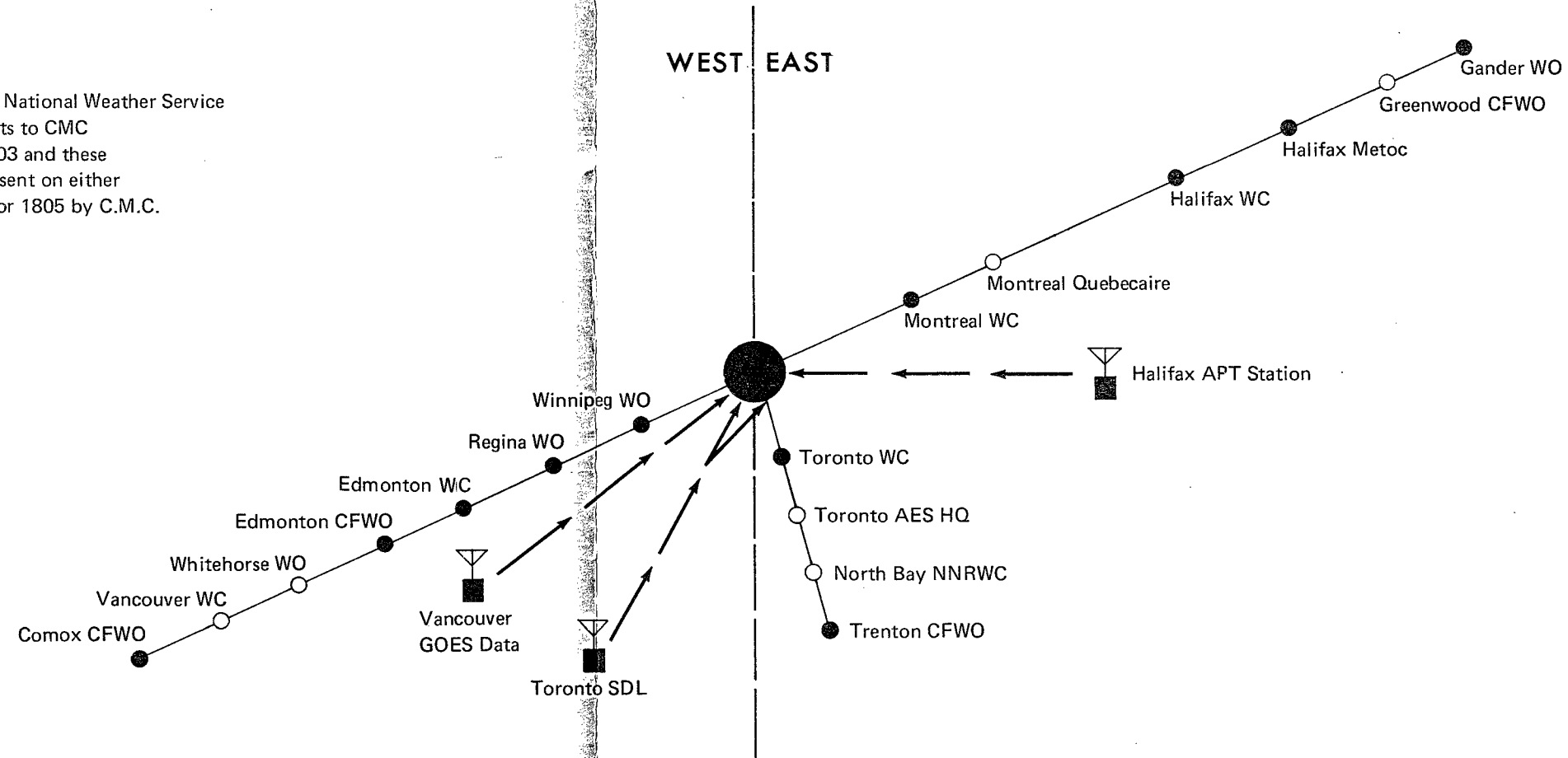
Toronto Briefing Office
Toronto AES HQ
Hamilton WO
Kitchener WO
London WO
North Bay WO
Sarnia WO
Sault Ste. Marie WO
St. Catharines WO
Sudbury WO
Kingston WO
Peterborough WO
Windsor WO

DND STATIONS

Toronto CFWO
North Bay NNRWC
Trenton CFWO

OTHER USERS

Toronto, MEP Co.
Toronto, Ontario Science Centre
Copper Cliff, Ont. INCO
Guelph, U. of Guelph
Toronto Forest Fire Control
Waterloo, U. of Waterloo



Notes 1805

- Weather charts transmitted by CMC are received at all locations shown on the above diagram.
- Satellite photos transmitted by Vancouver APT station are recorded at CMC and at those locations connected to the Western portion indicated with a black dot.
- Satellite photos transmitted by Halifax APT station are recorded at CMC and at those locations connected to the Eastern portion indicated with a black dot.
- Satellite photos transmitted by Toronto Satellite Data Lab (SDL) are recorded at CMC and at those stations on both the Western and Eastern portions indicated with a black dot.

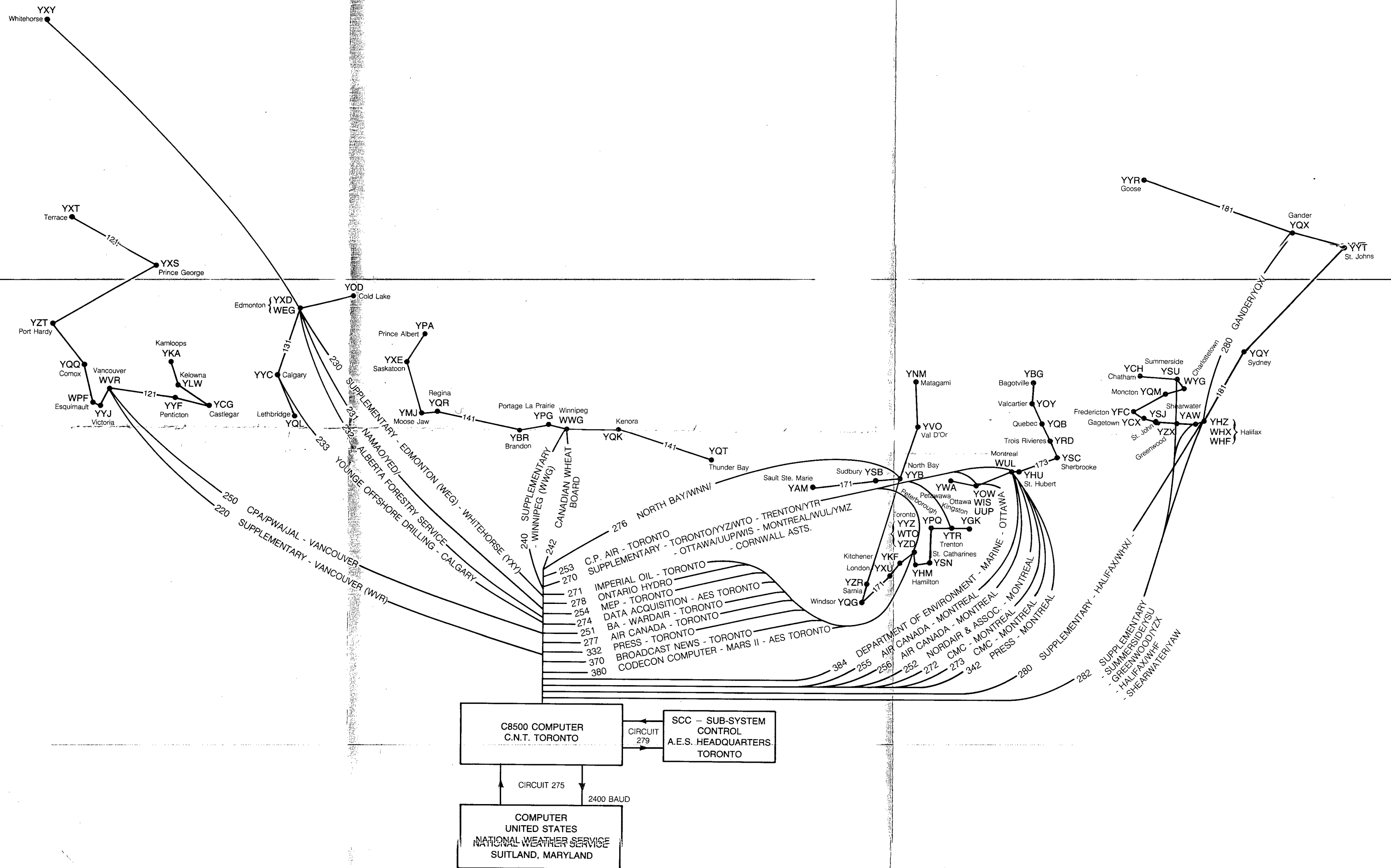
METEOROLOGICAL TELETYPE DISTRIBUTION CIRCUITS

RÉSEAU DE TÉLÉIMPRIMEURS POUR LA DIFFUSION DES DONNÉES MÉTÉOROLOGIQUES

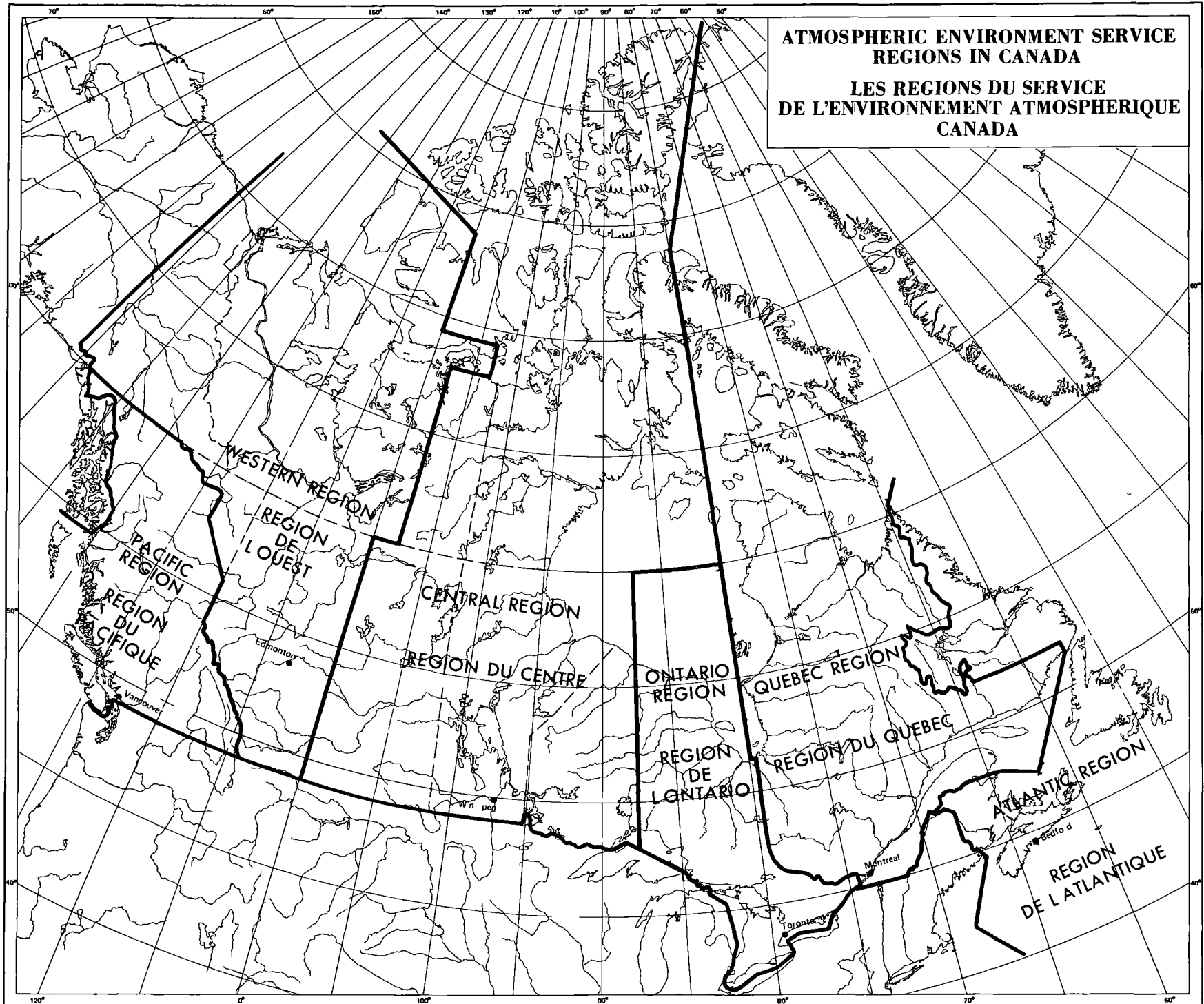
ENVIRONNEMENT CANADA ENVIRONNEMENT
APRIL/AVRIL 1980

LEGEND/LÉGENDE

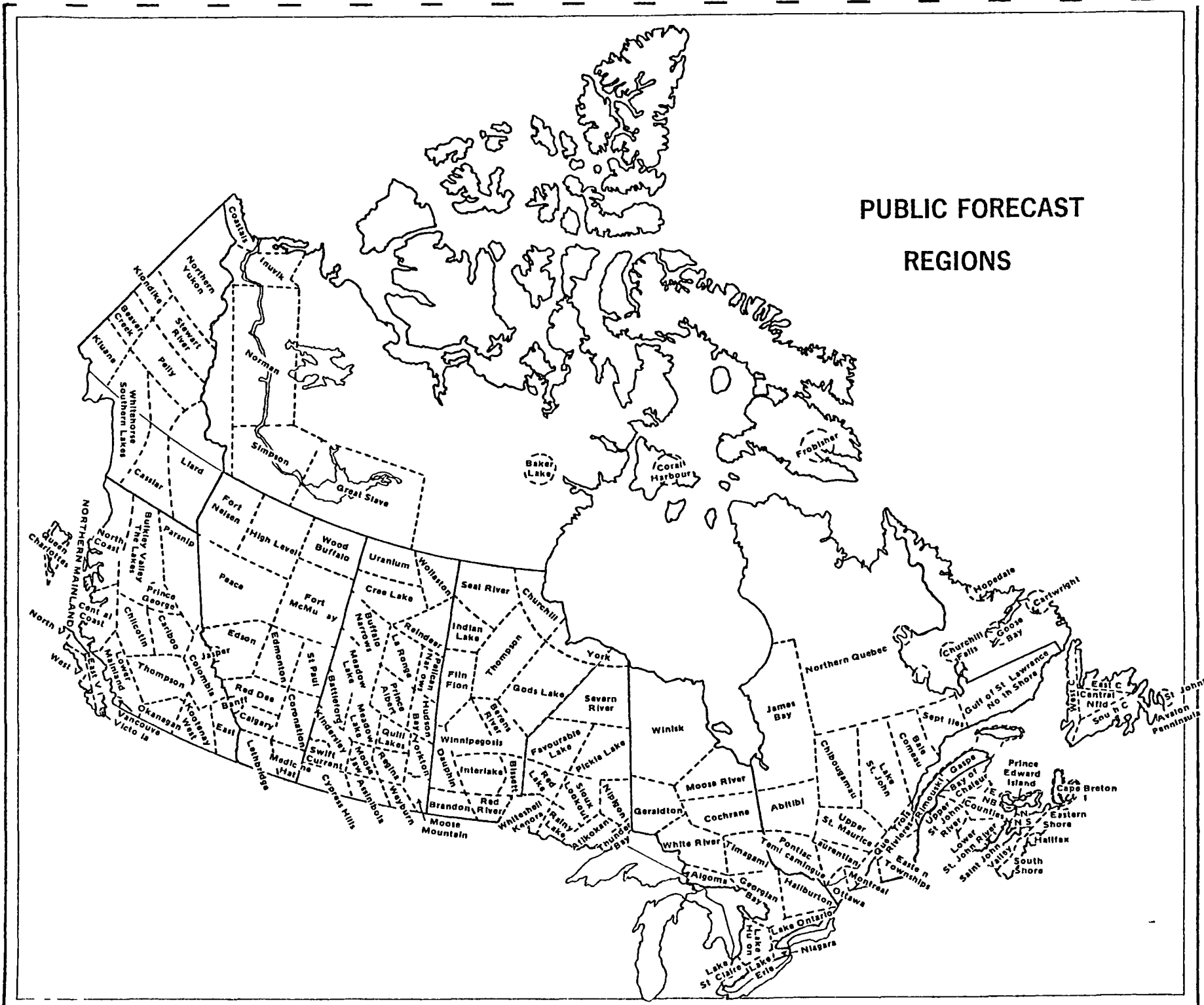
- 100 Series circuits
Circuits de la série 100
- 200/300 Series circuits
Circuits des séries 200 et 300



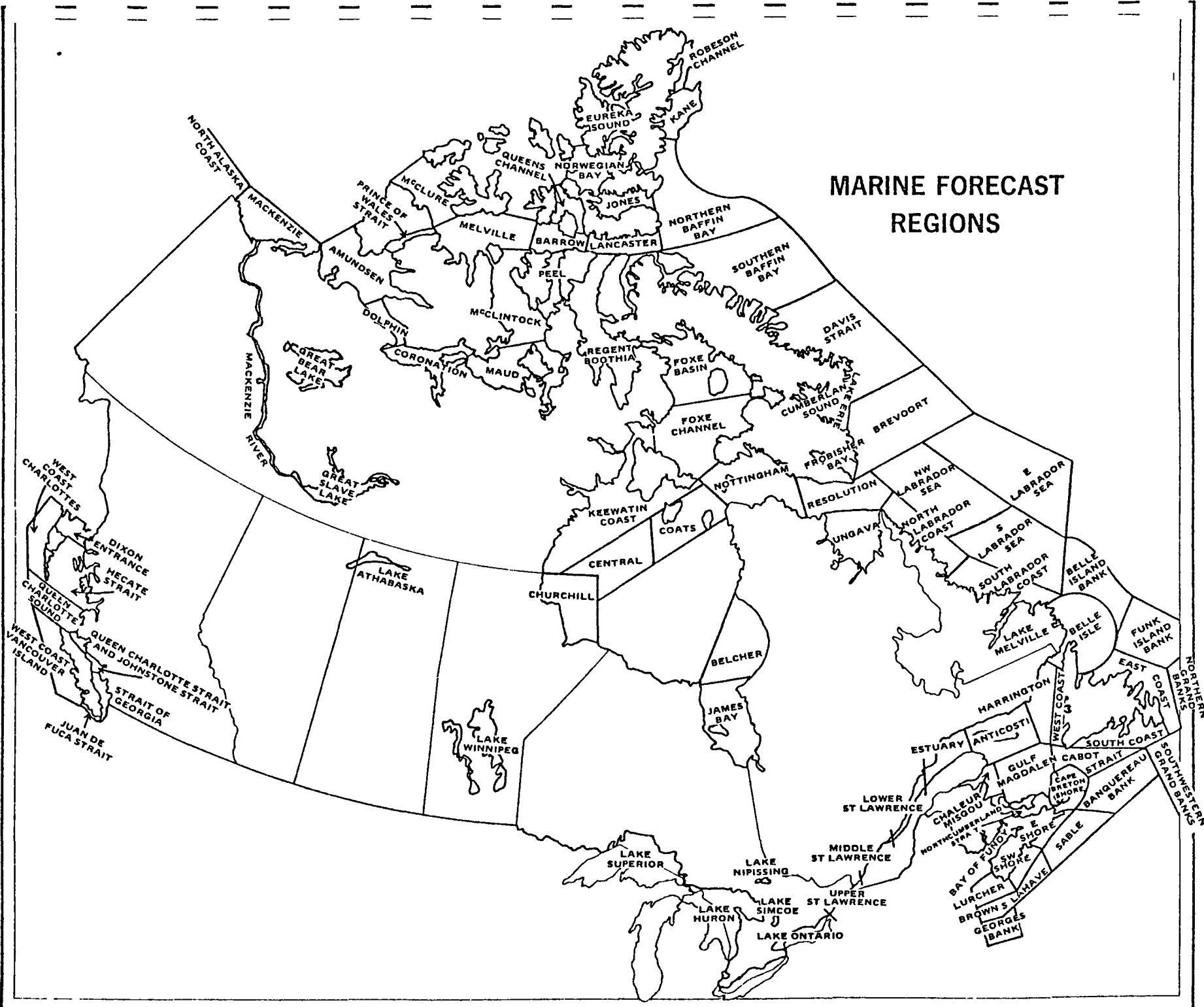
**ATMOSPHERIC ENVIRONMENT SERVICE
REGIONS IN CANADA**
**LES REGIONS DU SERVICE
DE L'ENVIRONNEMENT ATMOSPHERIQUE
CANADA**



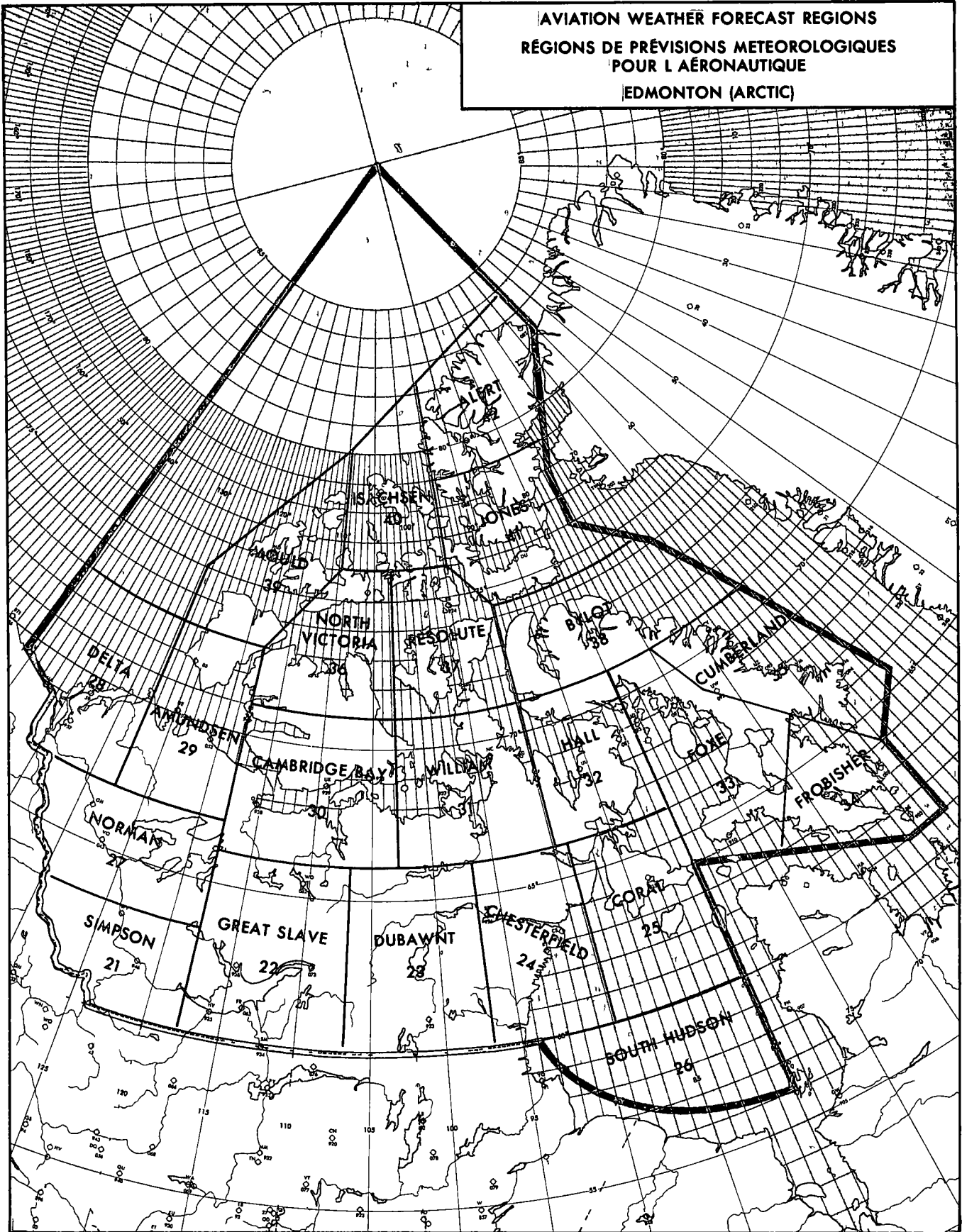
PUBLIC FORECAST REGIONS



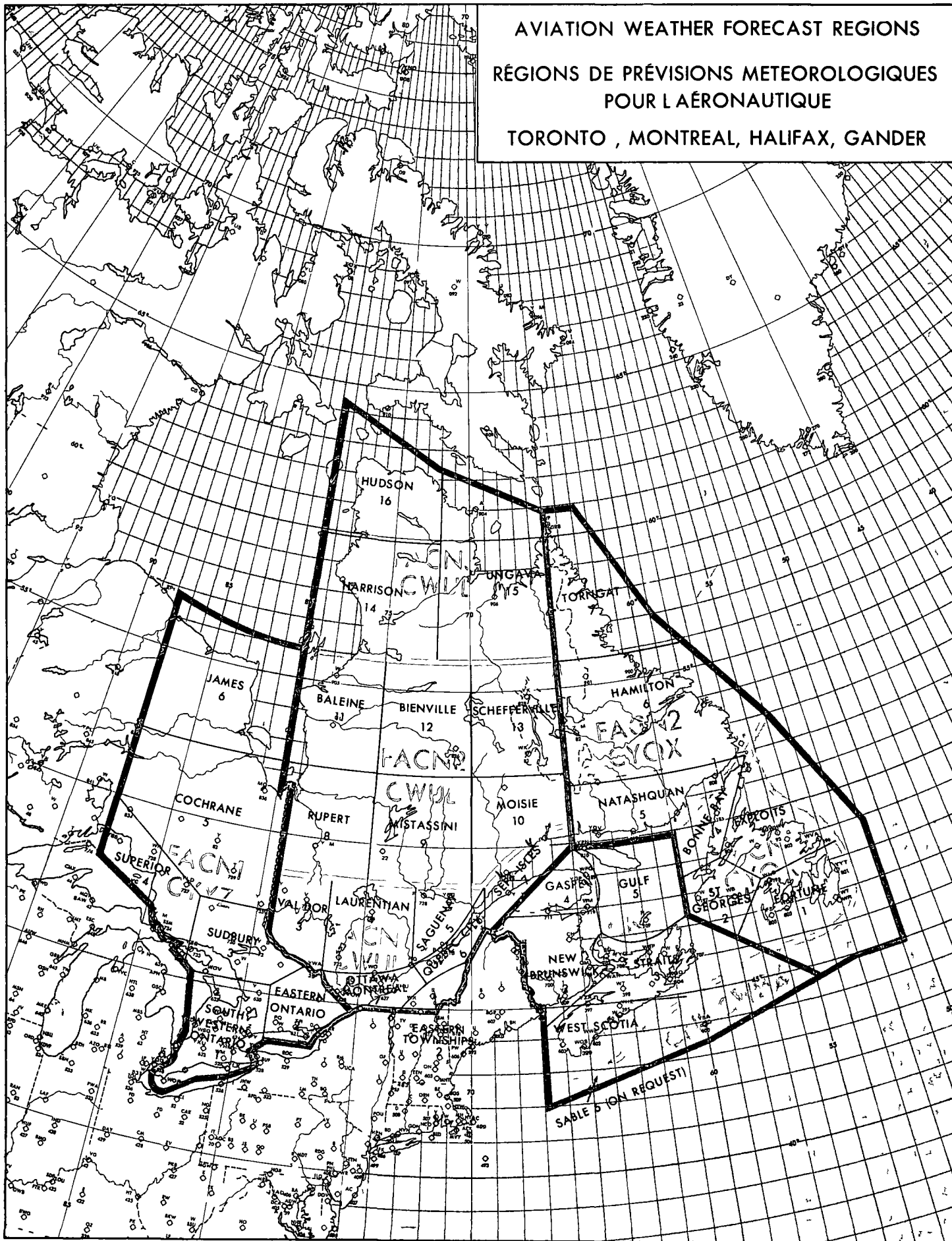
MARINE FORECAST REGIONS



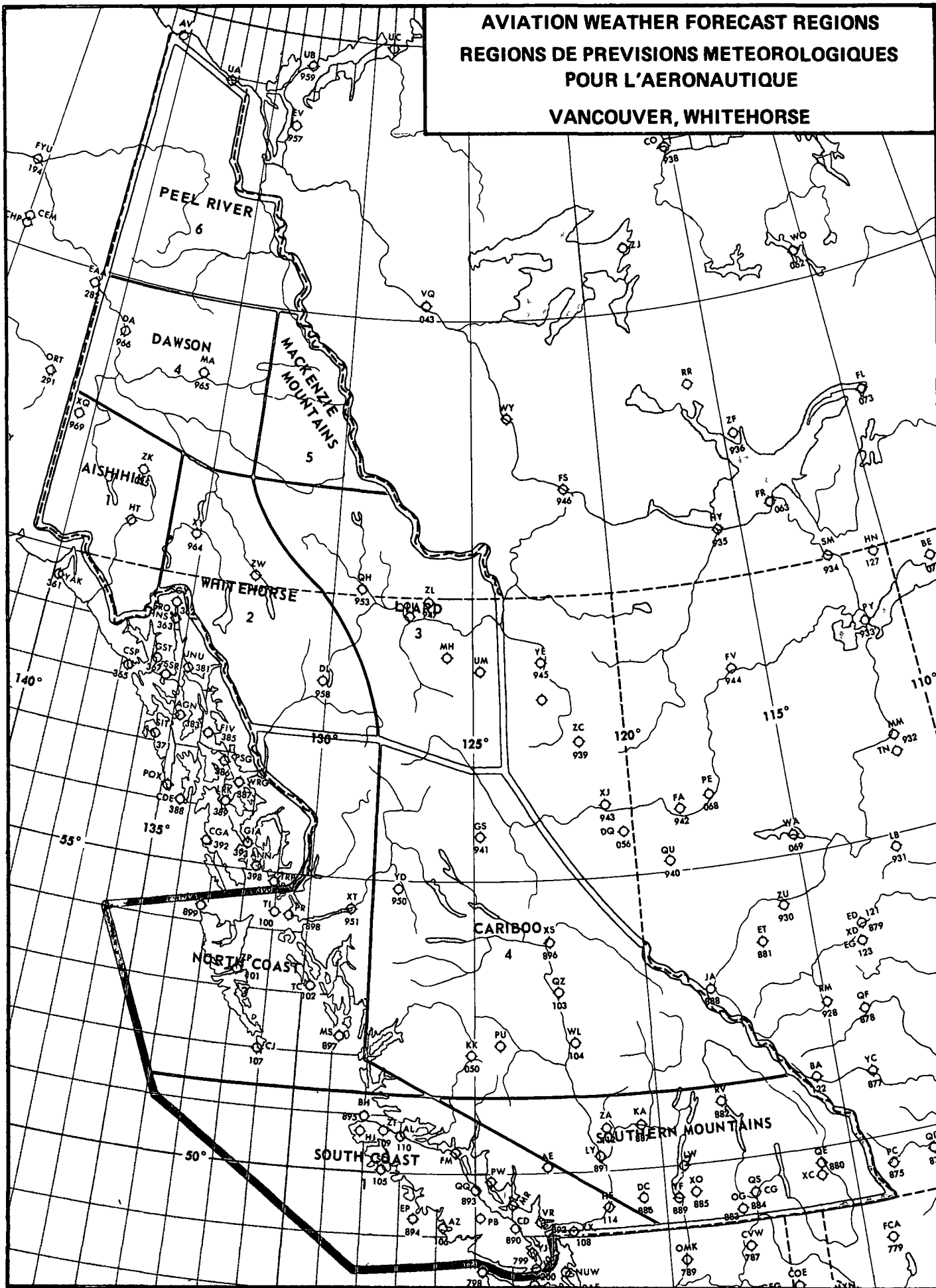
AVIATION WEATHER FORECAST REGIONS
RÉGIONS DE PRÉVISIONS MÉTÉOROLOGIQUES
POUR L'AÉRONAUTIQUE
EDMONTON (ARCTIC)



AVIATION WEATHER FORECAST REGIONS
 RÉGIONS DE PRÉVISIONS MÉTÉOROLOGIQUES
 POUR L'AÉRONAUTIQUE
 TORONTO, MONTREAL, HALIFAX, GANDER



**AVIATION WEATHER FORECAST REGIONS
REGIONS DE PREVISIONS METEOROLOGIQUES
POUR L'AERONAUTIQUE
VANCOUVER, WHITEHORSE**



**AVIATION WEATHER FORECAST REGIONS
 REGIONS DE PREVISIONS METÉOROLOGIQUES
 POUR L'AERONAUTIQUE
 EDMONTON, WINNIPEG**

