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Environment Canada | Environnement Canada

Atmospheric Environment Service | Service de l'environnement atmosphérique

ATMOSPHERIC ENVIRONMENT SERVICE

PROGRAM DIGEST

1983 - 1984

AES MANAGEMENT SERIES

THE BUSINESS OF AES

The business of AES is to report past and present conditions and predict future conditions of the atmosphere and closely-related phenomena such as sea ice and sea state for safety and to benefit Canada's economic and social life Primary among such predictions are weather forecasts and warnings In addition to physical conditions, the AES must report and predict the chemical composition of the atmosphere and its precipitation Predictions are of an operational, "real-time" nature, of a statistical or climatological variety, or are the product of research

These services are provided to general and specialized publics for safety and to benefit Canada's economic and social life

As AES cannot itself undertake to satisfy all demands for information on such conditions it has the added responsibility of promoting and coordinating similar activities among universities, private Canadian meteorological agencies and other such expert bodies, as well as internationally where there is clearly a national benefit

J P Bruce

TABLE OF CONTENTS

	Page
1. INTRODUCTION	1
1.1 Purpose	2
1.2 How to Reference Items in the Program Digest	2
2. AES RESPONSIBILITIES AND LEGAL MANDATE	3
3. AES OBJECTIVES	6
3.1 Objectives of Environment Canada	7
3.2 Objectives of the Atmospheric Environment Service	7
3.3 AES Priorities 1983-89	8
4. AES BUDGET BY PROGRAM ACTIVITY	10
4.1 AES Budget By Sub-Activity	11
4.1.1 Program Activity Structure	11
4 1.2 AES Budget by Sub-Activity	14
4.1.3 AES Total Budget by Sub-Activity	15
4.1.4 AES Person-Years by Sub-Activity	16
4.1.5 AES Salary and O&M by Sub-Activity	17
4.1.6 AES Capital by Sub-Activity	18
4.1.7 AES Budgets 1976 to 1983	19
4.1.8 AES Person Years 1975 to 1983	20
4.2 WEATHER SERVICES Sub-Activity	21
4.2.1 Objectives	21
4.2.2 Budget by Sub-Sub-Activities	21
4 2.3 Description	21
4.2.3.1 Public, Marine, Aviation, Economic and Canadian Forces Weather Service Sub-Sub-Activities	21
4 2.3.2 Data Sub-Sub-Activity	39
4.2.3 3 Weather Services Support Systems Sub-Sub-Activity	47
4.3 CLIMATE PROGRAM Sub-Activity	48
4 3.1 Objectives	48
4.3 2 Budget by Sub-Sub-Activity	48
4.3 3 Description	48
4.4 ICE SERVICES Sub-Activity	50
4.4 1 Objectives	50
4.4 2 Budget by Sub-Sub-Activity	50
4 4 3 Description	50
4 5 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH Sub-Activity	51
4.5.1 Objectives	51
4.5 2 Budget by Sub-Sub-Activity	51
4 5.3 Description	51

	Page
4 6 DEPARTMENTAL INTEGRATED PROGRAMS Sub-Activity	52
4.6.1 Objective	52
4.6 2 Budget by Sub-Sub-Activity	52
4.6 3 Description	52
4.7 MANAGEMENT AND COMMON SUPPORT SERVICES Sub-Activity	54
4.7.1 Objectives	54
4.7 2 Budget by Sub-Sub-Activity	54
4.7.3 Description	54
5. AES BUDGETS BY PROGRAM ACTIVITY, AND ORGANIZATIONAL UNIT	55
5.1 Atmospheric Environment Service	56
5 1 1 AES Organizational Structure	56
5.1.2 AES Total Budget by Program Activity and Organization	58
5.1.3 AES Person Years by Program Activity and Organization	59
5.1.4 AES Salary by Program Activity and Organization	60
5.1.5 AES O&M by Program Activity and Organization	61
5.1.6 AES Capital by Program Activity and Organization	62
5 1.7 AES Total Budget by Organization	63
5.1 8 AES Reconciliation to Main Estimates and Reference Level	64
5 1.9 AES Person Years by Organization and by Location	65
5 2 Office of the Assistant Deputy Minister	70
5.2.1 Functions of the Office of the ADM	70
5.2.2 Other Functional Units Serving the ADM	70
5 2.3 Budget by Sub-Activity and Sub-Sub-Activity	71
5.3 Field Services Directorate	72
5.3 1 Functions	72
5.3.2 FSD Budget	76
5 3.3 Office of the Director General (FSD) Budget	77
5 3 4 Field Meteorological Systems Branch Budget	77
5 3 5 Canadian Meteorological Centre Budget	78
5 3 6 Pacific Region Budget	78
5 3 7 Western Region Budget	79
5.3 8 Central Region Budget	80
5 3 9 Ontario Region Budget	80
5.3 10 Quebec Region Budget	81
5 3 11 Atlantic Region Budget	81
5.3 12 Canadian Forces Weather Service Budget	82
5.3 13 FSD Budget by Organizational Unit	83

		Page
5.4	Atmospheric Research Directorate	84
	5.4.1 Functions	84
	5.4 2 ARD Budget	86
	5.4.3 Office of the Director General (ARD) Budget	87
	5.4 4 Air Quality and Inter-Environmental Research Branch Budget	87
	5.4.5 Atmospheric Processes Research Branch Budget	88
	5 4 6 Meteorological Services Research Branch Budget	88
	5 4 7 ARD Budget by Organizational Unit	89
5 5	Canadian Climate Centre	90
	5 5.1 Functions	90
	5.5.2 CCC Budget	91
	5 5.3 Office of the Director General (CCC) Budget	91
	5.5.4 Climatological Applications Branch Budget	91
	5 5.5 CCC Budget by Organizational Unit	92
5.6	Central Services Directorate	93
	5.6.1 Functions	93
	5 6.2 CSD Budget	96
	5.6.3 Office of the Director General (CSD) Budget	97
	5 6.4 Computer and Communications Service Branch Budget	97
	5 6.5 Data Acquisition Branch Budget	98
	5.6.6 Ice Branch Budget	98
	5 6.7 Training Branch Budget	99
	5.6.8 CSD Budget by Organizational Unit	99
5.7	Finance and Administration Branch	
	5.7 1 Functions	100
	5 7 2 AABD Budget	101

CHAPTER 1

INTRODUCTION

1.1 PURPOSE

The Program Digest provides the reader with a concise, but comprehensive, picture of the Atmospheric Environment Service programs and budgets. Two main volumes are published

A Main Volume "The Program Digest" describes the objectives, mandate and responsibilities of AES, the AES budget by program sub-activity (SA 1) and program sub-sub-activity (SA 2), the AES Budget by organizational unit, and the major services and programs provided within each program activity Resource allocations are deduced from the input of each Directorate in April.

"An Addendum to the Program Digest" describes sub-sub-sub-activity (SA 3) and sub-sub-sub-sub-activity (SA 4) level definitions of the program activities, the relationship between responsibility centres and SA 3 program activities and the AES budget and PY allocation at the SA 3 and program activity element (SA-4) levels by organizational unit

1.2 HOW TO REFERENCE ITEMS IN THE PROGRAM DIGEST

This volume of the Program Digest is structured such that the Table of Contents may be used as an index, permitting the reader to reference any item simply by consulting the Table of Contents. The reader will find information relating to AES Program Activities and AES Organizational Units in Chapter 4 and Chapter 5, respectively, with each chapter having the general overview information near the beginning

Any comments or suggestions for amendments to this document should be forwarded to the Policy, Planning and Assessment Directorate

CHAPTER 2

Atmospheric Environment Service

RESPONSIBILITIES and LEGAL MANDATE

2 ATMOSPHERIC ENVIRONMENT SERVICE RESPONSIBILITIES AND LEGAL MANDATE

The federal responsibility for atmospheric science and meteorology is discharged by the Atmospheric Environment Service of Environment Canada 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

Legal Mandate The Government Organization Act of 1979 states 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

(i) the preservation and enhancement of the quality of the natural environment, including water, air, and soil quality,
(ii) renewable resources, .
(iii) water,
(iv) meteorology,
(v) ,
(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 directs 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 programs and coordinate programs of the Government of Canada, that are designed

(i) to promote the establishment or adoption of objectives or standards relating to environmental quality, or control to pollution
(ii) ,
(iii) to provide to Canadians environmental information in the public interest "

Although meteorological services are recognized as being the Federal Government's responsibility, in some specific areas AES shares this responsibility with the provinces. In addition, AES 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 Baseline Studies, Great Lakes Water Quality, Toxic Chemicals Management, and the Beaufort Sea Hydrocarbon Development Plan

CHAPTER 3

Atmospheric Environment Service

OBJECTIVES

3.1 OBJECTIVE OF ENVIRONMENT CANADA*

To foster harmony between society and the environment for the economic, social and cultural benefit of present and future generations of Canada.

Environment Canada has three Main Estimates Programs Environmental Services, Parks and Administration. The Atmospheric Environment Services is one Planning Element of the Environmental Services Program. The other three Planning Elements are the Environmental Conservation Service, the Canadian Forestry Service, and the Environmental Protection Service.

The objective of the Environmental Services Program is to promote the maintenance of environmental quality and the wise management and use of renewable resources and to facilitate the adaptation of human activities to environmental conditions.

3.2 OBJECTIVE OF THE ATMOSPHERIC ENVIRONMENT SERVICE*

To ensure that Canada has adequate information on the atmosphere, ice and sea state for the safety of life, the security of property, the greater efficiency of economic activities and for the maintenance and enhancement of environmental quality.

*These objective statements are subject to final approval by senior departmental management.

3 3 ATMOSPHERIC ENVIRONMENT SERVICES AES PRIORITIES 1983-1989

The priorities define specific areas to which AES must devote special attention while continuing to provide an adequate level of meteorological, sea state, and ice services Provision of these basic services depends on optimizing AES's integrated systems for basic data acquisition, forecast production, communications, research, and human resources deployment and development. This infrastructure serves as the foundation on which to mount initiatives in the following priority areas

1. AES must improve the utility of weather warnings and forecasts with emphasis on improved services in French In the short term, AES must continue to focus on improving DAY 1 forecasts. When the CMC vector computer becomes fully operational, emphasis will be shifted to improving longer-range forecasts (day 1 to 7).

2. AES must contribute policy proposals for both Canada-U.S and Federal-Provincial Agreements to control transboundary air pollution (including acid rain, oxidants and toxics). These proposals will be based on atmospheric studies, precipitation monitoring and the coordination of federal LRTAP research Upon signing of such Agreements, AES must manage monitoring and research programs necessary to ensure compliance

3 AES must implement the integrated Canadian Climate Program Emphasis will be on provision of monthly and seasonal climate predictions and on an enhanced understanding of the climatic effects of increasing atmospheric CO_2 and of other radiatively active gases

4 AES must initiate new services as required or improve existing services in support of Canada's economic recovery. Areas to receive particular attention include forestry, water management, aviation, and offshore oil and gas exploration

5. AES must develop the Departmental policy on the safe and efficient adaptation of man's activities to the natural environment ("Living with the Environment")

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CHAPTER 4

Atmospheric Environment Service

BUDGET

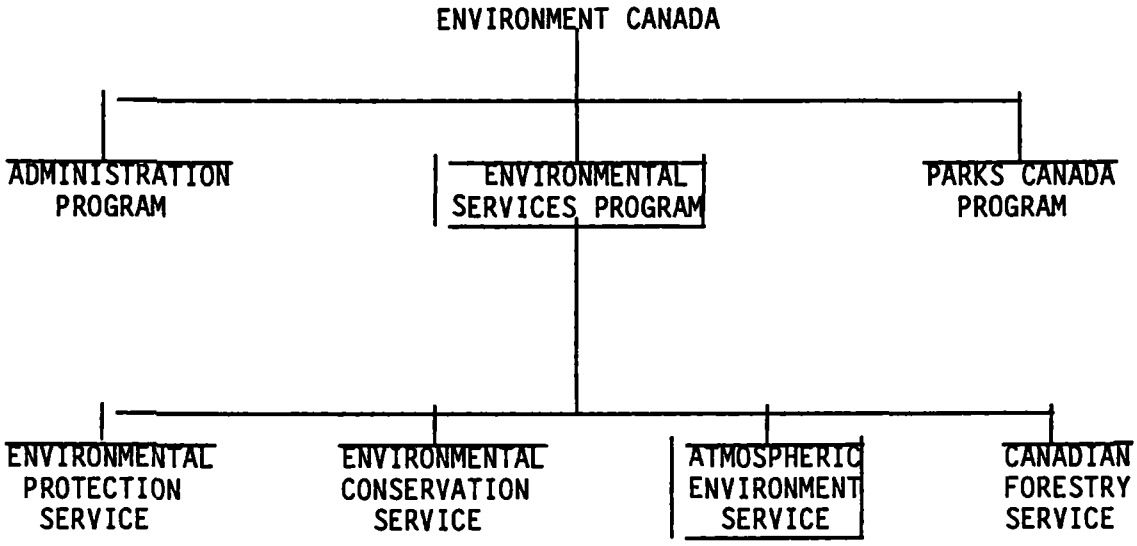
by

Program Activity

4.1 AES BUDGET BY SUB-ACTIVITY

4.1.1 PROGRAM ACTIVITY STRUCTURE

Environment Canada has three Main Estimates Programs Administration, Environmental Services and Parks Canada. The Environmental Services Program is divided into four activities as shown below. A description of the AES as one Activity of the Environmental Services program is indicated below.



AES ACTIVITY DESCRIPTION

The Atmospheric Environment Service provides weather, climate, ice and air quality services to promote and contribute to the safety of Canadians, the security of their property, to the improvement of the national economy, the enhancement of the environment and the raising of the quality of life of Canadians. The services include historical, current and future weather and climate, sea state and ice information for all areas of Canada, and contiguous waters, advice and consultation on the impact of these elements on human activities and on the applications of meteorological knowledge to weather sensitive operations, assessments of the impacts of human activities on the atmospheric environment, research on the behaviour of the atmosphere and its inter-environmental reactions, on wind-wave mechanisms and on ice in navigable waters, formulation of national ambient air quality objectives, research and information, advice and consultation on the atmospheric aspects of acid rain and toxic chemicals, participation in international air quality negotiations and scientific and operational programs, co-ordination of national atmospheric research on the Long Range Transport of Airborne Pollutants, and promotion of research in the atmospheric sciences.

AES PROGRAM ACTIVITY STRUCTURE

The Atmospheric Environment Service has four different program activity levels to depict and describe budgets and program information in varying degrees of detail, that is,

Sub-Activity	SA 1 Level
Sub-Sub-Activity	SA 2 Level
Sub-Sub-Sub-Activity	SA 3 Level
Program Activity Element	SA 4 Level

with the program activity element providing the most detail.

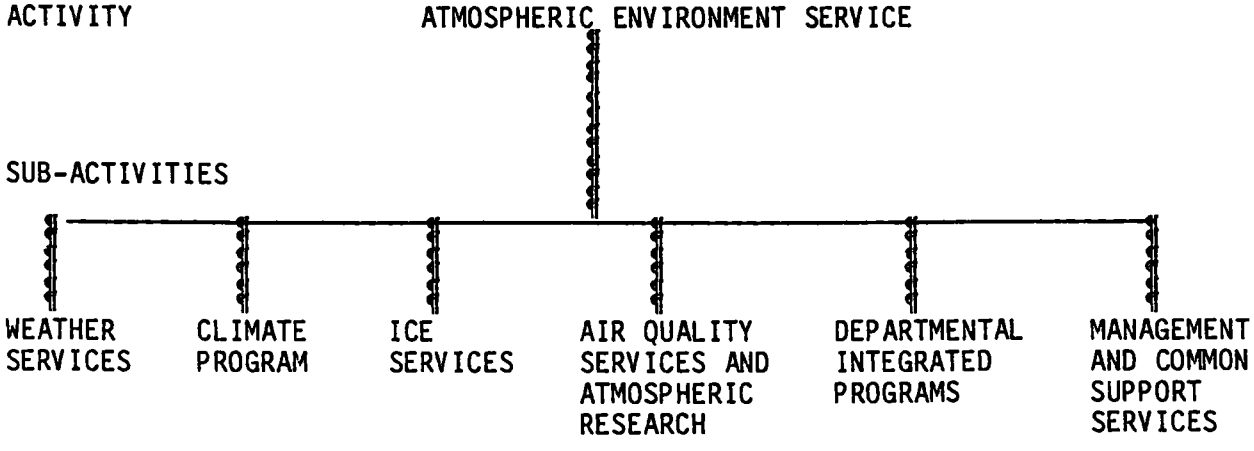
For fiscal year 1983/84 the AES program activity structure will consist of 6 sub-activities, 25 sub-sub-activities, 54 sub-sub-sub-activities, and 158 program activity elements

The AES sub-activity (SA 1) and sub-sub-activity (SA 2) structures are given in the following tables, and AES budgets and programs are described by sub-activity and sub-sub-activity in this chapter.

The AES sub-sub-sub-activity (SA 3) and program activity element (SA 4) structures are given in the Addendum of the Program Digest along with the corresponding budget information.

AES SUB-ACTIVITIES

The Atmospheric Environment Service Activity is divided into the six sub-activities (SA 1).



While there is a relationship between the organizational structure and the sub-activities of the AES, they do not correspond exactly

AES SUB-SUB-ACTIVITIES (SA 2)

The AES sub-activities are further divided into the sub-sub-activities (SA 2) shown in the table below.

Sub-Activity (SA 1)	Sub-Sub-Activity (SA 2)
1000 Weather Services	1100 Public Weather Services
	1200 Marine Weather Services
	1300 Aviation Weather Services
	1400 Economic Weather Services
	1500 Canadian Forces Weather Service
	2000 Data
	3000 Weather Services Support Systems
4000 Climate Program	4100 Climate Services
	4500 Climate Research
	4600 Climate Program Support Systems
5000 Ice Services	5100 Ice Reconnaissance and Data Acquisition
	5200 Ice Analysis and Forecasting
	5300 Ice Climate Services
	5400 Ice Services Support Systems
6000 Air Quality Services and Atmospheric Research	6100 Air Quality Services
	6300 Air Quality Research
	6600 Research - Other
	6700 Air Quality and Research Support Systems
7000 Departmental Integrated Programs	7200 LRTAP
	7300 Toxic Chemicals
	7400 Great Lakes Water Quality
	7500 Baseline Studies
0800 Management and Common Support Services	0810 Management
	0830 Common Support Services

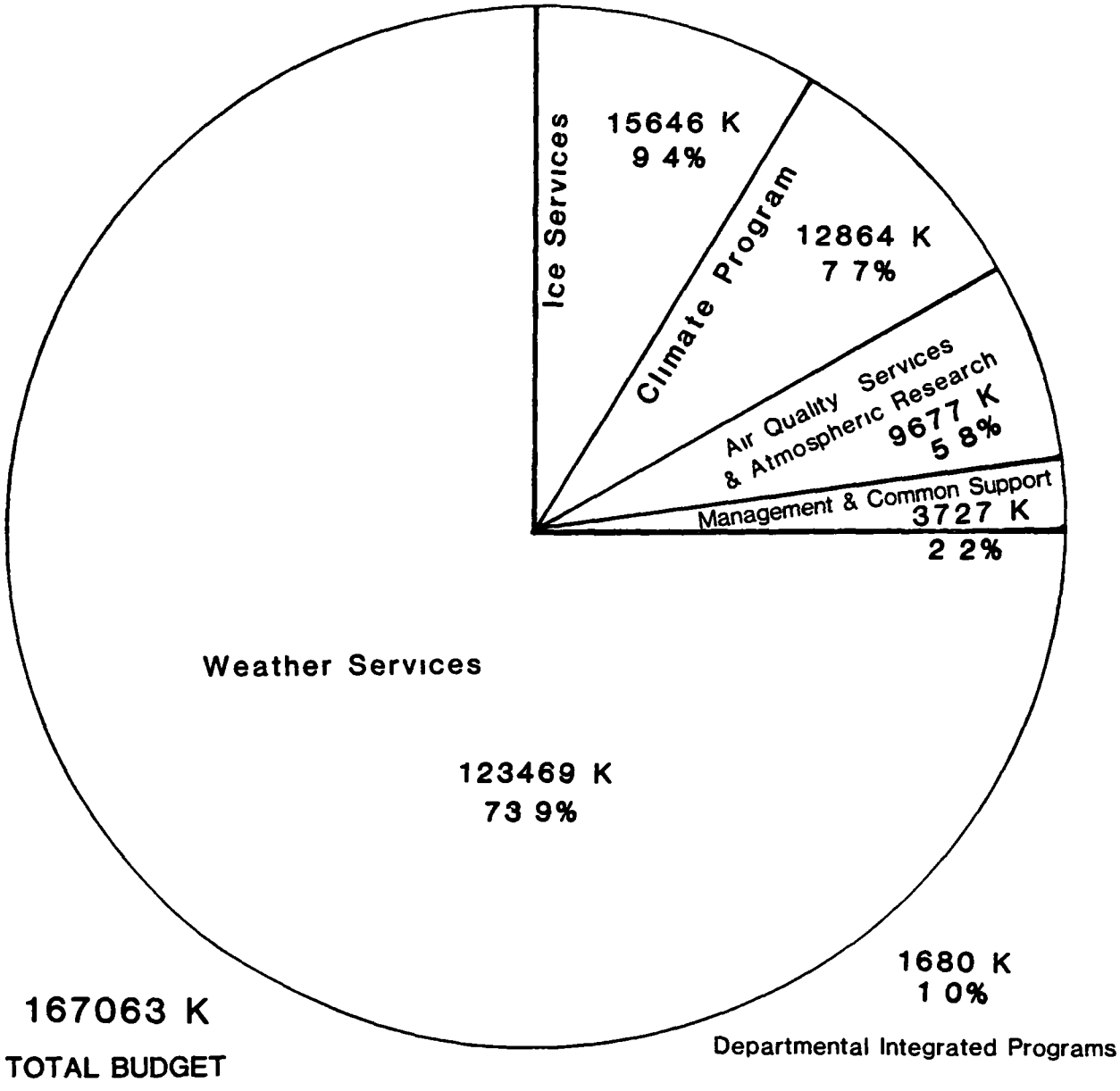
1983-84 Budget by Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)
($000)

4.1.2 ATMOSPHERIC ENVIRONMENT SERVICE

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
1100 Public Weather Services	418	15331.2	1378.5	29 8		16739.5
1200 Marine Weather Services	8	316.2	59 4			375.6
1300 Aviation Weather Services	119	4325 3	222 3			4547.6
1400 Economic Weather Services	39	1441.2	124 1			1565 3
1500 Canadian Forces Wx Service	106	4293.9	2245 0			6538.9
2000 Data	338	12074.7	11122 8	2315 5		25513 0
3000 Wx Services Support Sys.	823	31471.0	26201 1	9790 8	726 0	68188.9
1000 WEATHER SERVICES	1851	69253.5	41353 2	12136 1	726 0	123468 8
4100 Climate Services	145	4975.9	1992.5	584 5		7552 9
4500 Climate Research	14	627.1	42 0	15.0		684.1
4600 Climate Program Sup Sys.	70	2542 4	1888 0	197 0		4627.4
4000 CLIMATE PROGRAM	229	8145.4	3922 5	796.5		12864 4
5100 Ice Recon. & Data Acq.	30	1455 4	11641 1	141 5		13238 0
5200 Ice Anal & Forecasting	15	559.3	250.0	45.0		854.3
5300 Ice Climate Services	4	165.5	34.0			199 5
5400 Ice Services Support Sys	5	455.8	893 1	5 0		1353 9
5000 ICE SERVICES	54	2636.0	12818 2	191 5		15645 7
6100 Air Quality Services	12	486.5	118 0	102 0		706 5
6300 Air Quality Research	48	1980.8	542.0	468.9		2991.7
6600 Research - Other	36	1550.0	1377 3	1037.0		3964 3
6700 Air Qua & Res Sup. Sys.	17	872.9	703.5	69 0	369 0	2014 4
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH	113	4890.2	2740.8	1676.9	369.0	9676.9
7200 LRTAP	3	131.0	1127 0	422.0		1680 0
7300 Toxic Chemicals						
7400 Great Lakes Water Quality						
7500 Baseline Studies						
7000 DEPARTMENTAL INTEGRATED PROGRAMS	3	131.0	1127 0	422 0		1680 0
0810 Management	21	910.8	300 0	7.0		1217 8
0830 Common Support Services	65	1429 3	931 5	149 0		2509 8
0800 MANAGEMENT AND COMMON SUPPORT SERVICES	86	2340 1	1231 5	156 0		3727 6
GRAND TOTAL	2336	87396 2	63193 2	15379 0	1095.0	167063 4

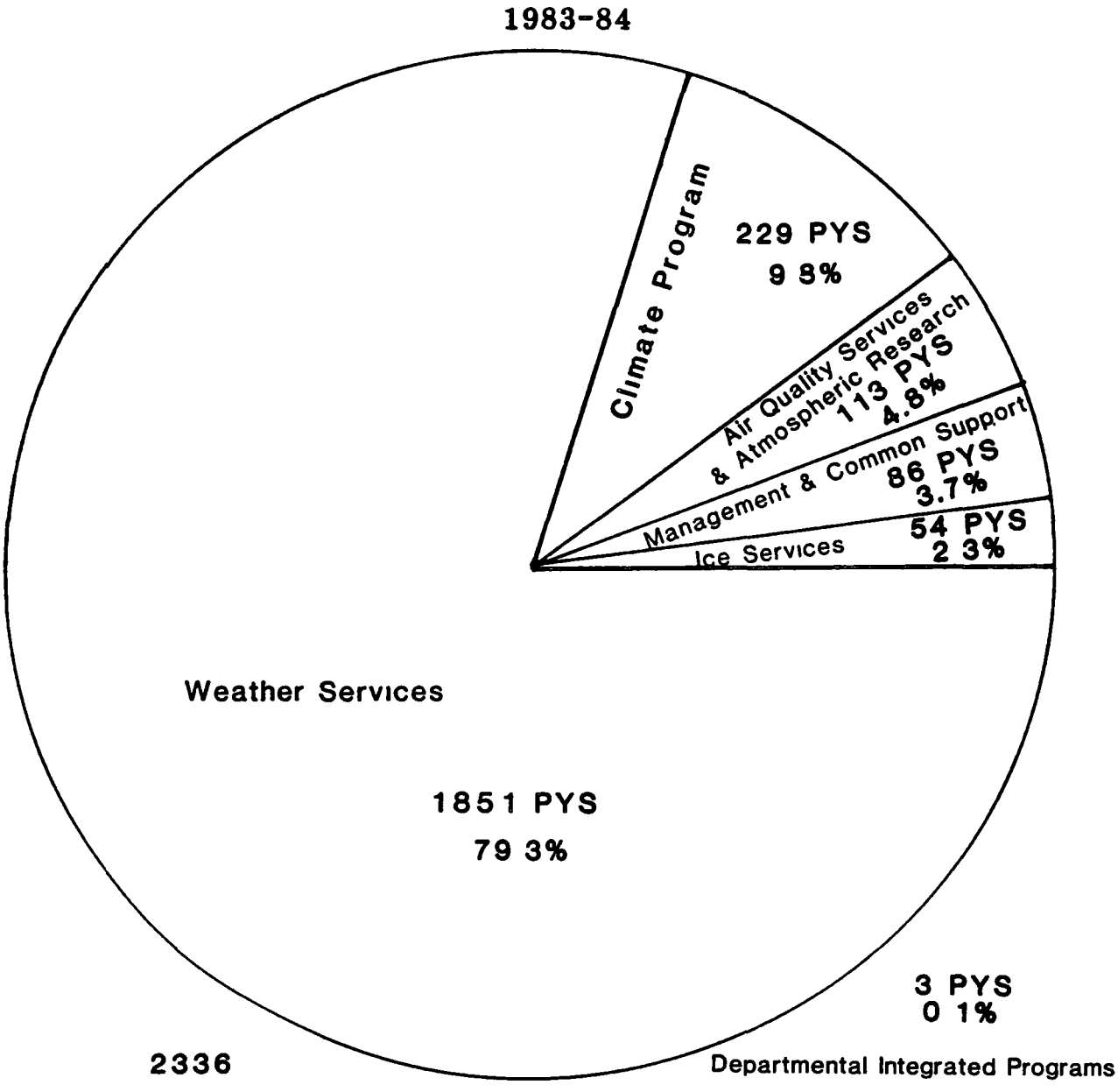
4 1 3 AES TOTAL BUDGET BY PROGRAM SUB-ACTIVITY

1983-1984



	Weather Services	Climate Program	Ice Services	Air Quality Services & Atm Research	Management & Common Support Services	Departmental Integrated Programs	Total
Person Years	1851	229	54	113	86	3	2336
$ Budget (000)	123469	12864	15646	9677	3727	1680	167063

4.1.4 AES PERSON YEARS BY PROGRAM SUB-ACTIVITY



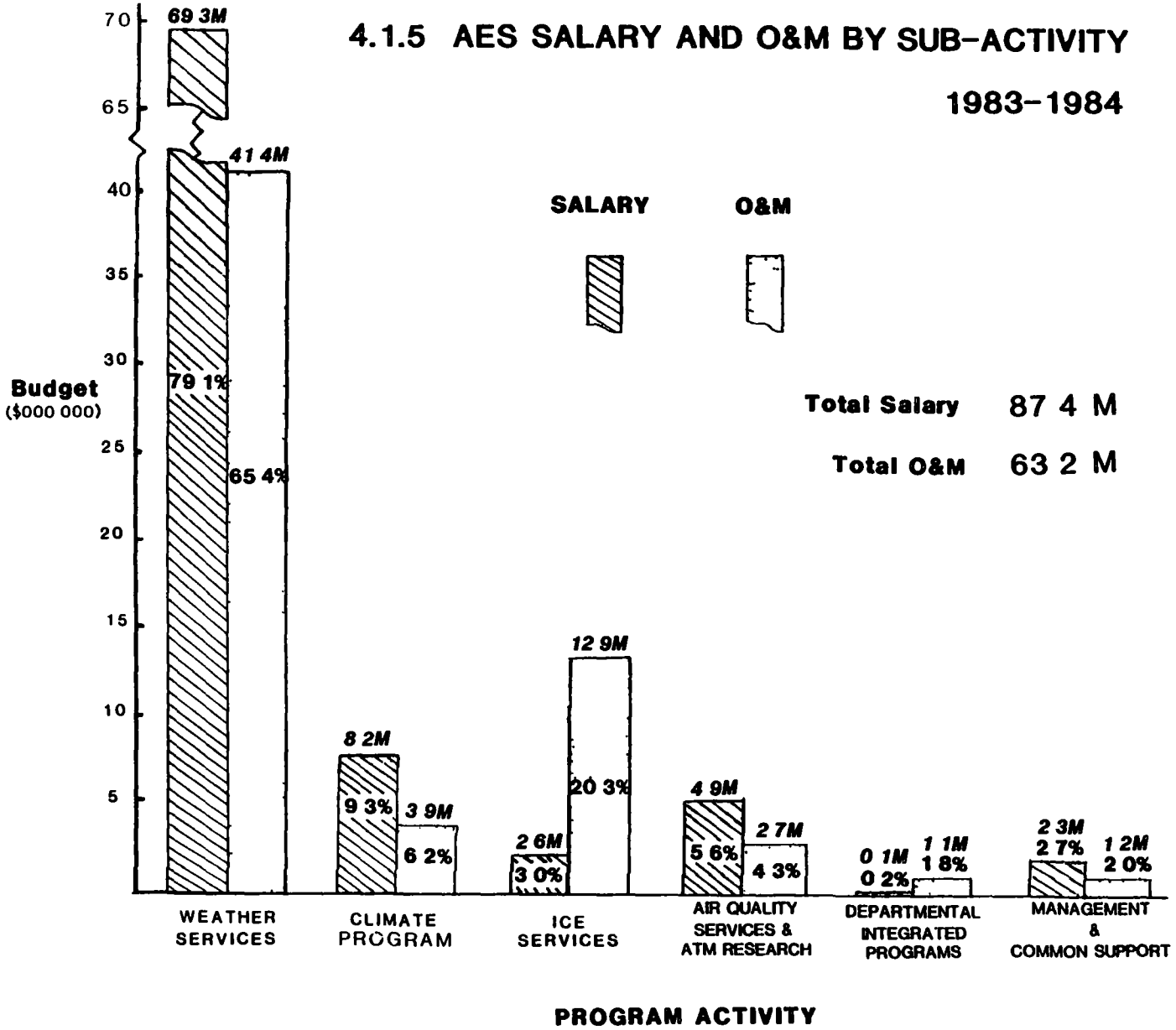
2336

TOTAL PERSON YEARS

	Weather Services	Climate Program	Ice Services	Air Quality Services & Atm Research	Management & Common Support Services	Departmental Integrated Programs	Total
Person Years	1851	229	54	113	86	3	2336
$ Budget (000)	123469	12864	15646	9677	3727	1680	167063

4.1.5 AES SALARY AND O&M BY SUB-ACTIVITY

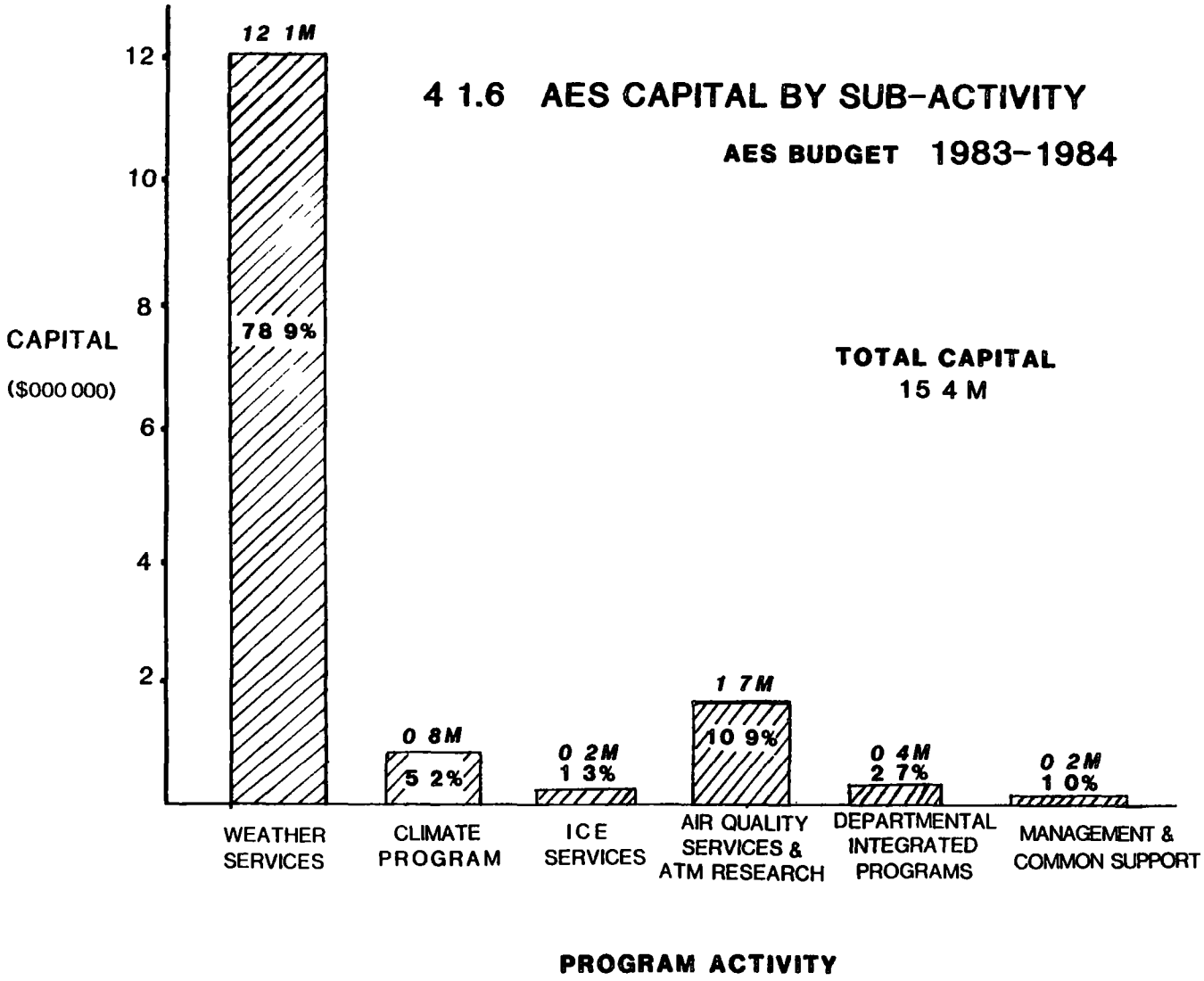
1983-1984



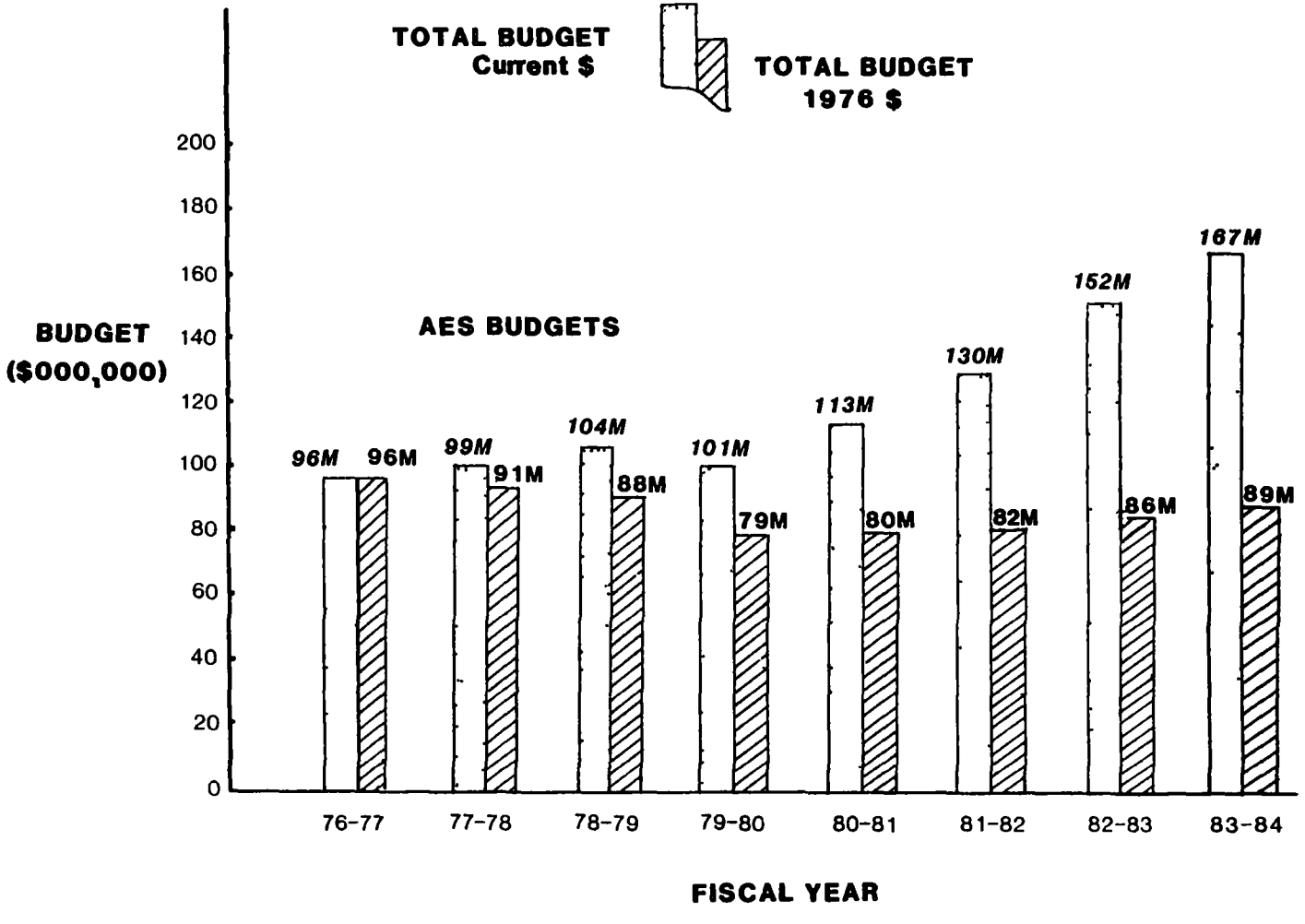
Total Salary	87 4 M
Total O&M	63 2 M

4 1.6 AES CAPITAL BY SUB-ACTIVITY

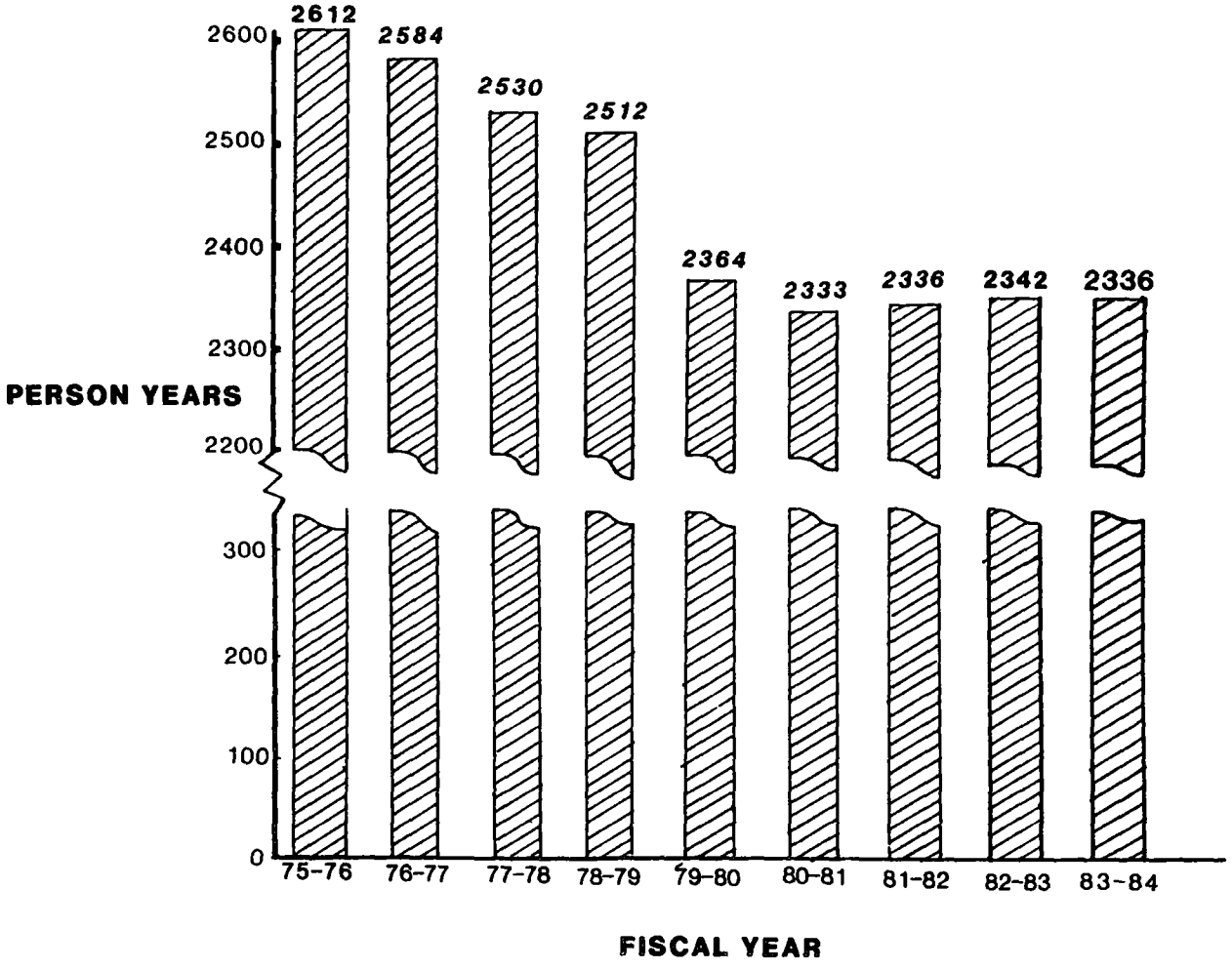
AES BUDGET 1983-1984



4.1.7 AES BUDGETS 1976-1983



4 1.8 AES PERSON YEARS 1975 TO 1983



4 2 WEATHER SERVICES Sub-Activity (1851 PY, $123,469K)

4.2 1 Objectives WEATHER SERVICES

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.

4 2.2 Budget WEATHER SERVICES 1983-84 Budget by Sub-Sub-Activity (SA 2)

($000)

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
1100 Public Weather Services	418	15331.2	1378.5	29.8		16739.5
1200 Marine Weather Services	8	316.2	59.4			375.6
1300 Aviation Weather Services	119	4325.3	222.3			4547.6
1400 Economic Weather Services	39	1441.2	124.1			1565.3
1500 Canadian Forces Wx Service	106	4293.9	2245.0			6538.9
2000 Data	338	12074.7	11122 8	2315 5		25513.0
3000 Wx Services Support Systems	823	31471.0	26201.1	9790 8	726.0	68188.9
1000 WEATHER SERVICES	1851	69253.5	41353.2	12136.1	726.0	123468.8

4 2.3 Description WEATHER SERVICES

4.2.3.1 Public, Marine, Aviation, Economic and Canadian Forces Weather Services Sub-Sub-Activities (690 PY, $27,767K)

The activities of these sub-sub-activities include the commitment to provide information on current and predicted weather for all land areas of Canada and the adjacent oceans 24 hours per day every day. The information provided includes weather warnings and forecasts and the sea state conditions of the Atlantic and Pacific Oceans particularly within the 200 mile economic zone.

Weather services are provided to the general public, the aviation industry, marine transportation, commercial fisheries, pleasure boating and economic activities such as forestry and agriculture which are weather sensitive.

The AES provides support to the Department of National Defence according to a Memorandum of Understanding to assist that Department to meet the meteorological and oceanographic services requirements of the Canadian Armed Forces Canadian Forces Weather Offices are located across Canada, on ships at sea and at Lahr and Baden-Soellingen, Germany

Nine weather forecast offices located at Vancouver, Whitehorse, Edmonton (Arctic and Alberta Weather Centres), Winnipeg, Toronto, Montreal, Halifax and Gander and supported by the Canadian Meteorological Centre in Montreal conduct the analyses and prepare the warnings, forecasts and other bulletins for their respective geographical areas of responsibility for distribution to users of the information. The staff of the centres provide guidance and assistance to the smaller weather offices to serve their local public. The centres also provide directly, as required, weather information to the public and other clients.

There are 59 smaller weather offices distributed across Canada The staff of these offices are available to provide additional or more detailed weather information than is available through the media from the nine centres. This is achieved through personal contact by telephone, automatic telephone answering devices, Weatheradio Canada studios in 13 locations (see pages 24 and 25), broadcasts on local radio and television and cable television in some locations.

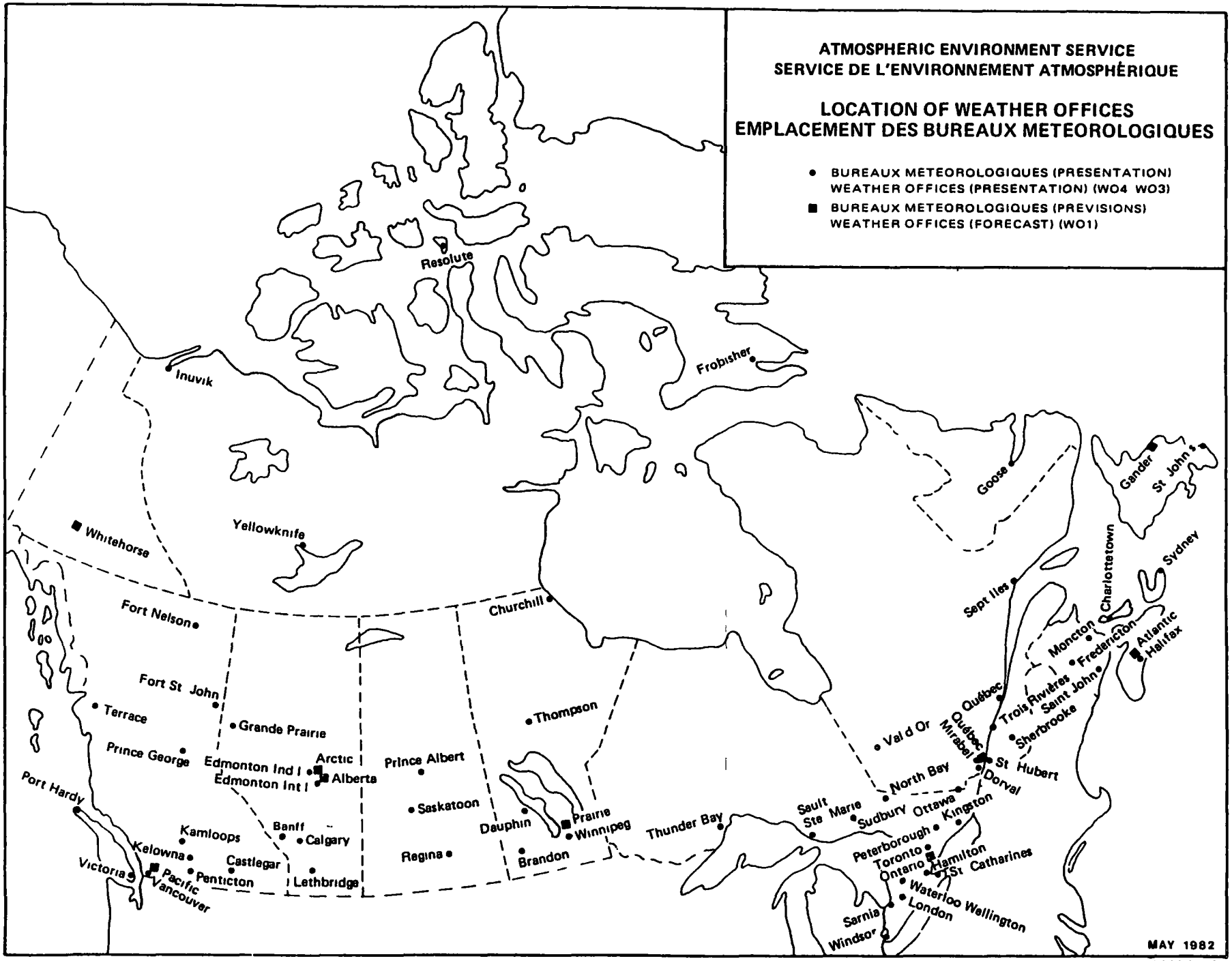
The number of contacts by users to the AES is displayed on pages 26 and 27. The 1982 figures are preliminary at the time of publication.

The chart "Weather Offices/Weather Centres" on pages 28 and 29 and the map "Location of Weather Offices" on page 23 identifies each office and the type of service available.

The services provided vary according to the needs of the user. For example, precipitation and maximum and minimum temperature are emphasized in forecasts for the general public and warnings are issued for extreme conditions of wind, snow, rain, thunderstorms and temperature, etc , while marine forecasts and warnings are concerned with wind, visibility and freezing spray. Services to aviation include weather conditions at airports, and significant en route winds and temperatures at flight levels. Marine and aviation forecasts are exchanged internationally. Services to the agricultural sector and forest industry are directed towards such activities as prevention or reduction of frost damage, crop spraying and forest fire control Weather offices and Scientific Services Divisions support air quality services and environmental assessment programs as well.

Geographic coverage of different types of forecasts for Canada and its adjacent waters are presented in map form following page 29. Pubic forecast regions are on pages 30 and 31, marine forecast regions are shown on pages 32 and 33 and Aerodrome forecast locations are presented on pages 34. Aviation weather forecast regions are presented on pages 35-38.

The AES is completing a study to more precisely define the level of service that should be provided with resources from parliamentary vote. This study along with a recently completed Long Term Human Resource Planning study and a Review of the Forecast Production System study will form the basis for the development of a comprehensive plan to guide the AES during the next 5 - 10 years


ATMOSPHERIC ENVIRONMENT SERVICE
SERVICE DE L'ENVIRONNEMENT ATMOSPHÉRIQUE
LOCATION OF WEATHER OFFICES
EMPLACEMENT DES BUREAUX METEOROLOGIQUES
• BUREAUX METEOROLOGIQUES (PRESENTATION)
WEATHER OFFICES (PRESENTATION) (WO4 WO3)
■ BUREAUX METEOROLOGIQUES (PREVISIONS)
WEATHER OFFICES (FORECAST) (WO1)
Resolute
Inuvik
Frobisher
Whitehorse
Yellowknife
Fort Nelson
Churchill
Fort St John
Terrace
Grande Prairie
Thompson
Prince George
Edmonton Ind
Edmonton Int
Arctic
Alberta
Prince Albert
Port Hardy
Saskatoon
Kamloops
Banff
Calgary
Dauphin
Prairie
Winnipeg
Kelowna
Castlegar
Regina
Brandon
Victoria
Pacific
Penticton
Lethbridge
Vancouver
Thunder Bay
Goose
Gander
St John's
Sept Iles
Charlottetown
Sydney
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Fredericton
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Saint John
Val d Or
Québec
Mirabel
Sherbrooke
St Hubert
Dorval
North Bay
Sault
Ste Marie
Sudbury
Ottawa
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Toronto
Ontario
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Wellington
Sarnia
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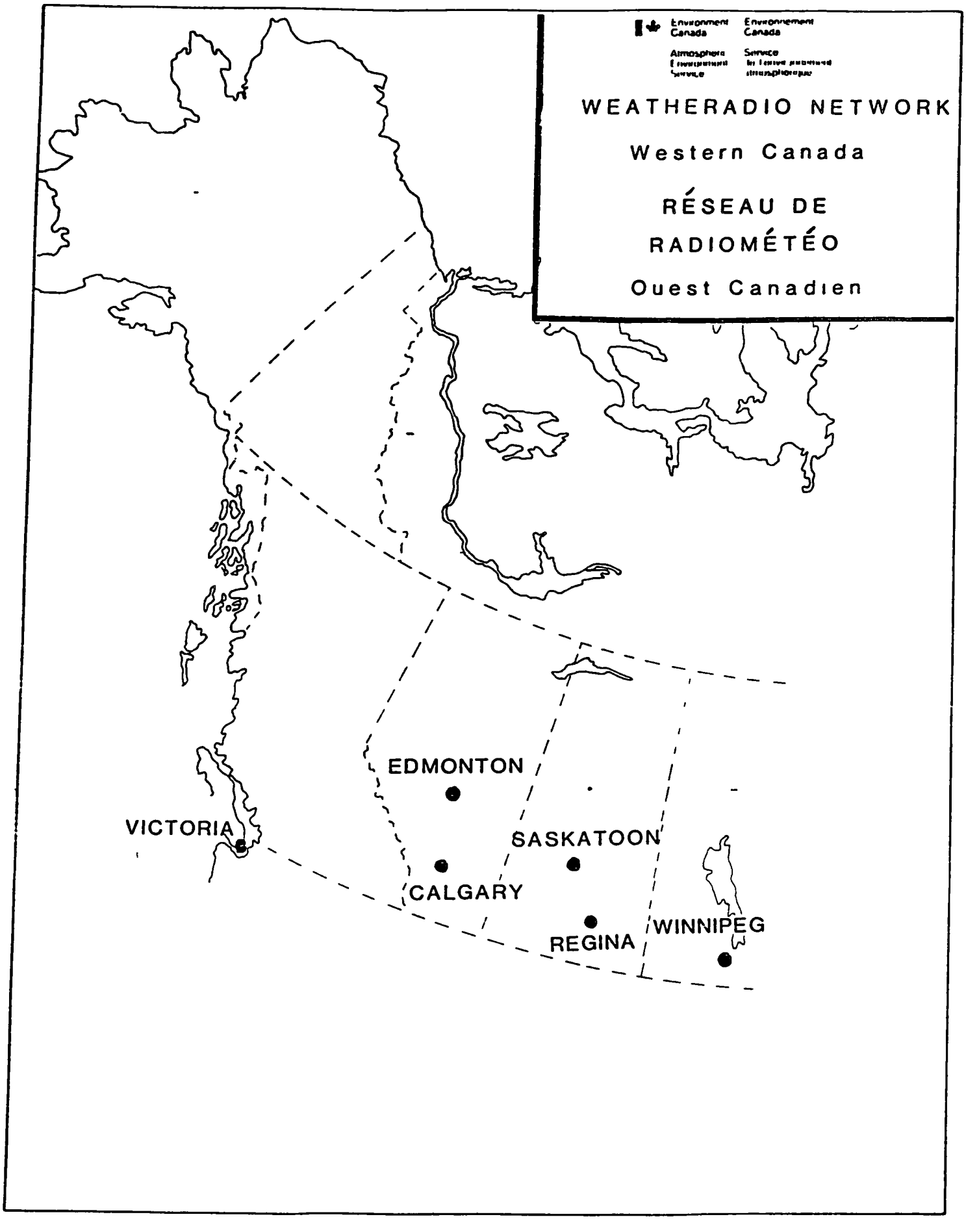
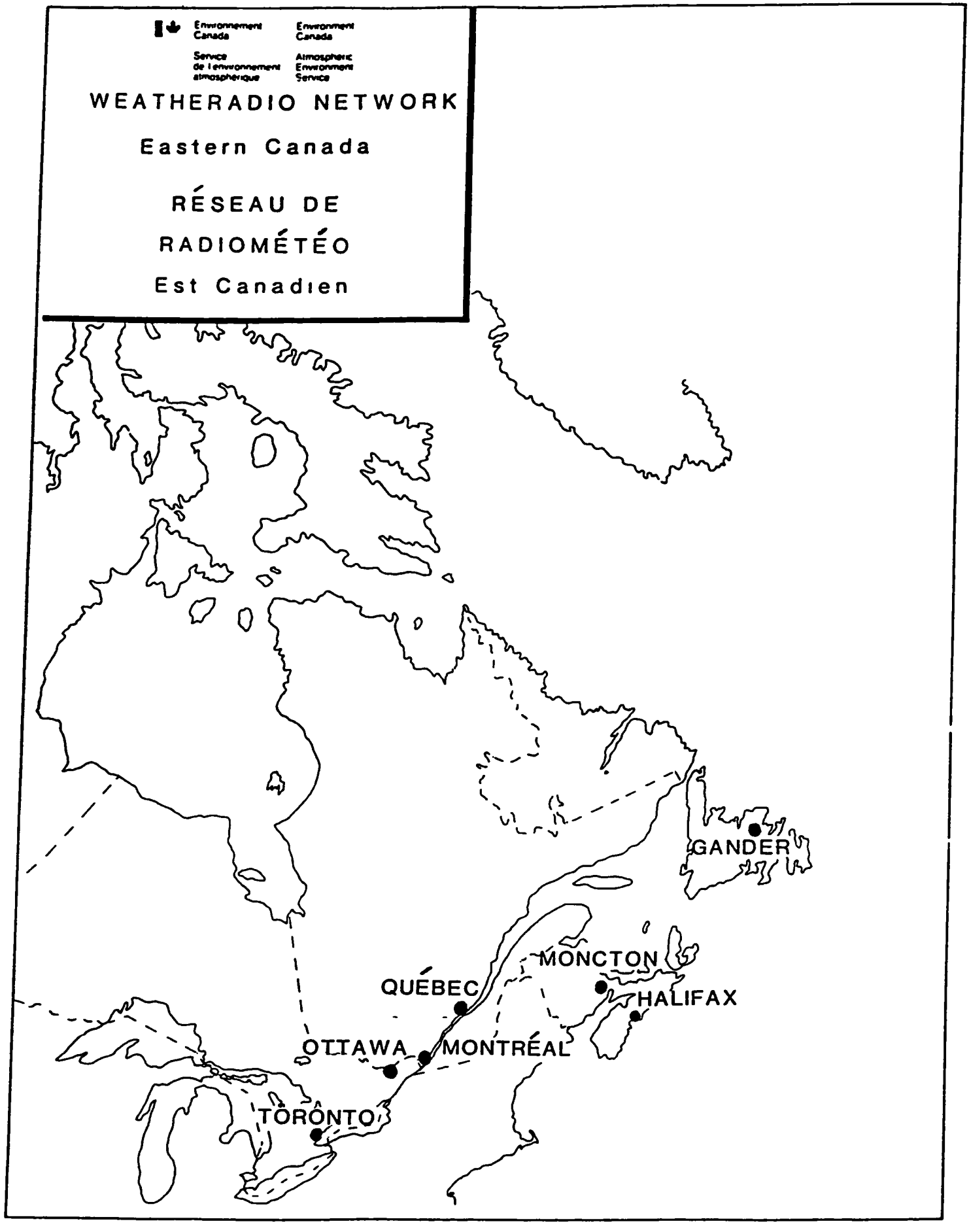
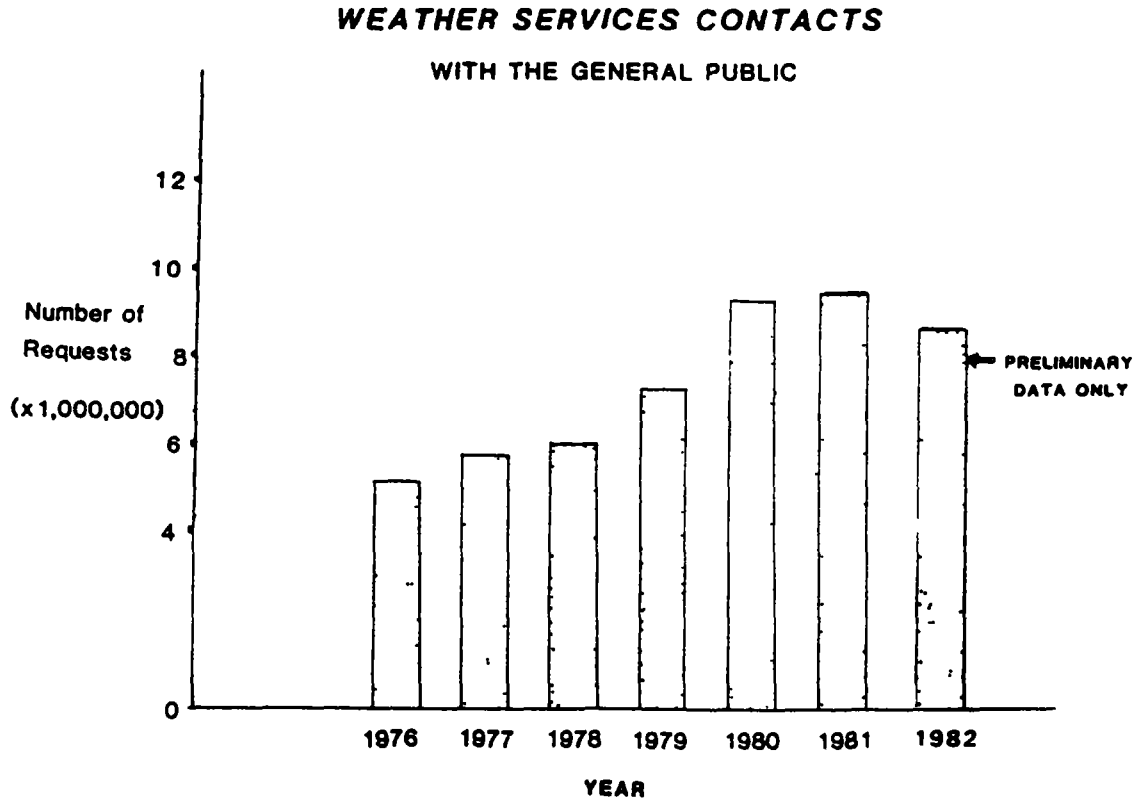

Environment Canada
Environnement Canada
Atmospheric Environment Service
Service de l'environnement atmosphérique
WEATHERADIO NETWORK
Western Canada
RÉSEAU DE RADIOMÉTÉO
Ouest Canadien
EDMONTON
VICTORIA
SASKATOON
CALGARY
REGINA
WINNIPEG


Environment Canada
Service de l'environnement atmosphérique
Environment Canada
Atmospheric Environment Service
WEATHERADIO NETWORK
Eastern Canada
RÉSEAU DE
RADIOMÉTÉO
Est Canadien
GANDER
MONCTON
QUÉBEC
HALIFAX
OTTAWA
MONTRÉAL
TORONTO

ATMOSPHERIC ENVIRONMENT SERVICE
WEATHER SERVICE CONTACTS
(Nearest 000)

	1976	1977	1978	1979	1980	1981	1982*
GENERAL PUBLIC	5,284,000	5,767,000	5,963,000	7,411,000	9,314,000	9,489,000	8,300,500
ECONOMIC DEVELOPMENT	227,000	244,000	289,000	272,000	387,000	388,000	290,500
TRANSPORTATION	1,483,000	1,516,000	1,539,000	1,660,000	1,631,000	1,547,000	1,339,000
RADIO-TV BROADCASTS	92,000	95,000	128,000	137,000	161,000	143,000	150,000
VISITORS	46,000	38,000	37,000	36,000	35,000	32,000	31,500
TOTAL	7,131,000	7,660,000	7,956,000	9,516,000	11,613,000	11,606,000	10,111,500

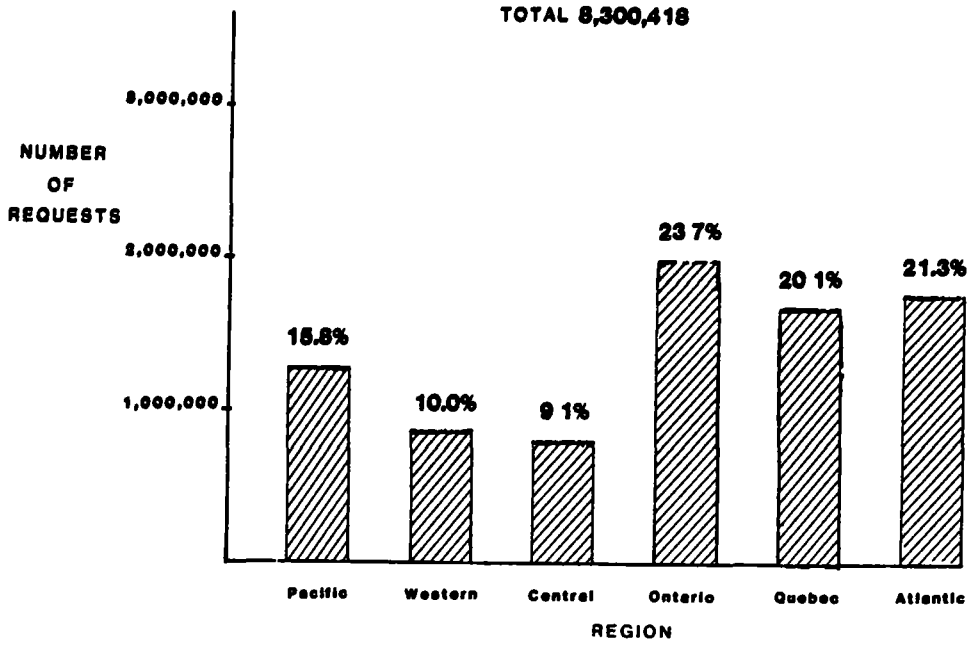
*Preliminary data only



WEATHER SERVICE TO THE GENERAL PUBLIC BY REGION

Preliminary Data Only

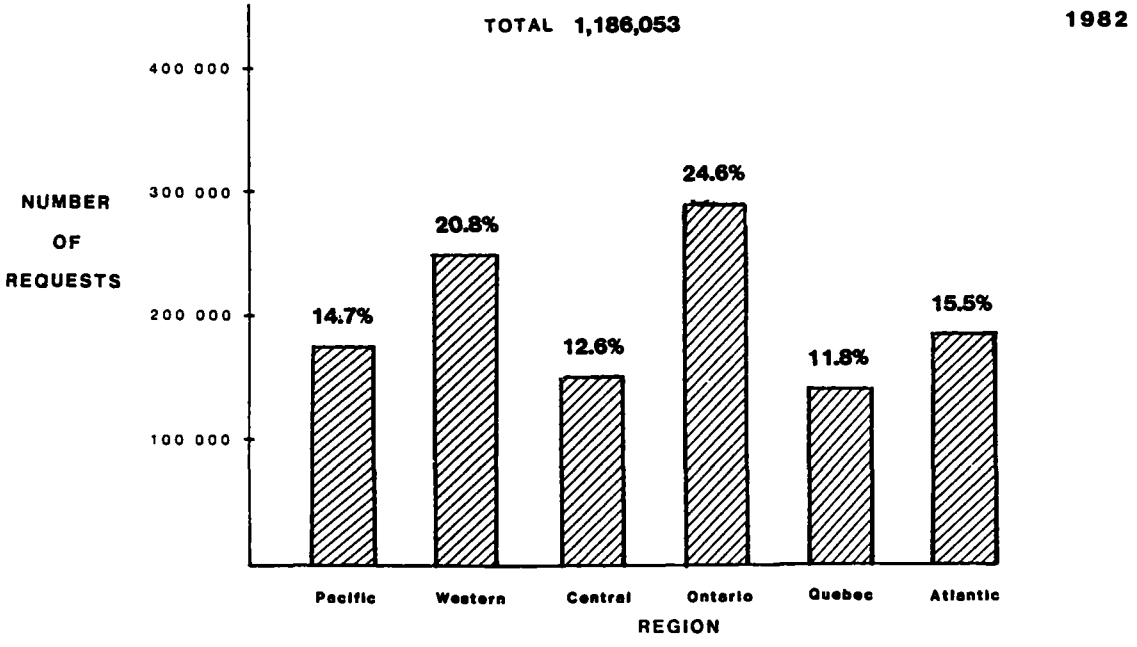
1982



WEATHER SERVICE TO THE AVIATION INDUSTRY BY REGION

Preliminary Data Only

1982



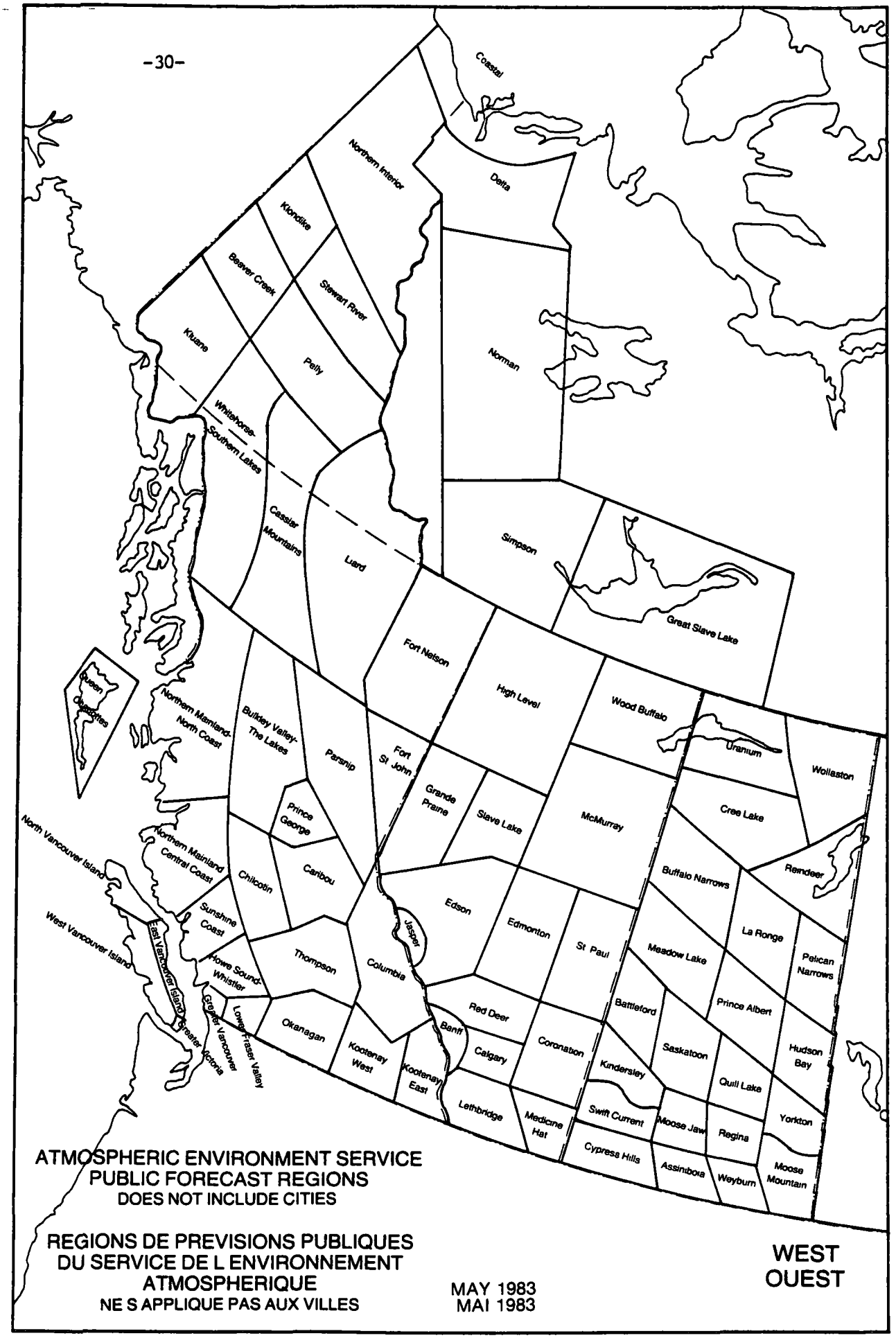
WEATHER OFFICES/WEATHER CENTRES
1983/84

REGION / TYPE	PACIFIC	WESTERN	CENTRAL	ONTARIO	QUEBEC	ATLANTIC
W O 1 Forecast Office (9)	Pacific Weather Centre	Alberta Weather Centre Arctic Weather Centre Yukon Weather Office	Prairie Weather Centre	Ontario Weather Centre	Quebec Weather Centre	Atlantic Weather Centre Gander Weather Office
W.O 3 Weather Service Office with Professional Consultation Available (4)	Victoria	Yellowknife	Regina Saskatoon			
W O 4 Weather Service Office (55)	Castlegar Kamloops Kelowna Penticton Port Hardy Prince George Terrace Vancouver Fort St John Fort Nelson	Calgary Edmonton International Edmonton Municipal Grande Prairie Inuvik Lethbridge Banff	Brandon Churchill Dauphin Prince Albert Resolute Thompson Winnipeg Int'l	Hamilton Kingston London Niagara Dist. St Catherines North Bay Ottawa Peterborough Sarnia Sault Ste. Marie Sudbury Thunder Bay Toronto W.O. Waterloo-Wellington Windsor	Frobisher Montreal/ Mirabel Montreal/Dorval Québec Sept Iles Sherbrooke St. Hubert Trois Rivieres Val D'Or	Charlottetown Fredericton Goose Bay Halifax International Moncton Saint John St. John's Sydney

Continued

WEATHER OFFICES/WEATHER CENTRES
1983/84

TYPE \ REGION	PACIFIC	WESTERN	CENTRAL	ONTARIO	QUEBEC	ATLANTIC
Canadian Forces Weather Office (18)	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
TOTAL 86	14	13	13	18	12	16

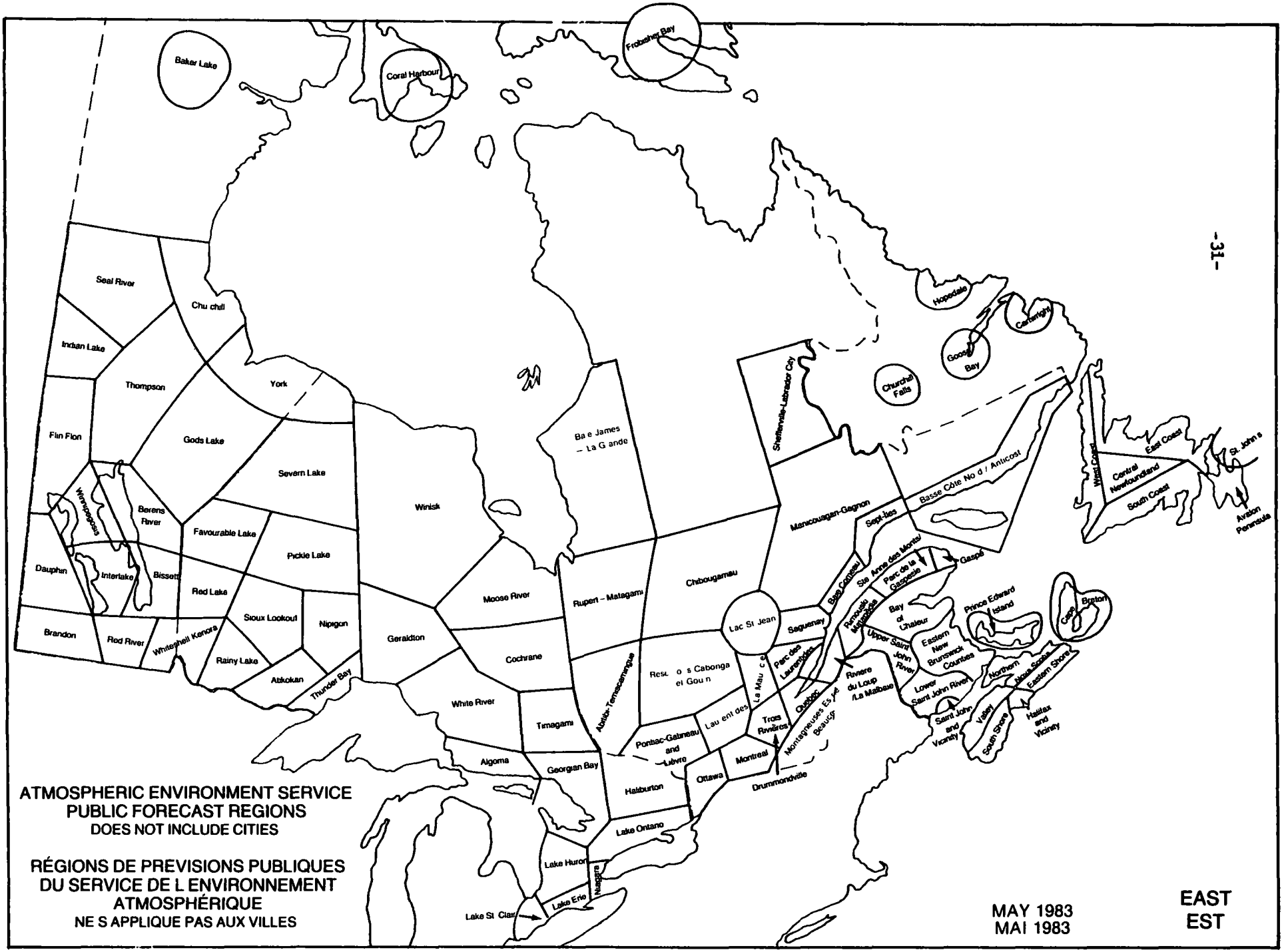


ATMOSPHERIC ENVIRONMENT SERVICE
PUBLIC FORECAST REGIONS
DOES NOT INCLUDE CITIES

REGIONS DE PREVISIONS PUBLIQUES
DU SERVICE DE L ENVIRONNEMENT
ATMOSPHERIQUE
NE S APPLIQUE PAS AUX VILLES

MAY 1983
MAI 1983

WEST
OUEST

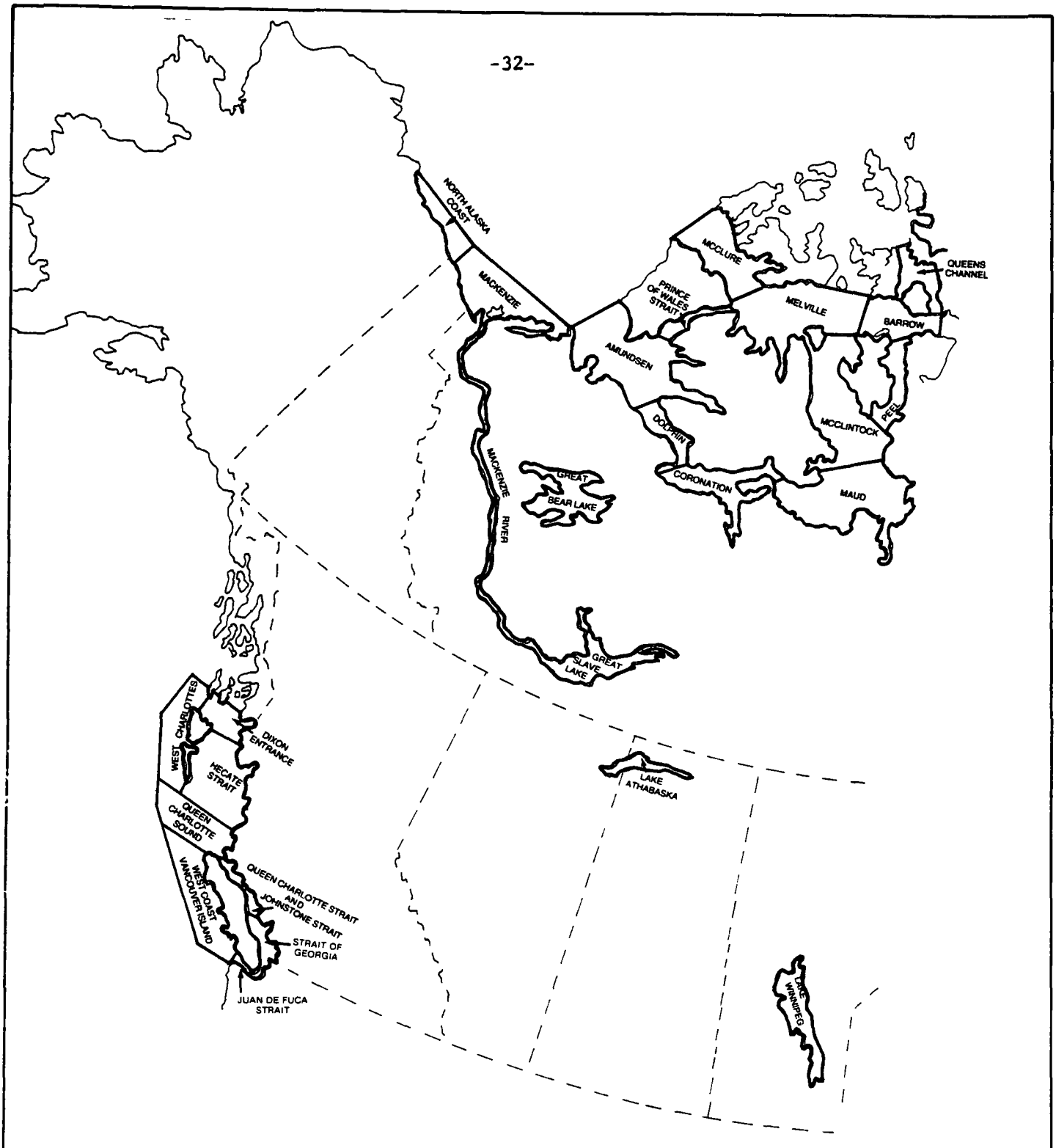


ATMOSPHERIC ENVIRONMENT SERVICE
PUBLIC FORECAST REGIONS
DOES NOT INCLUDE CITIES

RÉGIONS DE PREVISIONS PUBLIQUES
DU SERVICE DE L ENVIRONNEMENT
ATMOSPHÉRIQUE
NE S APPLIQUE PAS AUX VILLES

MAY 1983
MAI 1983

EAST
EST



ATMOSPHERIC ENVIRONMENT SERVICE
MARINE FORECAST REGIONS

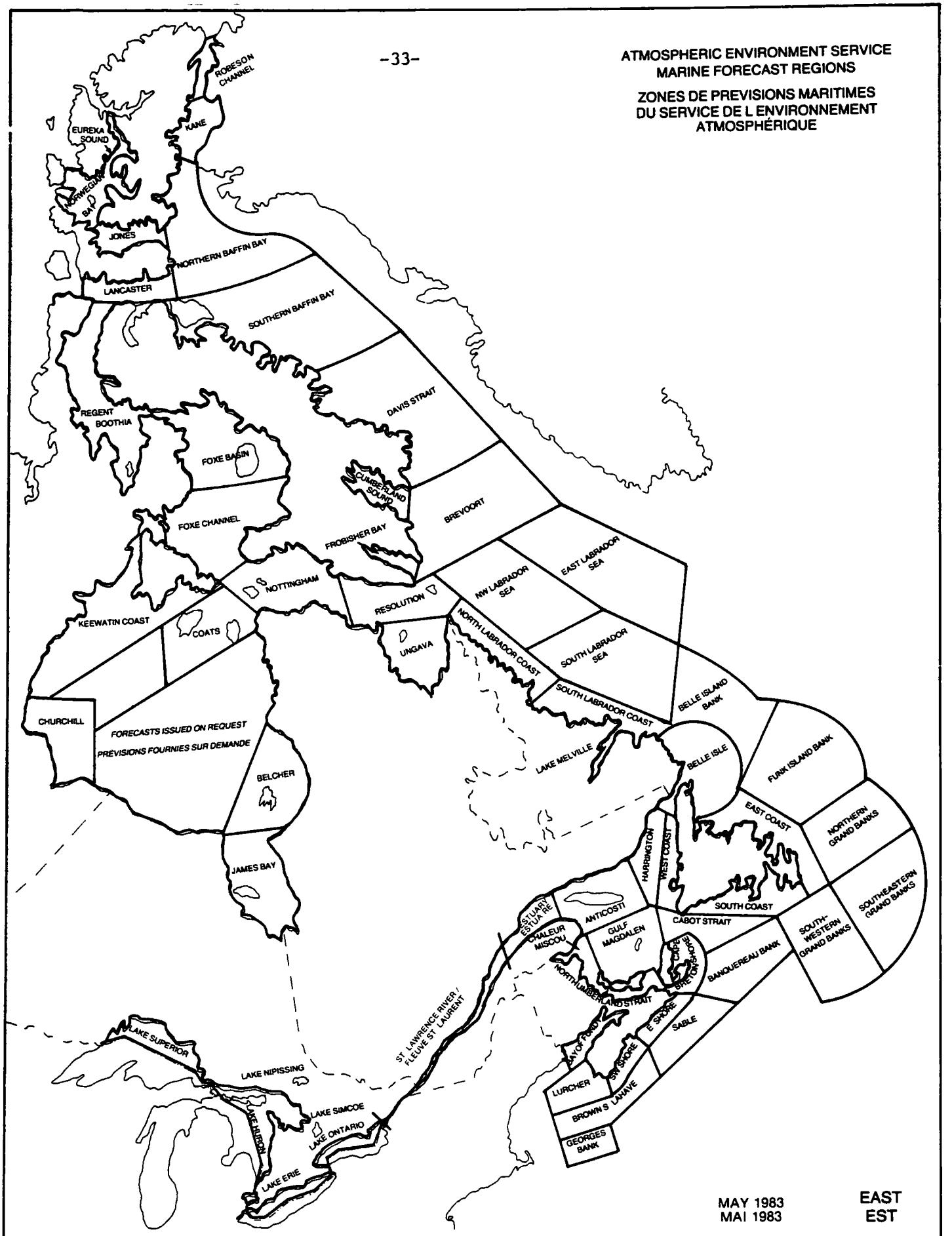
ZONES DE PRÉVISIONS MARITIMES
DU SERVICE DE L ENVIRONNEMENT
ATMOSPHERIQUE

MAY 1983
MAI 1983

WEST
OUEST

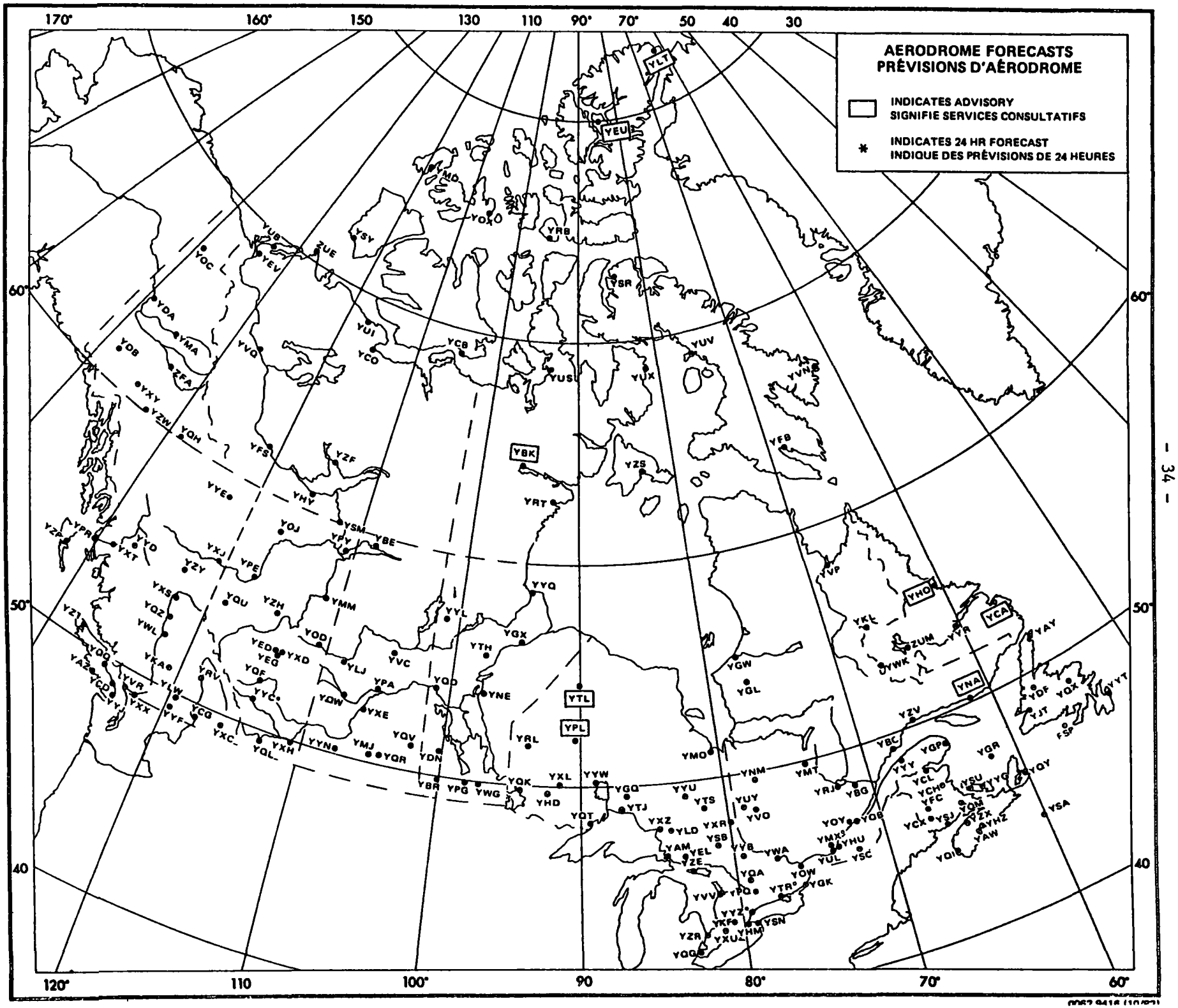
ATMOSPHERIC ENVIRONMENT SERVICE
MARINE FORECAST REGIONS

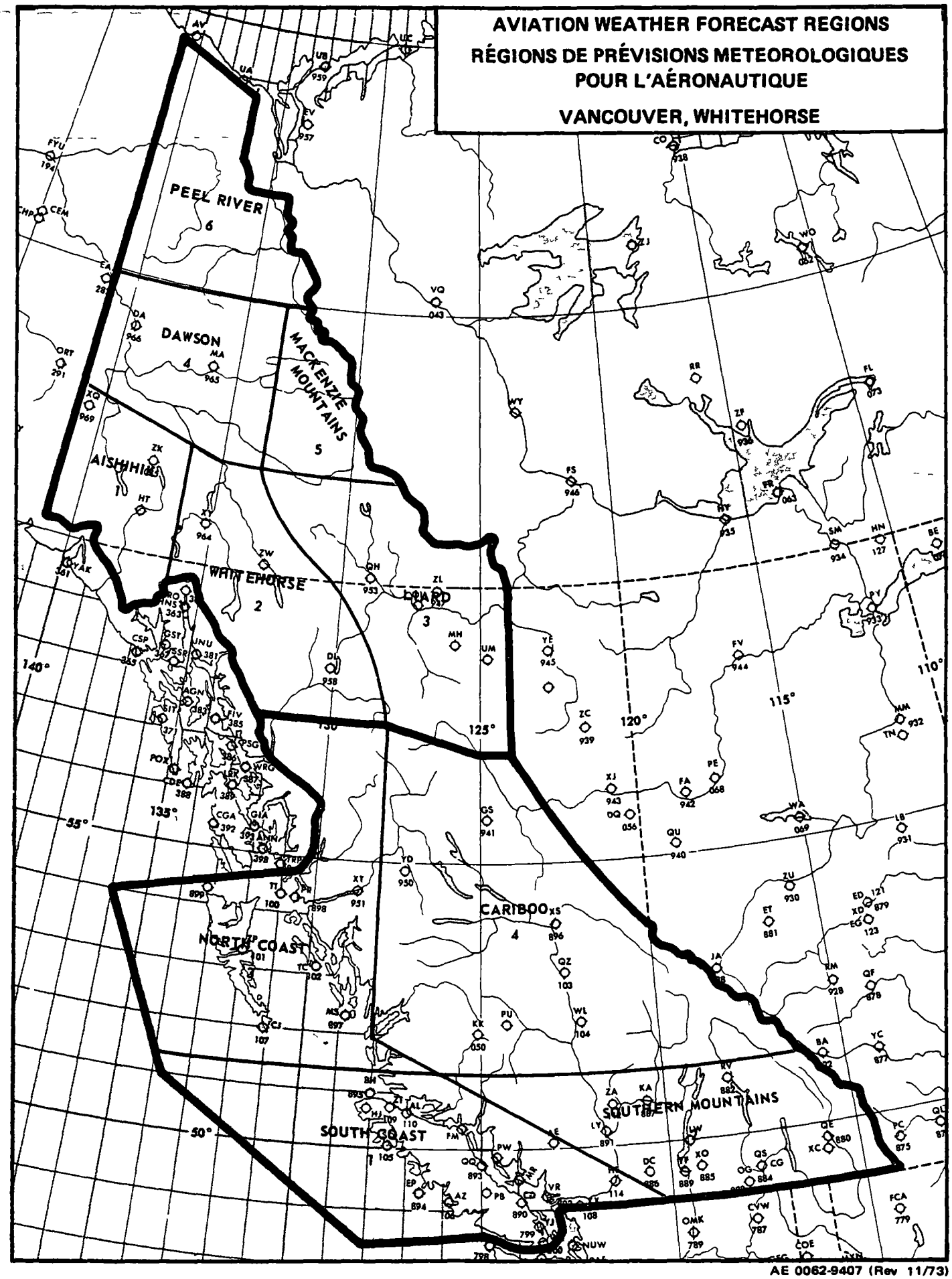
ZONES DE PREVISIONS MARITIMES
DU SERVICE DE L ENVIRONNEMENT
ATMOSPHÉRIQUE



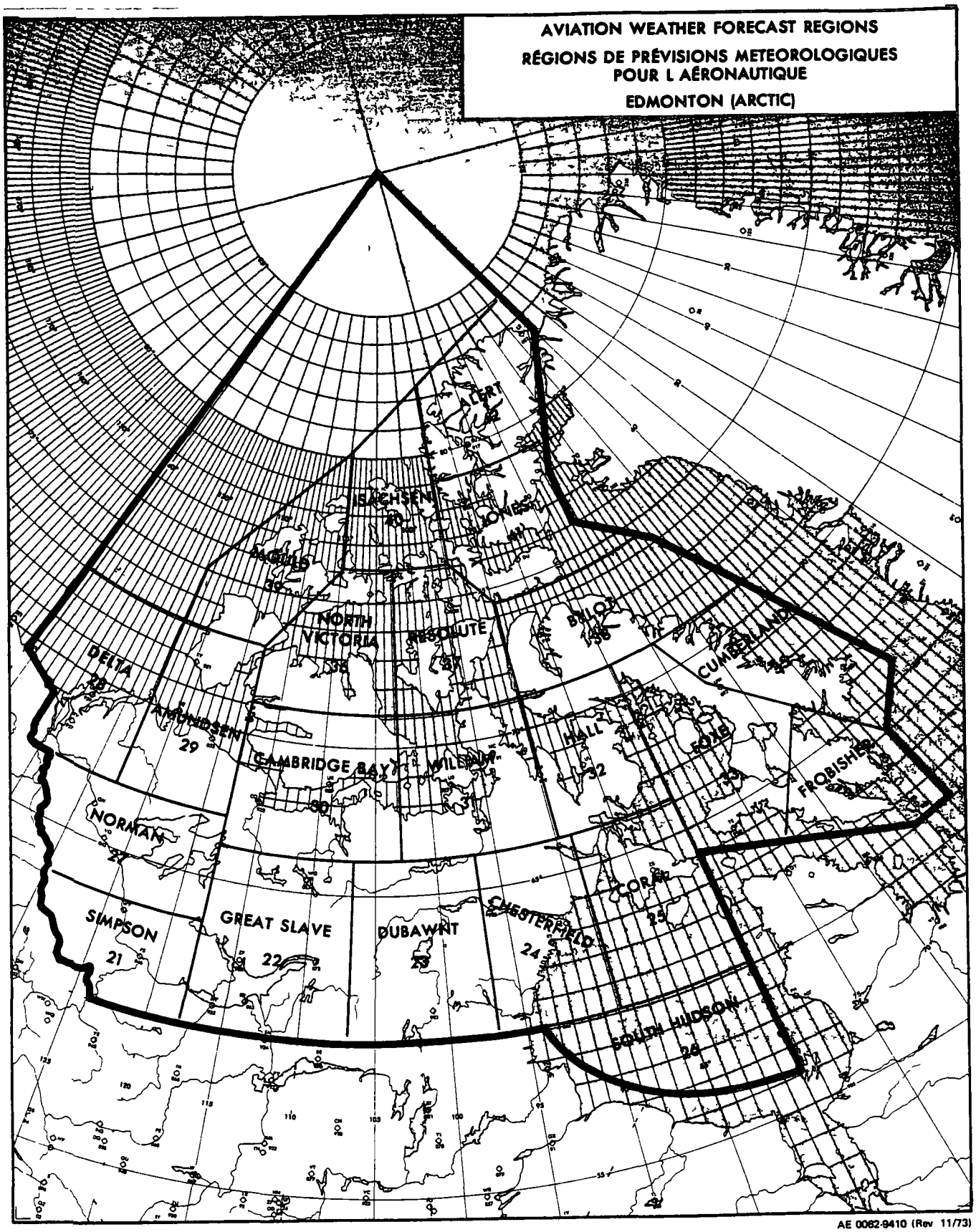
MAY 1983
MAI 1983

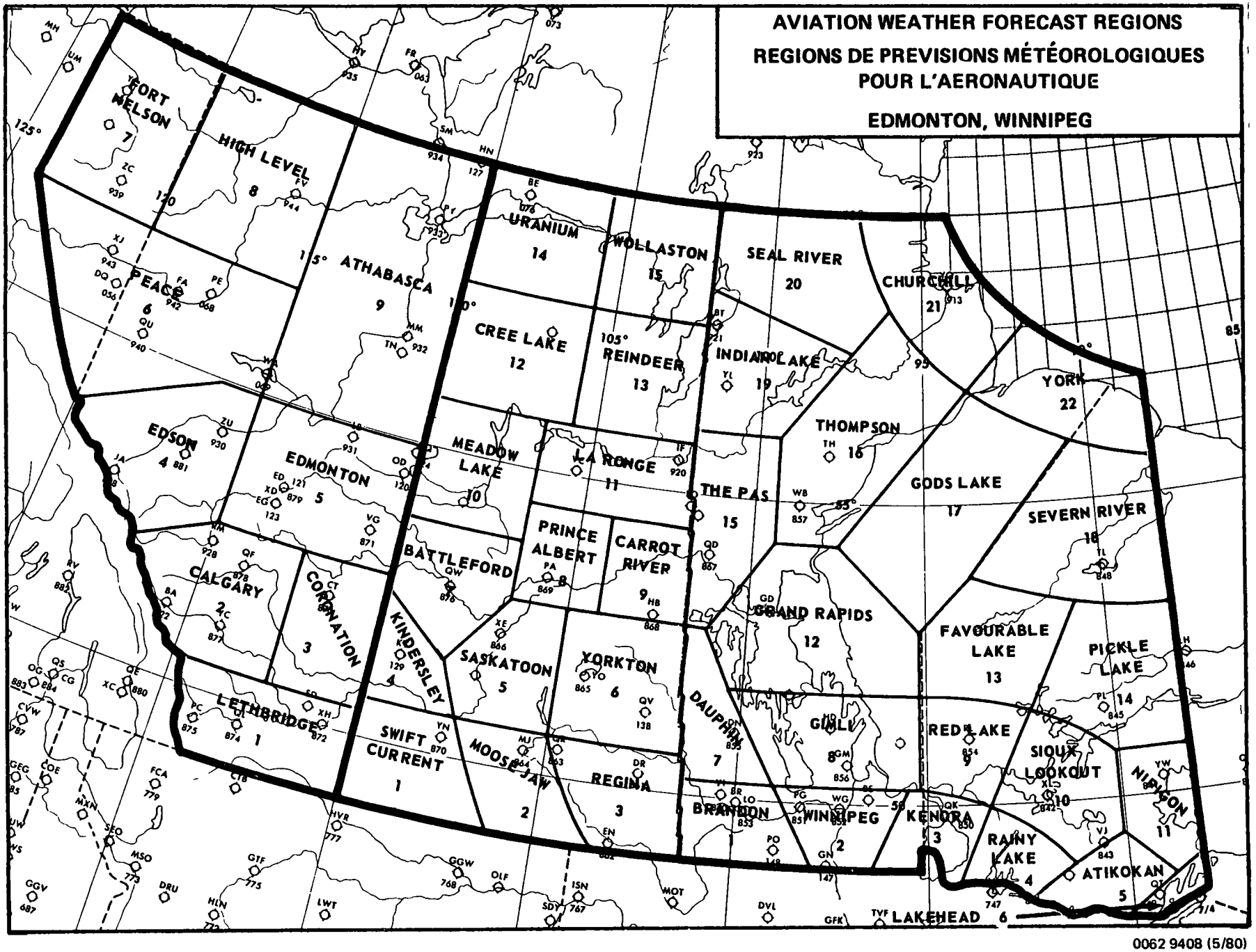
EAST
EST


AERODROME FORECASTS
PRÉVISIONS D'AÉRODROME
INDICATES ADVISORY
SIGNIFIE SERVICES CONSULTATIFS
INDICATES 24 HR FORECAST
INDIQUE DES PRÉVISIONS DE 24 HEURES
170°
160°
150
130
110
90°
70°
50
40
30
60°
50°
40
120°
110
100°
90
80°
70°
60°
YLT
YEU
YHD
YOX
YRB
YSR
YUV
YVN
YFB
YZS
YBK
YRT
YUS
YUX
YCB
YUI
YCO
YVQ
YEV
YUB
YSV
YUE
YOC
YDA
YMA
YOB
ZFA
YXY
YZW
YQH
YFS
YZF
YVE
YHY
YSM
YBE
YOJ
YPY
YXJ
YPE
YZY
YXT
YPR
YZP
YXS
YQZ
YWL
YZT
YQQ
YAZ
YCD
YVR
YXX
YLW
YKA
YRV
YCG
YVF
YXC
YQL
YXH
YYN
YMJ
YQR
YDN
YQV
YBR
YPG
YWG
YQK
YXL
YYW
YGQ
YYU
YTS
YTJ
YHD
YQT
YXZ
YLD
YXR
YAM
YEL
YZE
YSB
YVB
YWA
YUY
YVO
YUL
YSC
YQA
YOW
YTR
YGK
YVV
YPQ
YYZ
YKF
YSN
YHM
YZR
YXU
YQG
YTL
YPL
YRL
YMO
YNM
YMT
YRJ
YBG
YNE
YQD
YTH
YGX
YYL
YYQ
YMM
YZH
YQU
YXS
YQZ
YWL
YZT
YQQ
YAZ
YCD
YVR
YXX
YLW
YKA
YRV
YCG
YVF
YXC
YQL
YXH
YYN
YMJ
YQR
YDN
YQV
YQW
YXE
YPA
YVC
YLJ
YXD
YED
YEG
YQF
YYC
YOD
YZU
YWK
YGW
YGL
YKL
YVP
YHO
YCA
YNA
YAY
YDF
YQX
YYT
YJT
FSP
YZV
YBC
YQP
YQR
YYY
YCL
YSU
YG
YQY
YCH
YFC
YCK
YSJ
YQM
YZX
YHZ
YAW
YQI
YSA
YQB
YMX
YHU
YSJ
YZX
YHZ
YAW
YQI
YSA

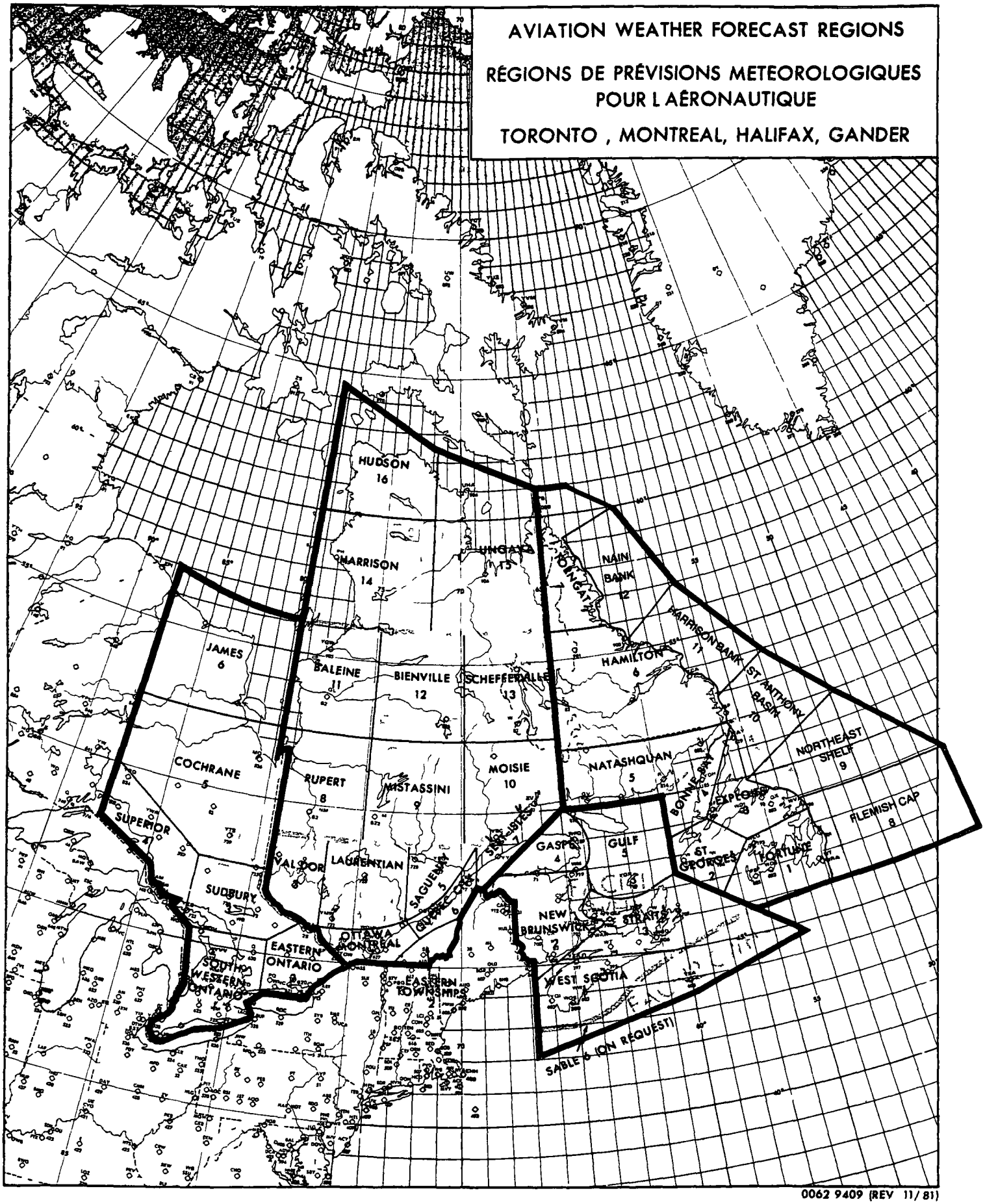


AE 0062-9407 (Rev 11/73)


AVIATION WEATHER FORECAST REGIONS
RÉGIONS DE PRÉVISIONS METEOROLOGIQUES POUR L AÉRONAUTIQUE
EDMONTON (ARCTIC)
ALERT
ISACHSEN
JONES
MACKLIN
NORTH VICTORIA
RESOLUTE
BILLOT
CUMBERLAND
DELTA
AMUNDSEN
CAMBRIDGE BAY
WILKINS
HALL
FOXE
FROBISHER
NORMAN
CORAL
SIMPSON
GREAT SLAVE
DUBAWNT
CHESTERFIELD
SOUTH HUDSON
AE 0062-9410 (Rev 11/73)



0062 9408 (5/80)



0062 9409 (REV 11/81)

4.2.3.2 Data Sub-Sub-Activity (338 PY, $25,513K)

This sub-sub-activity involves a commitment to acquire environmental data in Canada and adjacent air-space and waters as needed for the provision of weather and climate services, and for research purposes

Surface weather observations are provided by a network of about 321 weather observation stations supplemented by voluntary observing programs undertaken by over 300 ships operating on the Great Lakes and in the Atlantic, Pacific and Arctic Oceans. Weather reports are also obtained from 64 automatic reporting stations (see map "Synoptics and Hourlies Observing Stations" on pages 41 and 42)

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 (see map "Aerological Stations" on page 43)

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 224 synoptic weather stations and 2357 climatological stations provides climatological information Some of the climatological stations are jointly operated through agreements with the provinces

A network of weather radars strategically located at 13 sites across Canada, (see map "AES Radar Network" on page 44) provides information on the presence and movement of severe storms and precipitation areas

Satellite readout stations at Vancouver, Whitehorse, Edmonton, Toronto and a joint Canadian-Danish station at Sondre Stromfjord provide satellite imagery of North American weather systems and ice conditions to operational weather offices. The type of satellite stations in place are shown on the map on page 45.

Special observational programs such as seasonal freeze-up and break-up of water bodies, evaporation, sunshine, and total ozone are carried out by many weather stations Ten weather stations take Seismic observations for the Department of Energy, Mines and Resources. Air quality measurements are carried out at 57 locations, and monitoring for atmospheric radioactivity is done at 51 stations for the Department of National Health and Welfare. The map "Air Quality Network" on page 46 shows the location of these stations and type of measurements taken at each location

AES DATA ACQUISITION STATIONS BY REGION BY TYPE
1983-84

TYPE	REGION						
	PACIFIC	WESTERN	CENTRAL	ONTARIO	QUEBEC	ATLANTIC	TOTAL
Automatic Station	11	9	12	15	8	9	64
Upper Air Station	4	7	9	2	6	5	33
Synoptic Station	33	52	42	34	30	33	224
Climate Station	448	450	408	367	449	235	2357
Weather Radar Station	0	1	3	5	2	2	13
Satellite Station	1	1	0	1	0	1	4
Seismic Station	1	3	5	0	1	0	10
Air Quality Measurement	8	10	10	12	7	10	57
Radiation Measurement	8	9	12	6	9	7	51

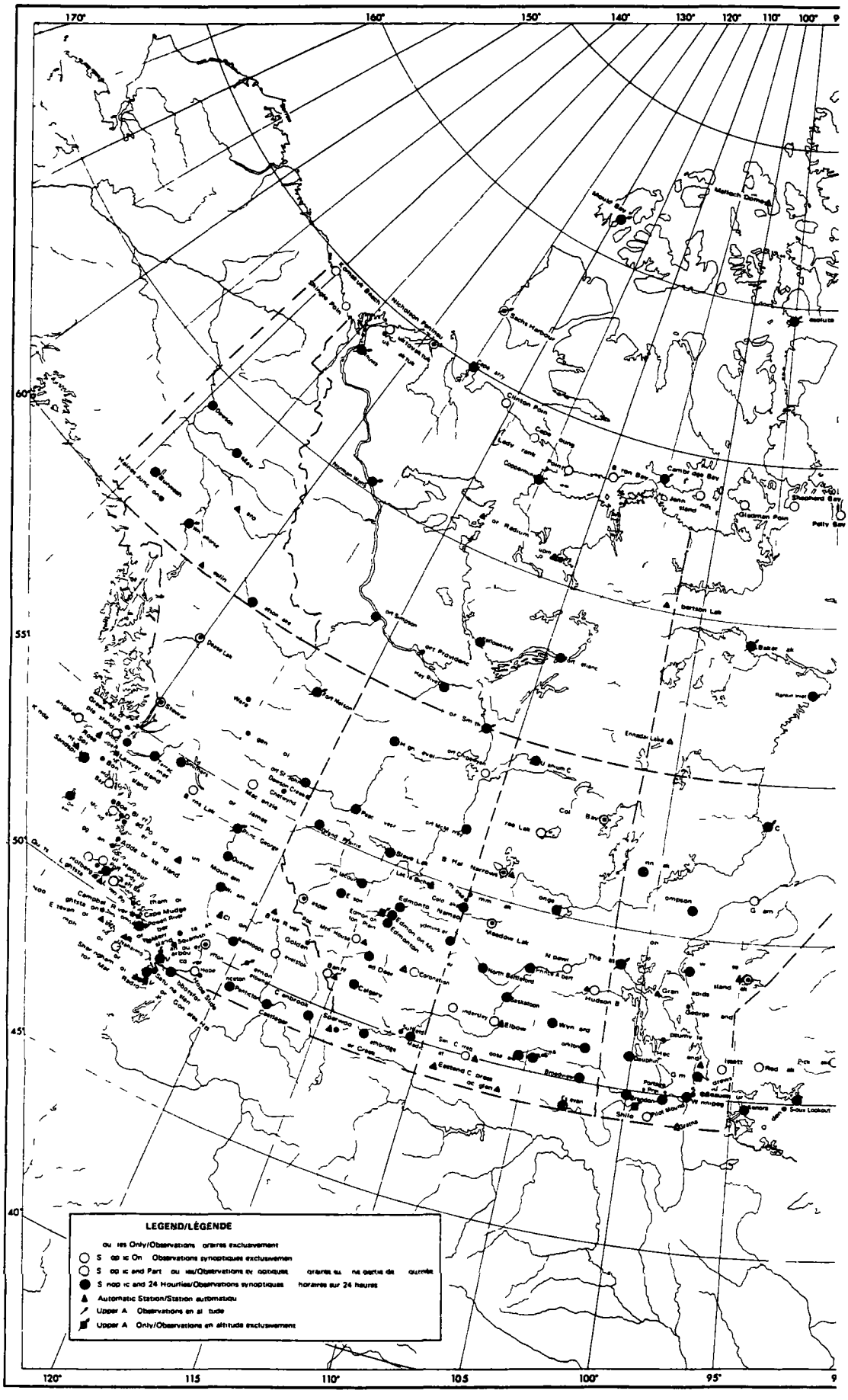
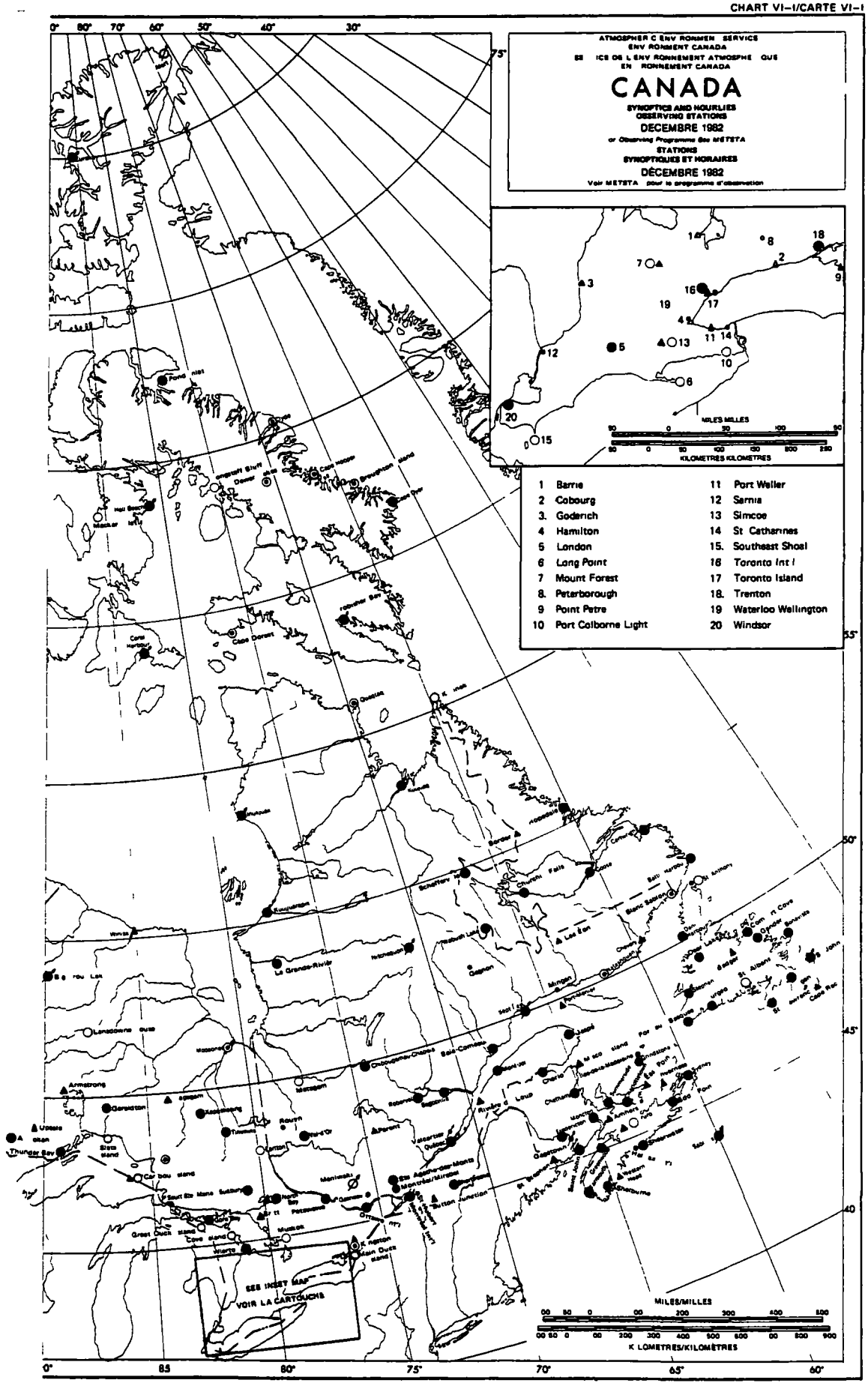
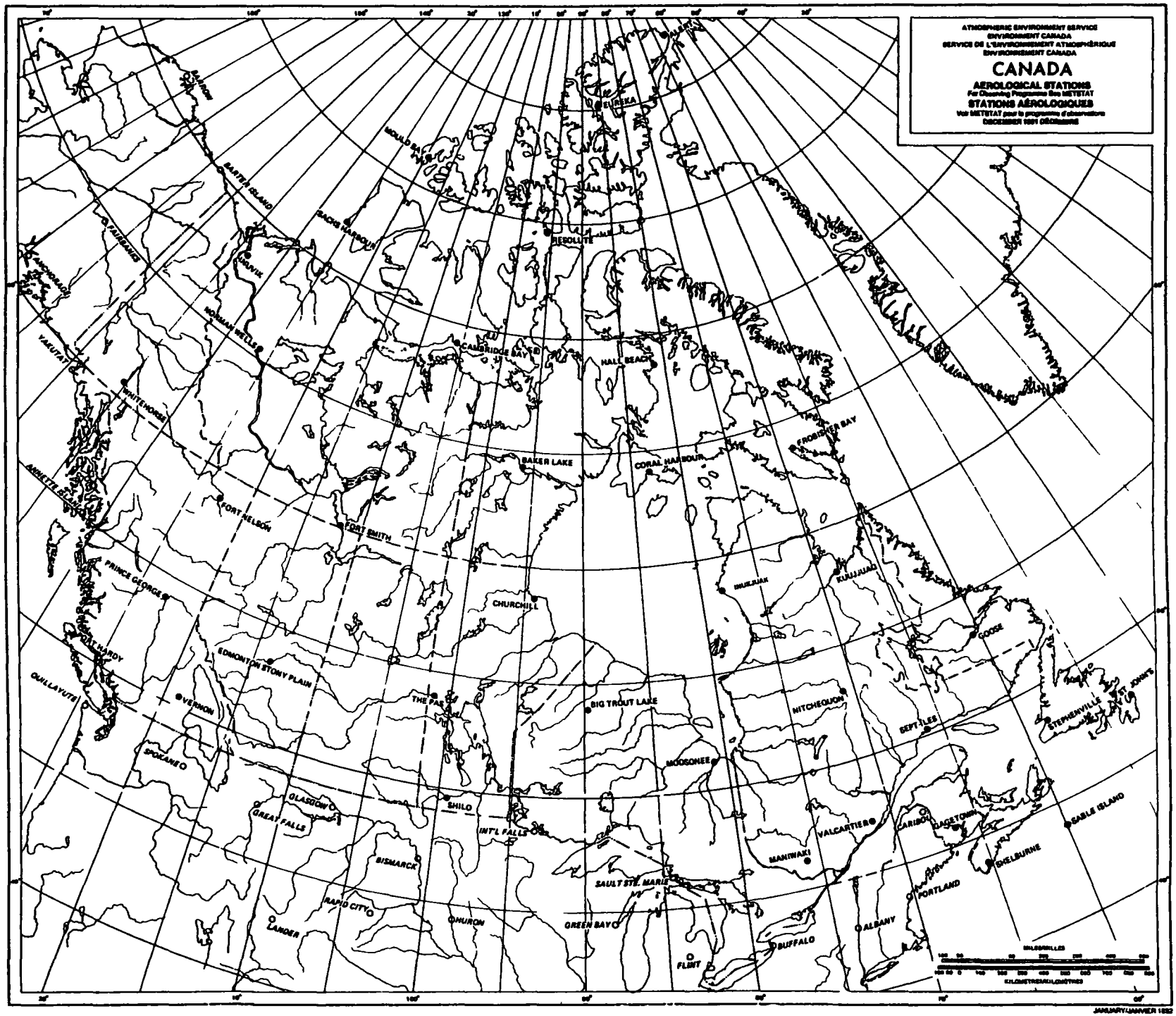
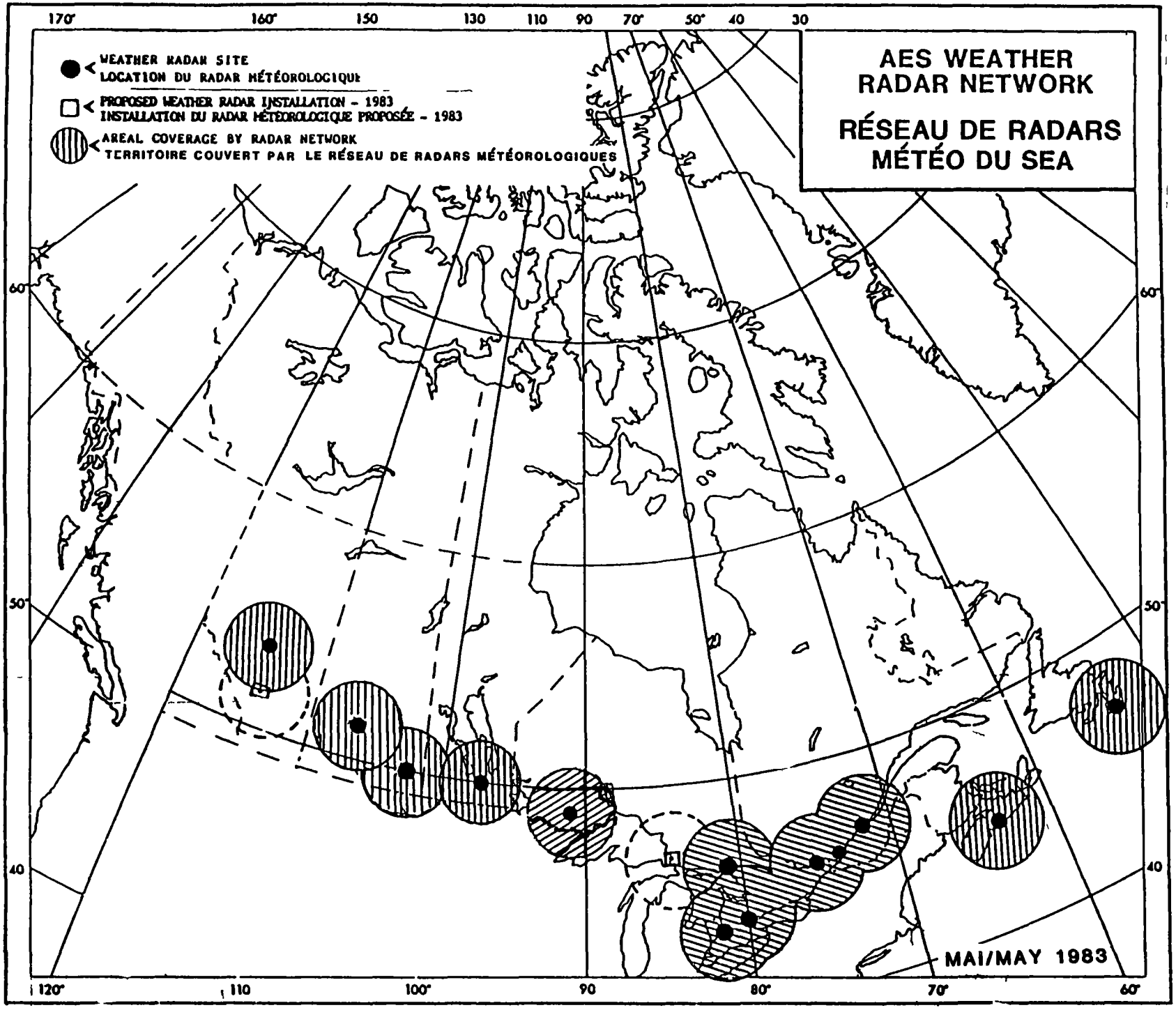
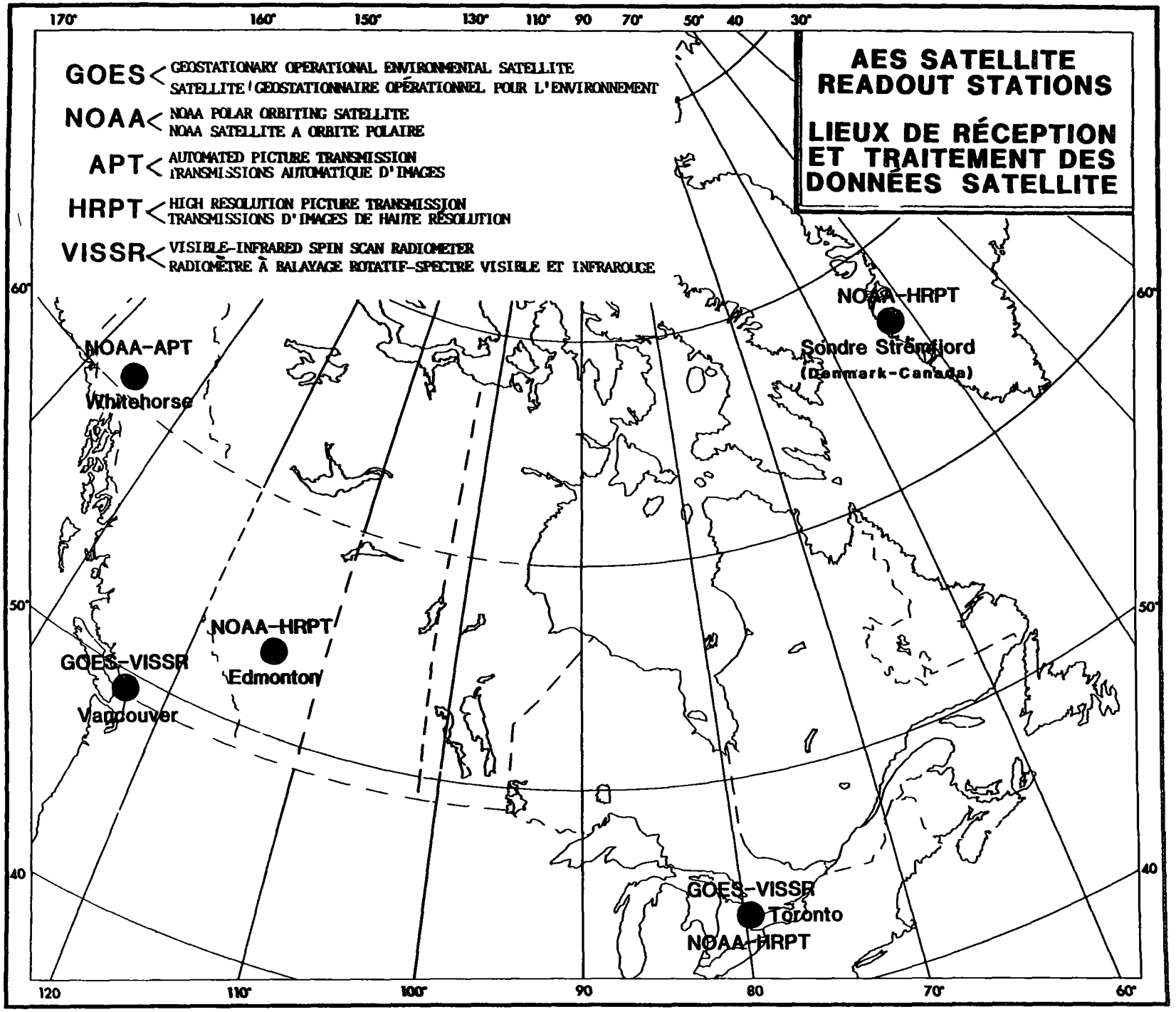

170°
160°
150°
140°
130°
120°
110°
100°
60°
55°
50°
45°
40°
120°
115
110°
105
100°
95°
LEGEND/LÉGENDE
Only/Observations orarres exclusivement
Synoptic Only/Observations synoptiques exclusivement
Synoptic and Part Hourlies/Observations synoptiques et horaires aux heures principales
Synoptic and 24 Hourlies/Observations synoptiques horaires aux 24 heures
Automatic Station/Station automatique
Upper Air Observations en altitude
Upper Air Only/Observations en altitude exclusivement

CHART VI–I/CARTE VI–I

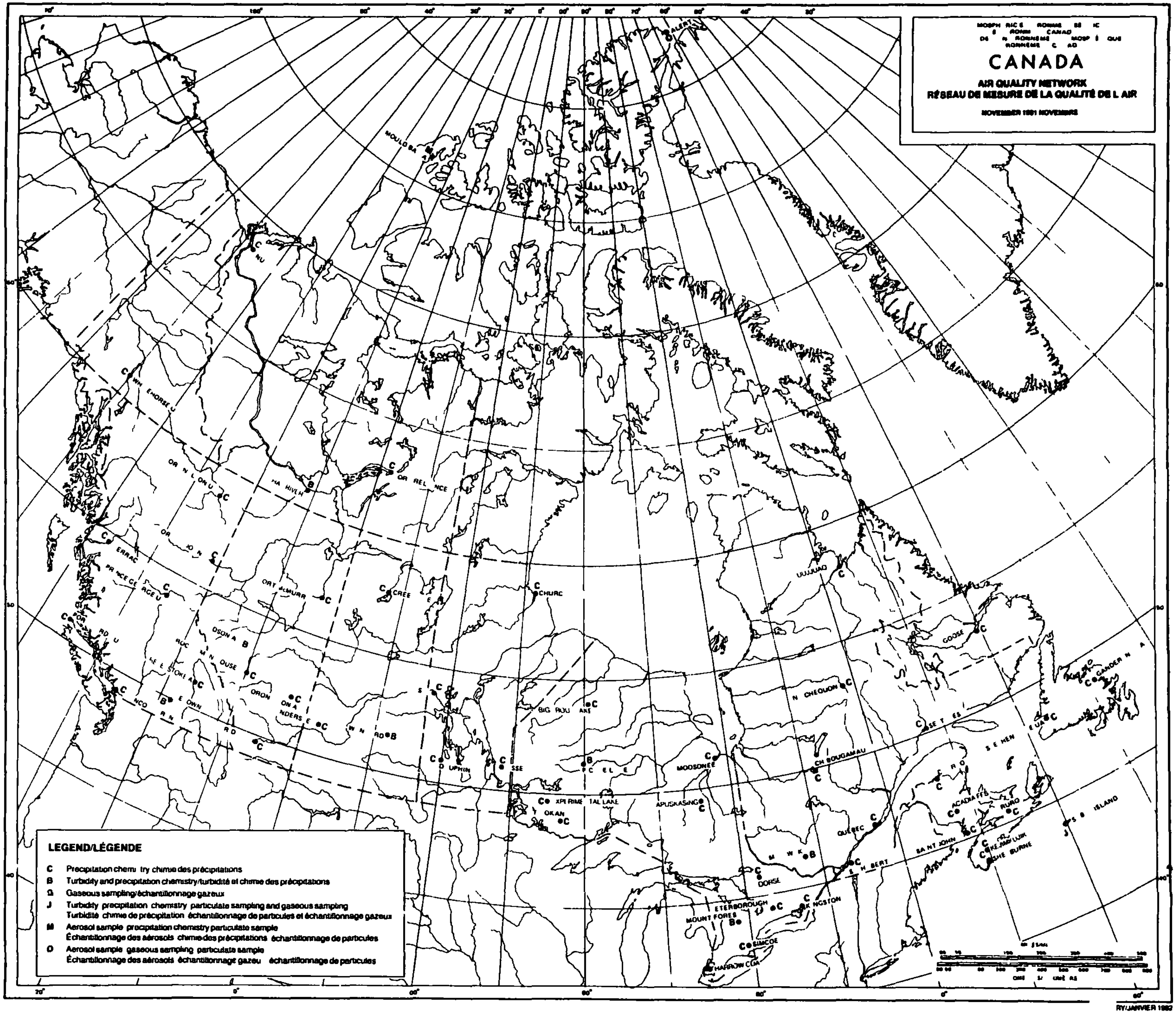



ATMOSPHERIC ENVIRONMENT SERVICE
ENVIRONMENT CANADA
SERVICE DE L'ENVIRONNEMENT ATMOSPHÉRIQUE
ENVIRONNEMENT CANADA
CANADA
AEROLOGICAL STATIONS
STATIONS AÉROLOGIQUES
EUREKA
ALERT
MOULD BAY
BATHURST ISLAND
BACHS HARBOUR
REBOLLITE
TUKTOYAKTUK
NORMAN WELLS
CAMBRIDGE BAY
HALL BEACH
YAKUTAT
WHITEHORSE
FROBISHER BAY
BAKER LAKE
CORAL HARBOUR
ANNETTE ISLAND
FORT NELSON
FORT SMITH
PRINCE GEORGE
CHURCHILL
INUKJUAK
KUUJJUAQ
GOOSE
QUILLAYUTE
EDMONTON STONY PLAIN
THE PAS
BIG TROUT LAKE
NITCHEQUON
SEPT-ÎLES
ST. JOHN'S
SPOKANE
MOOSONEE
GLASGOW
GREAT FALLS
SHILO
INT'L FALLS
VALCARTIER
CARIBOU
SABLE ISLAND
BISMARCK
MANIWAKI
SAULT STE. MARIE
RAPID CITY
OHURON
GREEN BAY
ALBANY
BUFFALO
FLINT
JANUARY/JANVIER 1982


AES WEATHER RADAR NETWORK
RÉSEAU DE RADARS MÉTÉO DU SEA
WEATHER RADAR SITE
LOCATION DU RADAR MÉTÉOROLOGIQUE
PROPOSED WEATHER RADAR INSTALLATION - 1983
INSTALLATION DU RADAR MÉTÉOROLOGIQUE PROPOSÉE - 1983
AREAL COVERAGE BY RADAR NETWORK
TERRITOIRE COUVERT PAR LE RÉSEAU DE RADARS MÉTÉOROLOGIQUES
170° 160° 150 130 110 90 70° 50° 40 30
60° 50° 40
120° 110 100° 90 80° 70° 60°
MAI/MAY 1983


AES SATELLITE READOUT STATIONS
LIEUX DE RÉCEPTION ET TRAITEMENT DES DONNÉES SATELLITE
GOES < GEOSTATIONARY OPERATIONAL ENVIRONMENTAL SATELLITE
SATELLITE GÉOSTATIONNAIRE OPÉRATIONNEL POUR L'ENVIRONNEMENT
NOAA < NOAA POLAR ORBITING SATELLITE
NOAA SATELLITE A ORBITE POLAIRE
APT < AUTOMATED PICTURE TRANSMISSION
TRANSMISSIONS AUTOMATIQUE D'IMAGES
HRPT < HIGH RESOLUTION PICTURE TRANSMISSION
TRANSMISSIONS D'IMAGES DE HAUTE RÉSOLUTION
VISSR < VISIBLE-INFRARED SPIN SCAN RADIOMETER
RADIOMÈTRE À BALAYAGE ROTATIF-SPECTRE VISIBLE ET INFRAROUGE
170° 160° 150° 130° 110° 90 70° 50° 40 30°
60° 50° 40°
120 110° 100° 90 80 70° 60°
NOAA-APT
Whitehorse
NOAA-HRPT
Sondre Strømfjord
(Denmark-Canada)
NOAA-HRPT
Edmonton
GOES-VISSR
Vancouver
GOES-VISSR
Toronto
NOAA-HRPT

DS#10-82


CANADA
AIR QUALITY NETWORK
RÉSEAU DE MESURE DE LA QUALITÉ DE L AIR
LEGEND/LÉGENDE
C Precipitation chemi try chimie des précipitations
B Turbidity and precipitation chemistry/turbidité et chimie des précipitations
Gaseous sampling/échantillonnage gazeux
J Turbidity precipitation chemistry particulate sampling and gaseous sampling
Turbidité chimie de précipitation échantillonnage de particules et échantillonnage gazeux
M Aerosol sample precipitation chemistry particulate sample
Échantillonnage des aérosols chimie des précipitations échantillonnage de particules
O Aerosol sample gaseous sampling particulate sample
Échantillonnage des aérosols échantillonnage gazeu échantillonnage de particules
UUJJUAQ
GOOSE
MOOSONEE
QUEBEC
SIMCOE
RY/JANVIER 1982

4.2.3.3 Weather Services Support Systems Sub-Sub-Activity (823 PY, $68,189K)

This sub-sub-activity provides support services necessary for the efficient functioning of a modern weather service. Some of these services are described below

The Canadian Meteorological Centre (CMC) in Montreal, using a large scale computer complex, employs advanced computer techniques and sophisticated mathematical models of the atmosphere to generate forecasts of meteorological conditions on a large scale for periods of up to 5 days. The weather forecasts generated by these computer models are used as major guidance by all other forecast weather offices in the AES. This computer system complex is one of two large scale computer complexes operated by the Computing and Communications Branch The other one, used primarily for research and climate data applications, is located at AES Headquarters in Downsview.

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 computer oriented research which concentrates on the development of computer models to predict large scale physical-dynamical parameters of the atmosphere. Forecasting methods are also developed and implemented to support regional and local forecasting In the Arctic and offshore areas, emphasis is being given to atmosphere related environmental predictions (ice, wind-wave, oil slick motion, etc) Meteorological satellite research and weather radar development are being carried out, the radar work 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. The principal part of the system includes a national teletype network, a national paper facsimile network and a national photo facsimile network. The Communications System was reviewed in 1980-81, a plan for the first phase of its upgrading approved, and a number of projects are well under way.

Training Branch develops and conducts advanced and refresher training courses in both official languages for professional meteorologists at training facilities in Downsview and Montreal, and at 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 Special technical courses are also given at the DEW Line Training Centre in Winnipeg Training Branch has ongoing negotiations with Canadian universities regarding the development of programs in meteorology and administers a Studentship Program to encourage university physics graduates to study meteorology through a one-year diploma course

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

4 3 CLIMATE PROGRAM Sub-Activity (229 PY, $12,864K)

4.3.1 Objectives CLIMATE PROGRAM

To provide a climate program that provides climate data and information services and climate forecasts that fosters understanding of the effects on climate of increasing atmospheric pollutants such as carbon dioxide, that fosters understanding of the social and economic consequences of such effects and the effect of climate hazards and variations, and that provides planning and decision information required to support Canadian socio-economic activities in which climate is a factor.

4 3 2 Budget CLIMATE PROGRAM 1983-84 AES Budget by Sub-Sub-Activity (SA 2) ($000)

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
4100 Climate Services	145	4975.9	1992 5	584.5	7552.9
4500 Climate Research	14	627.1	42.0	15 0	684.1
4600 Climate Program Sup Sys.	70	2542.4	2888 0	197 0	4627.4
4000 CLIMATE PROGRAM	229	8145.4	3922 5	796.5	12864 4

4 3 3 Description CLIMATE PROGRAM

The Climate Program includes the provision of climate services in the form of climate data, information, consultations and interpretations that are provided to the general public, private industry, provincial agencies and other federal departments through consultation (by telephone, personal visits or correspondence), data archives and publications. The following table displays the number of AES climate services contacts per year with all users of climate services since 1976 The majority of these enquiries are received and processed at local weather offices and regional offices across Canada

AES CLIMATE SERVICE CONTACTS
(Nearest 000)

	1976	1977	1978	1979	1980	1981	1982**
FIELD SERVICES DIRECTORATE	142,000	147,000	117,000*	178,000	173,000	178,500	203,500
CANADIAN CLIMATE CENTRE	15,000	14,000	14,000	15,000	15,000	14,500	14,500
TOTAL	157,000	161,000	131,000*	193,000	188,000	193,000	218,000

* Weather Office contacts only
** Preliminary data only

The Canadian Climate Centre located in Downsview processes about 15,000 enquiries per year, dealing with requests which are national in scope and assisting the regional offices in answering the enquiries as required

Climate Services include

The provision of climate data (for 2005 voluntary climatological observing stations, 475 climatological observing stations under contract to Quebec and 260 weather observing stations), information, consultations and interpretations to clients, including the general public. For example, climate information is frequently requested by energy companies (heating degree days and maximum temperatures) to estimate consumptions, the agricultural industry (growing degree days, frost dates, etc), the forestry industry (Fire Weather Indexes), conservation authorities (rainfall, hydrometeorological data), architects for building codes/design purposes (wind, temperature, etc), transportation, offshore drilling interests (wind/wave climatology), recreation and tourism industry, legal profession and law enforcement agencies for forensic studies and court cases, municipal and provincial governments.

The collection, quality control and archiving of national, historical and statistical climate data in the National Climate Archive to provide a data base for climate services and for research and applications programs in both the government and the private sector Approximately 4.25 million weather observations are archived per year and a national data archive for over 10,000 stations, of which 2,800 are currently active, is maintained.

The preparation and publication of climate summaries (including climate normals for about 2,800 stations and long-term abstracts for about 10,000 stations), periodicals, scientific papers and major publications. For example, about 30,000 pages of climate data and information are prepared in periodicals and summaries for distribution to regional offices, libraries and other information specialists, and 200 publications were printed and distributed.

The provision of applications services such as design and planning information for river, lake, and marine applications, and a wide range of clients in agriculture and forest meteorology, energy research and development, arctic meteorology, industrial applications, biometeorology and environmental assessment.

Research and the provision of strategic planning information on issues such as the effects of ozone depletion and carbon dioxide additions upon the climate.

The development and provision of climate predictions to improve the operational management of energy supplies, food and forest production and water supplies.

Research to increase our understanding of the climate as a physical system to provide a sound basis for assessing and determining the responses of the climate to natural changes and to those resulting from human activities.

4.4 ICE SERVICES Sub-Activity (54 PY, $15,646K)

4.4.1 Objective ICE SERVICES

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.

4.4.2 Budget ICE SERVICES 1983-84 Budget by Sub-Sub-Activity (SA 2)

($000)

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
5100 Ice Reconnaissance	30	1455.4	11641.1	141.5	13238.0
5200 Ice Forecasting	15	559 3	250 0	45 0	854.3
5300 Ice Climate Services	4	165 5	34 0	---	199.5
5400 Ice Services Support System	5	455 8	893.1	5.0	1353 9
5000 ICE SERVICES	54	2636.0	12818 2	191.5	15645.7

4.4.3 Description ICE SERVICES

This sub-activity includes developing and maintaining acquisition systems for ice data, provision of forecasts of ice formation, growth and movement in Canada's major rivers and lakes, and adjacent waters for the protection of the environment and in support of the Canadian Coast Guard, Canada Oil and Gas Lands Administration, fisheries, the public and other marine interests, over the 200 mile economic zone, and conducting of ice research to develop remote sensing and forecast capabilities.

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. About 3000 analyses and "nowcasts" are prepared in chart form annually.

Ice Forecasts

From the AES Ice Centre in Ottawa, forecasts of the extent and characteristics of ice in the form of about 1500 short-range tactical forecasts and bulletins and about 30 longer-range strategic forecasts are provided annually 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 winter-time Arctic development and industrial development along Canada's east coast is growing. Ice climatological services are being provided in response to about 4000 requests for information annually and the supporting data base is being expanded.

4.5 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH Sub-Activity (113 PY, $9,677K)

4 5.1 Objectives AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH

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.

To provide information on and predictions of air quality conditions for areas of Canada and adjacent waters.

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 waters

4.5.2 Budget AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH

1983-84 AES Budget by Sub-Sub-Activity (SA 2)
($000)

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
6100 Air Quality Services	12	486 5	118 0	102.0		706.5
6300 Air Quality Research	48	1980 8	542.0	468.9		2991.7
6600 Research - Other	36	1550 0	1377.3	1037 0		3964.3
6700 Air Qua & Res. Sup. Sys	17	872 9	703.5	69 0	369 0	2014 4
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH	113	4890 2	2740.8	1676.9	369.0	9676.9

4 5.3 Description AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH

This sub-activity includes the provision of air quality services such as monitoring (excluding LRTAP), environmental impact assessments for DOE, provincial, regulatory bodies, industry, etc , training, environmental emergency support such as through the development of systems and models for measuring wind and temperature profiles, advice and consultation, and input to the Toxic Chemicals Management Centre (EPS) on the atmospheric transport and deposition of toxic chemicals. Research is undertaken on atmospheric dispersion and chemistry and their effects upon air pollution

By conducting research and development activities, improvement is achieved in the knowledge and understanding of physical and chemical processes related to stratospheric pollution, atmospheric radiation, ozone, solar and wind energy, the boundary layer, cloud and precipitation physics and cloud chemistry and relevant prediction capabilities are developed. An ozone monitoring network of 5 stations is operated and the World Ozone Data Centre is maintained About 225 instruments (Brewer Spectrophotometers and various radiation instruments) are calibrated, installed and tested each year

4.6 DEPARTMENTAL INTEGRATED PROGRAMS Sub-Activity (3 PY, $1680K)

4.6.1 Objective To contribute to the Departmental programs which cover the objectives of various Services of the Department and involve a wide range of professional and scientific input from various operational units in the Department.

4.6.2 Budget DEPARTMENTAL INTEGRATED PROGRAMS 1983-84 Budget by Sub-Sub-Activity (SA 2) ($000)

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
7200 LRTAP*	3	131.0	1127.0	422.0	1680K
7300 Toxic Chemicals					
7400 Great Lakes Water Quality					
7500 Baseline Studies					
7000 DEPARTMENTAL INTEGRATED PROGRAMS	3	131.0	1127.0	422.0	1680K

* plus within 6000 Air Quality Services and Atmospheric Research 34PY's and $1980K are expended directly in support of LRTAP activities.

4.6 3 Description DEPARTMENTAL INTEGRATED PROGRAMS

Long Range Transport of Air Pollutants

The LRTAP program was established within Environment Canada in order to provide a focus for all activities relating to the long range transport of atmospheric pollutants, and particularly the problem of acid rain. AES, as lead agency for the federal LRTAP scientific program, is responsible for coordination, and for the provision of information to elected officials, the media and the general public. AES is also the lead in the atmospheric component of the scientific program. In this capacity, AES is currently maintaining and upgrading a national sampling network to monitor the atmospheric concentration and deposition of sulphur, nitrogen and other compounds, with special emphasis on acid precipitation. This includes the maintenance and operation of the 28 station Canadian Network for Sampling Precipitation (CANSAP) and the upgrading of the Canadian Air and Precipitation Monitoring Network (CAPMON) from 9 stations to 47 stations

A major part of the AES program includes research to improve the knowledge of physical and chemical processes involved in LRTAP and to develop predictive models of the long range transport, transformation and deposition of air pollutants. This initiative to a large extent (34 PY and $1980K) is directly supported by the A-base Sub-Activity (6000) of Air Quality Service and Atmospheric Research.

Toxic Chemicals

The Toxic Chemicals Management Program (TCMP) was designed to provide an Environment Canada liaison with federal, provincial, international and non-governmental organizations on matters concerning toxic chemicals. Environment Canada is involved through research, environmental monitoring and regulatory activities. The Environment Canada program is given general direction by a steering committee chaired by ADM Environmental Protection Service and consists of the other Service ADM's and RDG Ontario Region. The main emphasis is on control of the chemicals or groups of chemicals that are assessed as dangerous to human or environmental health. AES scientific efforts will focus on atmospheric measurements of toxic chemicals with a view towards defining their major atmospheric pathways, including transport, transformation and deposition mechanisms. Most of the PY and dollar resources for the planned AES activities have been approved, but were frozen by Treasury Board pending a Government wide review for which the Department of Environment is the lead.

Great Lakes Water Quality

The Canadian program is managed under the lead of Environment Canada which chairs an interdepartmental committee. The Ontario RDG is the program manager The AES component is concerned with estimating the atmospheric input of certain nutrients, heavy metals and organic contaminants to the Great Lakes and with examining the relative importance of various sources through modelling.

Baseline Studies

The Baseline Studies Integrated Program has been designed primarily to ensure that adequate environmental information is available to permit Environment Canada to fulfil its responsibilities under the Federal Environmental Assessment Review Process. The output of this program is environmental data that will provide a basis for Environment Canada experts to predict or evaluate predicted environmental impacts of industrial and other development projects subject to the Review Process. The Environmental Conservation Service has overall responsibility for this program with Regional Directors General managing the program in each region All operational Services including AES are involved and much of the required information is derived from ongoing programs.

*Beaufort Sea Hydrocarbon Development

A multi-Service Program Plan which sets out DOE's responsibilities in carrying out its mandate to preserve and enhance the environmental quality of the Beaufort Sea area has been approved but so far only resources for 1982/83 (NOGAP - Northern Oil and Gas Action Program). The plan focuses on hydrocarbon development issues and several of these impact upon AES. Interaction of this development with atmospheric/sea state/ice regimes could involve a major upgrading of core climatic, weather, ice and sea state information for forecasting services in the Beaufort Sea production zone Other AES involvement includes provision of special information and forecasting services as well as research applied to improve prediction and communications systems Overall federal emphasis so far has been on the research aspects and DOE (AES) will be taking the lead to ensure adequate federal priority also is given to operational programs in support of hydrocarbon development

*Likely to become a departmental integrated program in the near future

4 7 MANAGEMENT AND COMMON SUPPORT SERVICES Sub-Activity (86PY, $3728K)

4.7 1 Objectives MANAGEMENT AND COMMON SUPPORT SERVICES

1. To provide continuous policy guidance and leadership for the service including the establishment of objectives, goals and priorities.

2. To provide management and administrative support to the Atmospheric Environment Service in the area of financial management, human resources management, material management, policy and planning, general administration, library services, official languages, and affirmative action.

3 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 AES scientific and technological base.

4. To promote and foster the science and public awareness of meteorology and other environmental disciplines in Canada by

supporting organizations concerned with the advancement of meteorology and other environmental disciplines,

supporting meteorological and other environmental research in Canadian universities,

encouraging the development of meteorological and other environmental services in the private sector within Canada.

4 7 2 Budget MANAGEMENT AND COMMON SUPPORT SERVICES 1983-84 Budget by Sub-Sub-Activity (SA 2)

($000)

Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
8100 Management	21	910 8	300.0	7 0	1217.8
8300 Common Support Services	65	1429 3	931 5	149 0	2509 8
8000 MANAGEMENT AND COMMON SUPPORT	86	2340 1	1231 5	156 0	3727 6

4 7 3 Description MANAGEMENT AND COMMON SUPPORT SERVICES

This sub-activity includes the executive direction of the AES, 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, and participation in international meteorological affairs Also included are those common services which support AES in areas of administration, personnel, facilities, library, materiel and financial management

CHAPTER 5

Atmospheric Environment Service

BUDGETS

by

Program Activity

and

Organizational Unit

5.1 ATMOSPHERIC ENVIRONMENT SERVICE

5 1 1 AES Organizational Structure

The Atmospheric Environment Service is organized functionally into five directorates and one Branch

Field Services Directorate	FSD
Research Directorate	ARD
Canadian Climate Centre	CCC
Central Services Directorate	CSD
Policy, Planning and Assessment Directorate	APDG
Finance and Administration Branch	AABD

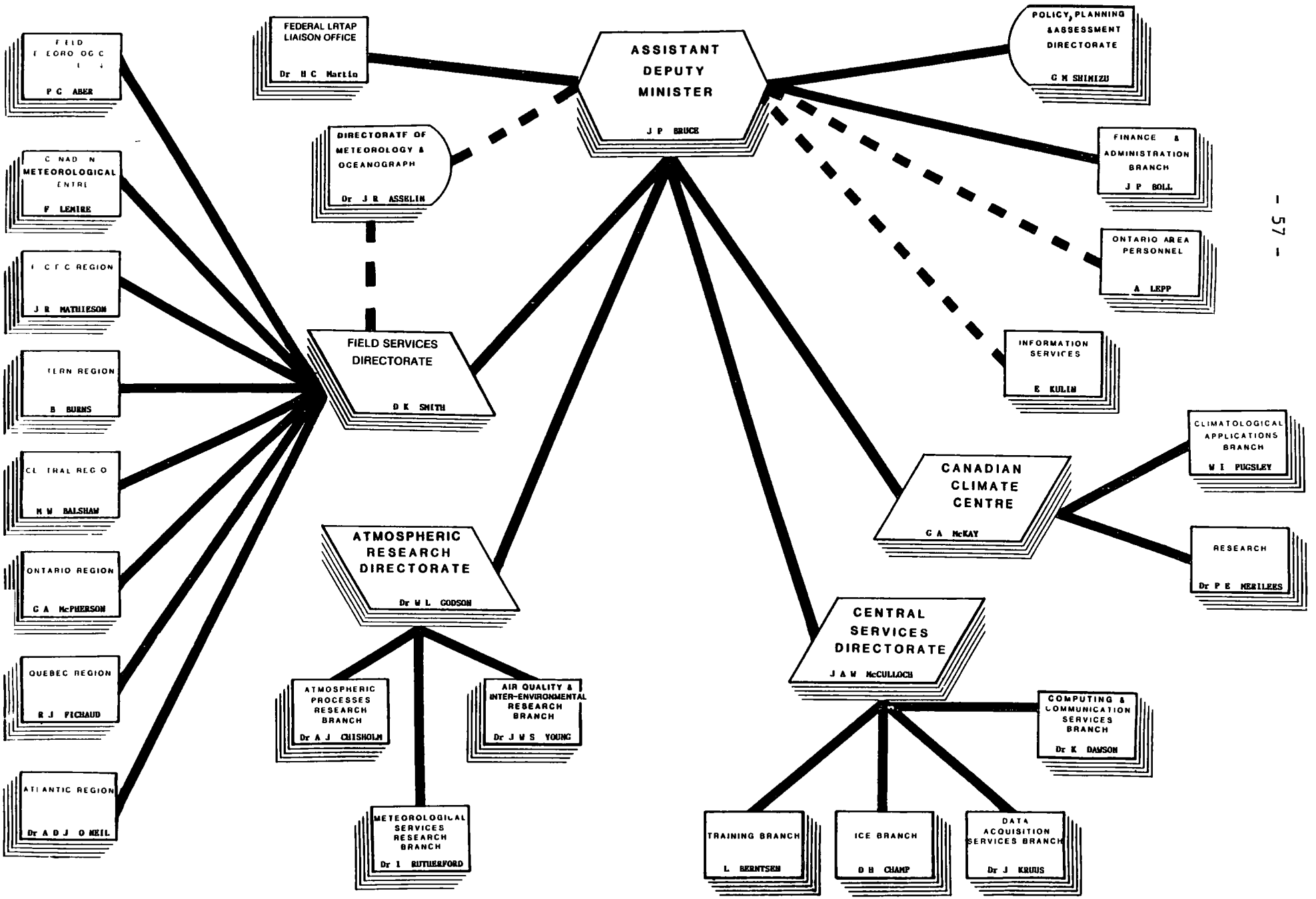
Four of the five directorates and the Finance and Administration Branch have their headquarters at Downsview, Ontario while the Assistant Deputy Minister and the Policy, Planning and Assessment Directorate have their offices in Hull, but also maintain staff in Downsview.

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 two parties. DND maintains a Canadian Forces Weather Service headed by the Director of Meteorology and Oceanography (DMetOc) in Ottawa. DMetOc formally reports to a higher level DND authority while functionally, and on technical matters, he reports to the ADM of the Atmospheric Environment Service or to the Director General, Field Services Directorate, as appropriate.

The Ontario Area Personnel Office of Environment Canada and the AES Information Directorate are located at Downsview to provide support to the ADM and services to AES managers.

The liaison office for the federal scientific LRTAP program is also located in Downsview.

ATMOSPHERIC ENVIRONMENT SERVICE



1983-84 Budget
($000)

5.1 ATMOSPHERIC ENVIRONMENT SERVICE

5.1.2 TOTAL BUDGET BY PROGRAM ACTIVITY AND ORGANIZATION

SUB-ACTIVITY Sub-Sub-Activity	ADMA	AABD	ARD	CCC	CSD	FSD	TOTAL
1100 Public Weather Services						16739	16739
1200 Marine Weather Services						376	376
1300 Aviation Weather Services						4548	4548
1400 Economic Weather Services						1565	1565
1500 Canadian Forces Wx Service						6539	6539
2000 Data					119	25394	25513
3000 Wx Services Support Sys.		4578	6901		23948	32761	68188
1000 WEATHER SERVICES		4578	6901		24067	87922*	123468
4100 Climate Services				4547	240	2767	7554
4500 Climate Research				684			684
4600 Climate Program Sup Sys.		664		847	2672	444	4627
4000 CLIMATE PROGRAM		664		6078	2912	3211	12865
5100 Ice Recon & Data Acq.					13144	94	13238
5200 Ice Anal. & Forecasting					854		854
5300 Ice Climate Services					200		200
5400 Ice Services Support Sys.		799			555		1354
5000 ICE SERVICES		799			14753	94	15646
6100 Air Quality Services			592			114	706
6300 Air Quality Research	132		2808			52	2992
6600 Research - Other			3878			87	3965
6700 Air. Qua & Res Sup Sys.		934	1017		63		2014
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH	132	934	8295		63	253	9677
7200 LRTAP	110		1570				1680
7300 Toxic Chemicals							
7400 Great Lakes Water Quality							
7500 Baseline Studies							
7000 DEPARTMENTAL INTEGRATED PROGRAMS	110		1570				1680
0810 Management	1048	169					1217
0830 Common Support Services		2510					2510
0800 MANAGEMENT AND COMMON SUPPORT SERVICES	1048	2679					3727
GRAND TOTAL	1290	9654	16766	6078	41795	91480*	167063

* Includes Canadian Forces Weather Service

1983-84 Budget

5.1 ATMOSPHERIC ENVIRONMENT SERVICE

5 1.3 PERSON YEARS BY PROGRAM ACTIVITY AND ORGANIZATION

SUB-ACTIVITY Sub-Sub-Activity	ADMA	AABD	ARD	CCC	CSD	FSD	TOTAL
1100 Public Weather Services						418	418
1200 Marine Weather Services						8	8
1300 Aviation Weather Services						119	119
1400 Economic Weather Services						39	39
1500 Canadian Forces Wx Service						106	106
2000 Data						338	338
3000 Wx Services Support Sys.		10	67		239	507	823
1000 WEATHER SERVICES		10	67		239	1535*	1851
4100 Climate Services				93	1	51	145
4500 Climate Research				14			14
4600 Climate Program Sup Sys		1		10	49	10	70
4000 CLIMATE PROGRAM		1		117	50	61	229
5100 Ice Recon & Data Acq.					30		30
5200 Ice Anal. & Forecasting					15		15
5300 Ice Climate Services					4		4
5400 Ice Services Support Sys.		1			4		5
5000 ICE SERVICES		1			53		54
6100 Air Quality Services			10			2	12
6300 Air Quality Research	3		44			1	48
6600 Research - Other			36				36
6700 Air. Qua & Res. Sup. Sys.		1	14		2		17
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH	3	1	104		2	3	113
7200 LRTAP	2		1				3
7300 Toxic Chemicals							
7400 Great Lakes Water Quality							
7500 Baseline Studies							
7000 DEPARTMENTAL INTEGRATED PROGRAMS	2		1				3
0810 Management	18	3					21
0830 Common Support Services		65					65
0800 MANAGEMENT AND COMMON SUPPORT SERVICES	18	68					86
GRAND TOTAL	23	81	172	117	344	1599*	2336

* Includes Canadian Forces Weather Service

1983-84 Budget
($000)

5.1 ATMOSPHERIC ENVIRONMENT SERVICE

5.1 4 SALARY BY PROGRAM ACTIVITY AND ORGANIZATION

SUB-ACTIVITY Sub-Sub-Activity	ADMA	AABD	ARD	CCC	CSD	FSD	TOTAL
1100 Public Weather Services						15331	15331
1200 Marine Weather Services						316	316
1300 Aviation Weather Services						4325	4325
1400 Economic Weather Services						1441	1441
1500 Canadian Forces Wx Service						4294	4294
2000 Data						12075	12075
3000 Wx Services Support Sys.		1513	2869		8958	18132	31472
1000 WEATHER SERVICES		1513	2869		8958	55914*	69254
4100 Climate Services				3184	32	1760	4976
4500 Climate Research				627			627
4600 Climate Program Sup Sys.		217		404	1561	360	2542
4000 CLIMATE PROGRAM		217		4215	1593	2120	8145
5100 Ice Recon & Data Acq					1370	85	1455
5200 Ice Anal. & Forecasting					559		559
5300 Ice Climate Services					166		166
5400 Ice Services Support Sys.		261			195		456
5000 ICE SERVICES		261			2290	85	2636
6100 Air Quality Services			382			105	487
6300 Air Quality Research	98		1836			46	1980
6600 Research - Other			1550				1550
6700 Air. Qua & Res. Sup Sys.		185	625		63		873
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH	98	185	4393		63	151	4890
7200 LRTAP	75		56				131
7300 Toxic Chemicals							
7400 Great Lakes Water Quality							
7500 Baseline Studies							
7000 DEPARTMENTAL INTEGRATED PROGRAMS	75		56				131
0810 Management	799	112					911
0830 Common Support Services		1429					1429
0800 MANAGEMENT AND COMMON SUPPORT SERVICES	799	1541					2340
GRAND TOTAL	972	3717	7318	4215	12904	58270*	87396

* Includes Canadian Forces Weather Service

1982-83 Budget
($000)

5.1 ATMOSPHERIC ENVIRONMENT SERVICE

5 1.5 O&M BY PROGRAM ACTIVITY AND ORGANIZATION

SUB-ACTIVITY	Sub-Sub-Activity	ADMA	AABD	ARD	CCC	CSD	FSD	TOTAL
	1100 Public Weather Services						1378	1378
	1200 Marine Weather Services						60	60
	1300 Aviation Weather Services						222	222
	1400 Economic Weather Services						124	124
	1500 Canadian Forces Wx Service						2245	2245
	2000 Data						11123	11123
	3000 Wx Services Support System		2340	1917		12135	9809	26201
1000	WEATHER SERVICES		2340	1917		12135	24961*	41353
	4100 Climate Services				1008	7	977	1992
	4500 Climate Research				42			42
	4600 Climate Program Sup. Sys		447		383	1003	55	1888
4000	CLIMATE PROGRAM		447		1433	1010	1032	3922
	5100 Ice Reconnaissance					11633	9	11642
	5200 Ice Forecasting					250		250
	5300 Ice Climate Services					34		34
	5400 Ice Services Support System		537			356		893
5000	ICE SERVICES		537			12273	9	12819
	6100 Air Quality Services				108		10	118
	6300 Air Quality Research		33		504		5	542
	6600 Research - Other				1377			1377
	6700 Air Qua. & Res Sup Sys.			380	323			703
6000	AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH		33	2364	2312		15	2740
	7200 LRTAP	35			1092.0			1127
	7300 Toxic Chemicals							
	7400 Great Lakes Water Quality							
	7500 Baseline Studies							
7000	DEPARTMENTAL INTEGRATED PROGRAMS	35			1092.0			1127
	0810 Management	248	52					300
	0830 Common Support Services		932					932
0800	MANAGEMENT AND COMMON SUPPORT	248	984					1232
	GRAND TOTAL	316	4688	5321	1433	25418	26017*	63193

* Includes Canadian Forces Weather Service

1983-84 Budget
($000)

5.1 ATMOSPHERIC ENVIRONMENT SERVICE

5.1.6 CAPITAL BY PROGRAM ACTIVITY AND ORGANIZATION

SUB-ACTIVITY Sub-Sub-Activity	ADMA	AABD	ARD	CCC	CSD	FSD	TOTAL
1100 Public Weather Services						30	30
1200 Marine Weather Services							
1300 Aviation Weather Services							
1400 Economic Weather Services							
1500 Canadian Forces Wx Service							
2000 Data					119	2196	2315
3000 Wx Services Support Sys.			2115		2855	4821	9791
1000 WEATHER SERVICES			2115		2974	7047	12136
4100 Climate Services				355	200	30	585
4500 Climate Research				15			15
4600 Climate Program Sup. Sys.				60	108	29	197
4000 CLIMATE PROGRAM				430	308	59	797
5100 Ice Recon. & Data Acq.					141		141
5200 Ice Anal. & Forecasting					45		45
5300 Ice Climate Services							
5400 Ice Services Support Sys.					5		5
5000 ICE SERVICES					191		191
6100 Air Quality Services			102				102
6300 Air Quality Research			469				469
6600 Research - Other			950			87	1037
6700 Air. Qua & Res. Sup. Sys.			69				69
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH			1590			87	1677
7200 LRTAP			422				422
7300 Toxic Chemicals							
7400 Great Lakes Water Quality							
7500 Baseline Studies							
7000 DEPARTMENTAL INTEGRATED PROGRAMS			422				422
0810 Management	2	5					7
0830 Common Support Services		149					149
0800 MANAGEMENT AND COMMON SUPPORT SERVICES	2	154					156
GRAND TOTAL	2	154	4127	430	3473	7193	15379

1983-84 Budget
($000)

5.1 ATMOSPHERIC ENVIRONMENT SERVICE

5.1.7 TOTAL BUDGET BY ORGANIZATION

	PY	SALARY	O&M	CAPITAL	GRANTS & CONTRIBUTIONS	TOTAL
OFFICE OF ASSISTANT DEPUTY MINISTER	23	972	316	2	nil	1290
FINANCE AND ADMINISTRATION BRANCH	81	3717	4688	154	1095	9654
ATMOSPHERIC RESEARCH DIRECTORATE	172	7318	5321	4127	nil	16766
CANADIAN CLIMATE CENTRE	117	4215	1433	430	nil	6078
CENTRAL SERVICES DIRECTORATE	344	12904	25418	3473	nil	41795
FIELD SERVICES DIRECTORATE	1493	53976	23772	7193	nil	84941
CANADIAN FORCES WEATHER SERVICE	106	4294	2245	nil	nil	6539
AES TOTAL	2336	87396	63193	15379	1095	167063

5 1 8

ATMOSPHERIC ENVIRONMENT SERVICE

1983-84 Budget

RECONCILIATION TO MAIN ESTIMATES

AND REFERENCE LEVEL

($000)

1) Allocated within AES (total in Program Digest)	$167,063	
Plus		
- Capital Construction	$ 2,850	
- MSSD X Budget	$ 2,532	
- Departmental/Cabinet O&M Reduction	$ 234	
- Employee Benefit Plans allocation at Program Level	$10,906	
2) Main Estimates (Blue Book)		$183,585
Less		
- Vote Netted Revenue		(24,890)
3) 1983-84 Reference Level		$158,695

ATMOSPHERIC ENVIRONMENT SERVICE

5 1.9 PERSON-YEARS BY ORGANIZATION AND BY LOCATION

(TOTAL 2336)

	Location	Region or Branch	Directorate
ADMA			23
Downsview, Ont.	13		
Hull, P Q	10		
FINANCE AND ADMINISTRATION		81	81
Downsview, Ont	81		
ATMOSPHERIC RESEARCH DIRECTORATE			172
Directors General's Office		8	
Downsview, Ont.	8		
Air Quality and Inter-Environmental Research Branch		54	
Downsview, Ont	63		
Victoria, B.C.	1		
Atmospheric Processes Research Branch		32	
Downsview, Ont.	32		
Meteorological Services Research Branch		68	
Dorval, P Q.	21		
Downsview, Ont.	47		
CANADIAN CLIMATE CENTRE			117
Directors General's Office		28	
Downsview, Ont	28		
Climatological Applications Branch		89	
Downsview, Ont	89		
CENTRAL SERVICES DIRECTORATE			344
Directors General's Office		5	
Downsview, Ont.	5		
Computing and Communications Services Branch		111	
Dorval, P Q	34		
Downsview, Ont.	77		
Data Acquisition Services Branch		104	
Downsview, Ont.	104		
Ice Branch		53	
Downsview, Ont.	33		
Ottawa, Ont	20		
Training Branch		71	
Winnipeg, Man	2		
Cornwall, Ont.	32		
Downsview, Ont	31		
Montreal, P.Q	6		

	Location	Region or Branch	Directorate
FIELD SERVICES DIRECTORATE			1493
Directors General's Office		37	
Downsview, Ont.	37		
Canadian Meteorological Centre		77	
Dorval, P Q.	77		
Field Meteorological Systems Branch		39	
Downsview, Ont.	39		
Atlantic Region		232	
Bedford, N.S. - Regional Office	37		
Bedford, N S - Maritime Weather Centre	56		
Charlo, N B	5		
Charlottetown, P E I	2		
Churchill Falls, Labrador	4		
Fredericton, N.B.	6		
Gander, Nfld.	48		
Goose Bay, Labrador	11		
Halifax Airport, N S	11		
Moncton, N.B.	11		
Sable Island, N S.	6		
Saint John, N.B.	5		
Shelburne, N S	5		
St. John's, Nfld.	14		
Stephenville, Nfld	3		
St Leonard, N B.	0		
Sydney, N S	6		
Truro, N S	2		
Quebec Region		203	
Baie Comeau, P Q.	5		
Cape Dyer, N W T.	3		
Chibougamau, P Q.	5		
Clyde River, N W T	5		
Dorval, P Q.	22		
Frobisher Bay, N W T	6		
Inoucdjouac, P.Q.	7		
Kuujjuak, P Q	5		
Maniwaki, P Q.	5		
Mirabel, P.Q.	10		
Montreal (Ville St. Laurent)-Regional HQ	39		
- Weather Centre	62		
Nitchequon, P Q	2		
Quebec, P Q	6		
Sept-Iles, P Q.	4		
Sherbrooke, P.Q	1		
St. Hubert, P Q	5		
Ste. Agathe des Monts, P.Q.	5		
Trois Rivières, P.Q	1		
Val d'Or, P Q.	5		

	Location	Region or Branch	Directorate
Ontario Region		197	
Atikokan, Ont.	4		
Dryden, Ont.	0		
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.	6		
Peterborough, Ont.	2		
Pickle Lake, Ont.	1		
Sarnia, Ont	2		
Sault Ste. Marie, Ont.	7		
Simcoe, Ont.	1		
St. Catherines, Ont.	1		
Sudbury, Ont.	3		
Thunder Bay, Ont.	9		
Toronto - Regional Headquarters	31		
- Ontario Weather Centre	44		
- Toronto Weather Office	30		
- Ontario Climate Centre	6		
Toronto Island	3		
Trout Lake	7		
Waterloo/Wellington, Ont.	2		
Windsor	7		
Central Region		245	
Alert, N.W T.	3		
Baker Lake, N.W.T.	2		
Bissett, Man.	1		
Brandon, Man.	1		
Broadview, Sask.	5		
Churchill, Man.	8		
Coral Harbour, N.W T	2		
Cree Lake, Sask.	4		
Dauphin, Man.	1		
Estevan, Sask.	4		
Elbow, Sask.	2		
Eureka, N.W T.	8		
Gillam, Man	1		
Gimli, Man	2		
Hall Beach, N.W.T	5		
Hudson Bay, Sask.	2		
Island Lake, Man	2		
Kindersley, Sask	1		
Mould Bay, N W.T	8		
Prince Albert, Sask	3		
Regina, Sask	11		
Resolute, N.W.T	7		

Location	Region or Branch	Directorate
Saskatoon, Sask.	8	
The Pas, Man.	7	
Thompson, Man.	1	
Winnipeg, Man - International Airport (Obs)	5	
- International Airport (Presentation)	8	
- Prairie Weather Centre	61	
- Regional Headquarters	70	
Wynyard, Sask.	2	
Yorkton, Sask	0	
Western Region	266	
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 - Regional Director	15	
- Data Acquisition	29	
- Forecast Operations	85	
- Scientific Services	9	
- Weather Services	17	
Fort McMurray, Alta.	3	
Fort Reliance, N W T	0	
Fort Smith, N W T	3	
Grande Prairie, Alta.	4	
Hay River, N.W.T	1	
Inuvik, N W T	8	
Jasper, Alta	3	
Lethbridge, Alta	5	
Norman Wells, N W.T	3	
Pincher Creek, Alta.	2	
Rocky Mountain House, Alta.	3	
Sachs Harbour, N W T.	6	
Slave Lake, Alta.	4	
Stony Plain, Alta	4	
Whitehorse, Yukon	21	
Yellowknife, N W T.	6	
Pacific Region	197	
Cape St James, B C	3	
Castlegar, B C.	3	
Dease Lake, B C.	2	
Fort St. John	4	
Fort Nelson	6	
Hope, B.C.	3	
Kamloops, B.C	4	
Kelowna, B C.	6	
Lytton, B C	3	
Penticton, B.C	2	

	Location	Region or Branch	Directorate
Port Alberni, B C.	2		
Port Hardy, B.C	6		
Prince George, B C	10		
Revelstoke, B.C	3		
Terrace, B.C	2		
Vancouver, B.C. - Regional Headquarters	51		
- Pacific Weather Centre	52		
- Airport	6		
- Harbour	3		
- Weather Office	13		
Vernon, B C	3		
Victoria, B.C.	10		
CANADIAN FORCES WEATHER SERVICE		106	
AES TOTAL	2,336	2,336	2,336

5.2 OFFICE OF THE ASSISTANT DEPUTY MINISTER

5.2.1 FUNCTIONS OF THE OFFICE OF THE ADM (23 PY, $1290K)

The Assistant Deputy Minister (ADM) provides executive direction to, and management of, the Atmospheric Environment Service, participates in the corporate executive management of Environment Canada, and is the permanent representative for Canada on the executive governing body of the World Meteorological Organization of the United Nations.

The Director General of the Policy, Planning and Assessment Directorate reporting to the ADM is located in Hull along with some of his staff, the remainder being in Downsview This Directorate has a variety of responsibilities covering long-term issues in policy, planning, liaison, co-ordination, program development, program integration with other elements of the Department and program evaluation. Because of its overview of AES activities, it also coordinates the preparation of a variety of documents for senior management consideration, including the Minister and Deputy Minister of the Department, Central Agencies, etc. Principal staff reporting to the Director General include Chief of Program Development and Evaluation Branch, Senior Policy Advisor, Senior Economist, Liaison Meteorologist and Scientific Programs Coordinator

The International Affairs Coordinator reports to the ADM. He assists the ADM and other managers with official business with other countries and organizations.

The Head, LRTAP Liaison Office reports directly to the ADM and is responsible for the provision of information and advisory services, and for the scientific direction and coordination of Canada-USA, federal and federal/provincial LRTAP research programs.

5 2.2 OTHER FUNCTIONAL UNITS SERVING THE ADM

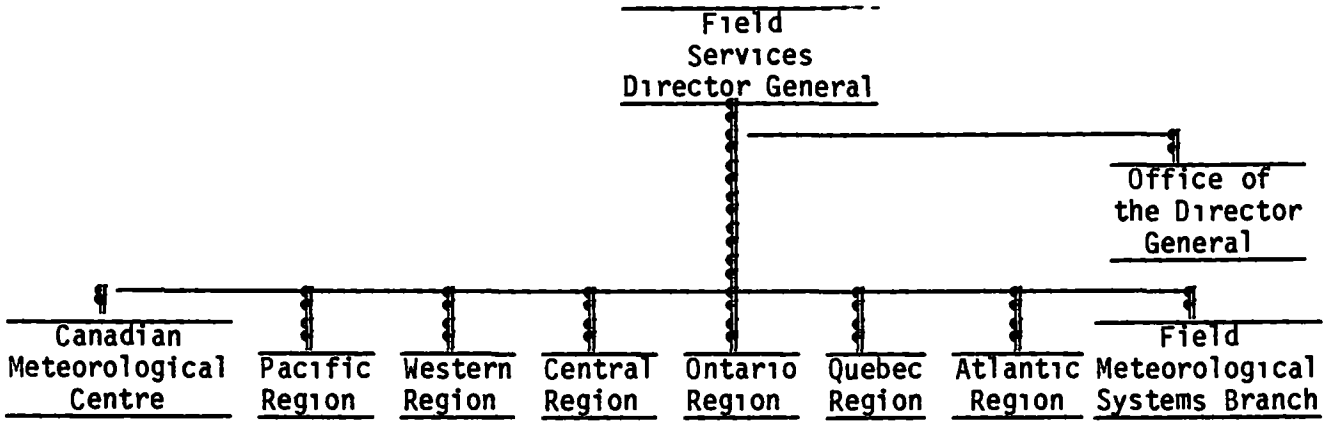
Two units, Information Directorate in Downsview and the Ontario Regional Personnel Office, are not part of AES. The former, in cooperation with AES managers, develops and implements AES' public information and media relations programs and the latter serves as the ADM's special advisor on personnel matters across the Service.

5.2.3 1983-84 Budget by Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)
($000)

OFFICE OF THE ASSISTANT DEPUTY MINISTER

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
1000 WEATHER SERVICES					nil
4000 CLIMATE PROGRAM					nil
5000 ICE SERVICES					nil
6100 Air Quality Services					
6300 Air Quality Research	3	98.3	33 4		131.7
6600 Research - Other					
6700 Air Qual. & Res. Sup Sys.					
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH	3	98 3	33.4	-	131.7
7200 LRTAP	2	74.9	35 0		109 9
7300 Toxic Chemicals					
7400 Great Lakes Water Quality					
7500 Baseline Studies					
7000 DEPARTMENTAL INTEGRATED PROGRAMS	2	74 9	35 0		109.9
0810 Management	18	798 8	247 5	2.0	1048.3
0830 Common Support Services					
0800 MANAGEMENT AND COMMON SUPPORT SERVICES	18	798.8	247 5	2.0	1048 3
GRAND TOTAL	23	972 0	315 9	2.0	1289.9

5.3 FIELD SERVICES DIRECTORATE



5.3 1 FUNCTIONS FIELD SERVICES DIRECTORATE (1493 PY, $84,942K)

This Directorate is the largest of the Service. It employs 66% of the total staff It is responsible for all Regional activities, including data acquisition, the forecast production program and the dissemination of weather information to the general public. The Director General is supported in Downsview by the Office of the Director General and the Field Meteorological Systems Branch. Others reporting to the Director General are the Directors of the Canadian Meteorological Centre in Montreal and the six Regions of the AES, ie. the Pacific, Western, Central, Ontario, Quebec and Atlantic Regions

Office of the Director General (37 PY, $3,485K)

This unit is accountable for the co-ordination, allocation and control of financial resources in the Directorate, for the co-ordination of recruitment, training and development, the allocation and the posting of all human resources in the Directorate and, in areas concerning meteorologists and meteorological technicians, for the co-ordination of recruitment, training and development for the AES as a whole, for the co-ordination and evaluation of Directorate policies, plans and programs, and for the provision of other general administrative support services for the Directorate. This unit also carries several project and meteorologist training pool PY's (25 PY, $2,522.0). These are included in the above resources.

Field Meteorological Systems Branch (39 PY, $5,819K)

This Branch is made up of three Divisions

The Forecasting, Computers and Communications Systems Division exercises functional control over the forecasting, computer and communications activities of the six Regions and CMC. The Division is responsible for the development of relevant FSD policy, standards and goals, the identification of requirements, and the successful implementation of new techniques and procedures. It monitors the forecasting production program and assesses general forecast skill and accuracy by means of a verification program

Observational Services Division interfaces with the six regions, CMC, Central Services Directorate and Administration Branch at Downsview on the planning and management of the operational observational network. It is responsible for policy development, network implementation, analysis of network performance, adherence to national standards and ensuring that data requirements to support forecasting and weather services are met. It also manages major capital funds associated with observational systems and associated installation, etc.

Weather Services Division develops national plans and policies for services which AES provides to the public, marine, aviation, agriculture and wide variety of special users. The Division is the national focal point for services provided to the media, and other AES and DOE programs such as Climate Services, LRTAP, Toxic Chemicals, and the North. It provides advice and information on international matters in Marine and Aviation meteorology to the World Meteorological Organization and ICAO. It also sets standards for weather offices in the regions and nationally coordinates FSD portions of the climate and air quality services programs

Canadian Meteorological Centre (79 PY, $3,286K)

The Canadian Meteorological Centre (CMC) in Montreal employs advanced computer techniques and sophisticated mathematical models of the atmosphere to generate analyses, prognoses and weather element forecasts on a synoptic scale for periods of up to 5 days.

The Operations Division is responsible for data assimilation into operational runs, for the preparation of subjective products, for the implementation and maintenance of the computerized production system and for the monitoring and evaluation of (automated and manual) output

The Development Division is responsible for improving the quality and range of forecast products and for providing efficient production systems.

Pacific, Western, Central, Ontario, Quebec and Atlantic Regions (1,340 PY, $72,352K)

Six Regions representing AES provide services to all Canadians The organizational structure and specific responsibilities of the Regions are similar except for geographical coverage (see page 75) and different regional needs

Each Region has four Divisions

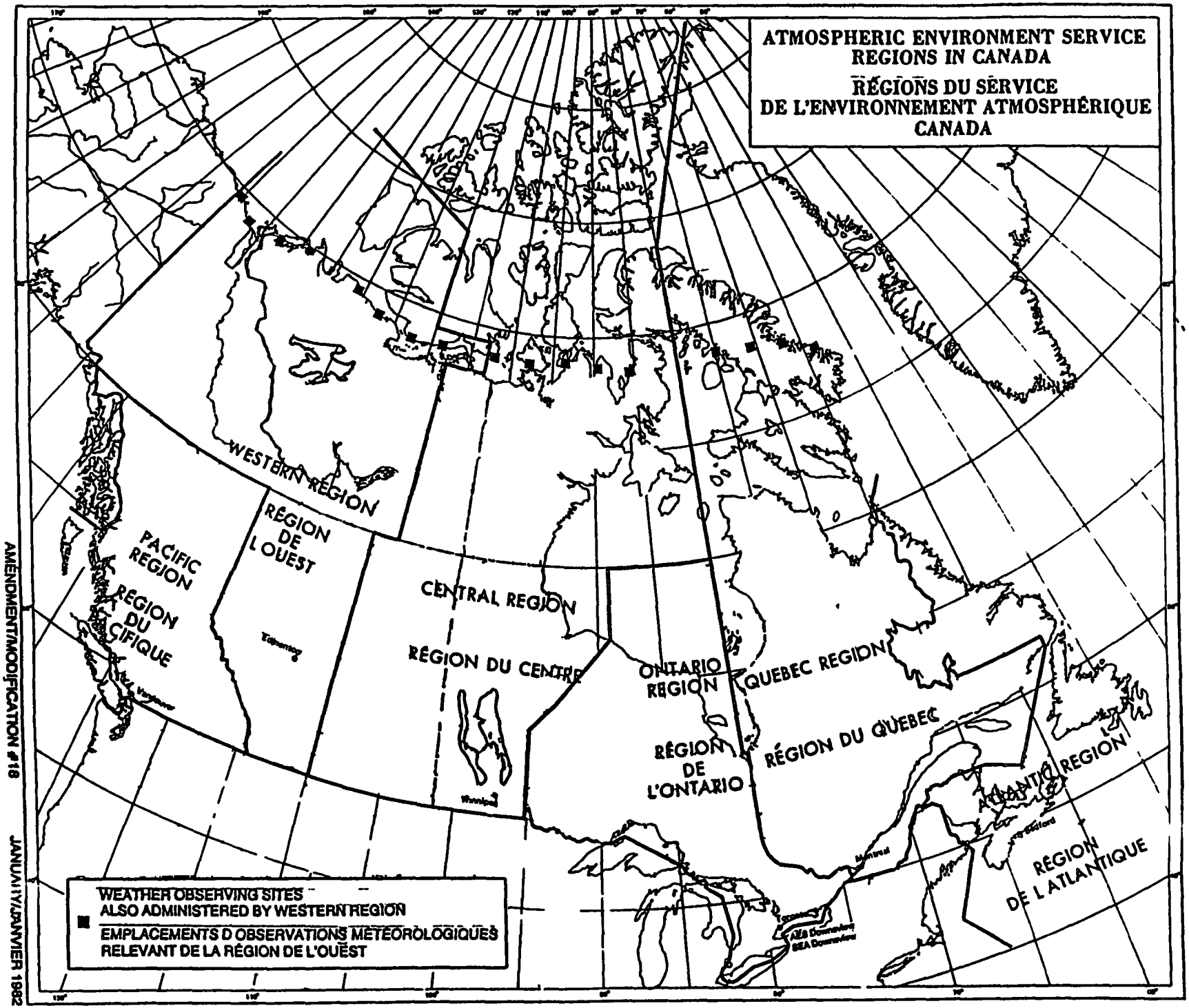
Data Acquisition Division is responsible for taking observations in real-time of all standard weather elements and of special weather conditions as inputs to the AES forecast operations system Other data such as air quality measurement, radiation measurement, seismic measurement are also taken by some stations Data are taken at surface observation stations, upper-air observation stations, automatic stations, radar/SCEPTRE sites, volunteer climate stations and ships.

This Division is responsible for administering contract stations It is also responsible for ensuring that the meteorological instruments are properly maintained and calibrated, and that the volunteer observers and observers working at contract stations are adequately trained

Regional Weather Centres and Weather Forecast Operations Division are responsible for producing regional weather forecasts and weather warnings based on all incoming weather information including the weather maps produced by CMC and the National Meteorological Centre of the United States, Radar and Satellite Imagery, Synoptic Weather reports, etc. The forecasts include public weather forecasts, aviation weather forecasts, marine weather forecasts and various specialized forecasts adapted to regional needs, for example, in the fields of agrometeorology, hydrometeorology, forest meteorology Development work to produce suitable products for the media is also carried out

Weather Services Division is responsible for ensuring that the regional needs for weather services are met. Weather offices of this Division are responsible for disseminating weather information mainly to the general public and aviation community Many other specialized users obtain weather and climate information from these offices. The majority of weather offices are also involved in taking weather observations This Division is also responsible for operating Weatheradio

Scientific Services Division is responsible for the quality control of climatological data in the region and provision of climatological information services to users including the provincial government, private sector, and federal and provincial agencies. This Division is involved in different types of studies for regional interests such as agrometeorology, forestry, air quality related activities, energy applications, hydrometeorology and climate impacts. The Division is the focal point for AES regional participation in EARP and the federal/ provincial environment assessment.



AMENDMENT/MODIFICATION #18 JANUARY/JANVIER 1982

1983-84 Budget by Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)
($000)

5 3.2 FIELD SERVICES DIRECTORATE

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
1100 Public Weather Services	418	15331 2	1378.5	29.8		16739 5
1200 Marine Weather Services	8	316.2	59 4			375.6
1300 Aviation Weather Services	119	4325 3	222.3			4547.6
1400 Economic Weather Services	39	1441.2	124 1			1565.3
1500 Canadian Forces Wx Service						
2000 Data	338	12074 7	11122.8	2196 5		25394.0
3000 Wx Services Support Systems	507	18131 4	9808.9	4821.2		32761.5
1000 WEATHER SERVICES	1429	51620.0	22716 0	7047 5		81383 5
4100 Climate Services	51	1759.9	977 3	29 5		2766 7
4500 Climate Research						
4600 Climate Program Sup. Sys.	10	360 0	54 8	29 5		444 3
4000 CLIMATE PROGRAM	61	2119 9	1032 1	59 0		3211.0
5100 Ice Recon & Data Acq	0	85 4	8 5			93.9
5200 Ice Anal. & Forecasting						
5300 Ice Climate Services						
5400 Ice Services Support. Sys						
5000 ICE SERVICES	0	85 4	8 5			93 9
6100 Air Quality Services	2	104 6	10 2			114.8
6300 Air Quality Research	1	46 4	5.2			51 6
6600 Research - Other				87 0		87.0
6700 Air Qual. & Res Sup. Sys.						
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH	3	151.0	15.4	87.0		253.4
7000 DEPARTMENTAL INTEGRATED PROGRAMS						nil
0800 MANAGEMENT AND COMMON SUPPORT SERVICES						nil
GRAND TOTAL	1493 0	53976.3	23772.0	7193.5		84941 8

1983-84 Budget by Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)
($000)

5 3 3 OFFICE OF DIRECTOR GENERAL

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
1100 Public Weather Services						
1200 Marine Weather Services						
1300 Aviation Weather Services	1	55.8	5.5			61.3
1400 Economic Weather Services						
1500 Canadian Forces Wx Service						
2000 Data	4	224 9	800 0	965 0		1989 9
3000 Wx Services Support Systems	32	870.8	546 1	17 0		1433.9
1000 WEATHER SERVICES	37	1151 5	1351.6	982.0		3485.1
GRAND TOTAL	37	1151.5	1351 6	982.0		3485 1

5.3.4 FIELD METEOROLOGICAL SYSTEMS BRANCH

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
1100 Public Weather Services						
1200 Marine Weather Services						
1300 Aviation Weather Services						
1400 Economic Weather Services						
1500 Canadian Forces Wx Service						
2000 Data			77 0	1000.0		1077.0
3000 Wx Services Support Systems	39	1579.5	342 8	2732 5		4654 8
1000 WEATHER SERVICES	39	1579 5	419 8	3732.5		4731 8
6100 Air Quality Services						
6300 Air Quality Research						
6600 Research - Other				87 0		87 0
6700 Air Qual & Res Sup Sys						
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH				87.0		87.0
GRAND TOTAL	39	1579.5	419.8	3819.5		5818 8

1983-84 Budget by Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)
($000)

5 3.5 CANADIAN METEOROLOGICAL CENTRE

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
1100 Public Weather Services						
1200 Marine Weather Services						
1300 Aviation Weather Services						
1400 Economic Weather Services						
1500 Canadian Forces Wx Service						
2000 Data						
3000 Wx Services Support Systems	77	3040 1	236.2	10.0		3286 3
1000 WEATHER SERVICES	77	3040.1	236 2	10.0		3286.3
GRAND TOTAL	77	3040 1	236.2	10.0		3286.3

5.3 6 PACIFIC REGION

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
1100 Public Weather Services	63	2501 1	98 0			2599.1
1200 Marine Weather Services						
1300 Aviation Weather Services	16	538.0	21.3			559.3
1400 Economic Weather Services	4	149 2	23 9			173.1
1500 Canadian Forces Wx Service						
2000 Data	50	1721 1	1292 4	49 5		3063.0
3000 Wx. Services Support Sys.	52	1831 6	1287 6	180 0		3299 2
1000 WEATHER SERVICES	185	6741.0	2723 2	229 5		9693.7
4100 Climate Services	11	385 5	118 8	18.5		522 8
4500 Climate Research						
4600 Climate Program Sup. Sys	1	54 7	3 5			58.2
4000 CLIMATE PROGRAM	12	440 2	122 3	18 5		581 0
6100 Air Quality Services						
6300 Air Quality Research			2 0			2 0
6600 Research - Other						
6700 Air Qua. & Res. Sup Sys						
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH			2 0			2.0
GRAND TOTAL	197	7181.2	2847 5	248 0		10276 7

1983-84 Budget by Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)
($000)

WESTERN REGION

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
1100 Public Weather Services	72	2634.0	331.3			2965.3
1200 Marine Weather Services	1	45.1				45.1
1300 Aviation Weather Services	34	1264.7	94 1			1358.8
1400 Economic Weather Services	5	281.0	51.3			332 3
1500 Canadian Forces Wx Service	-	-	-			-
2000 Data	79	2818.9	1447.3			4266.2
3000 Wx Services Support Sys	65	2351.3	1792.8	245.0		4389.1
1000 WEATHER SERVICES	256	9395.0	3716 8	245.0		13356.8
4100 Climate Services	7	235.6	110 1			345.7
4500 Climate Research	-	-	-			-
4600 Climate Program Sup. Sys.	2	71 3	13.7			85.0
4000 CLIMATE PROGRAM	9	306 9	123 8			430.7
5100 Ice Recon. & Data Acq	0	85.4	8 5			93.9
5200 Ice Anal. & Forecasting						
5300 Ice Climate Services						
5400 Ice Services Support Sys.						
5000 ICE SERVICES	0	85.4	8.5			93 9
6100 Air Quality Services						
6300 Air Quality Research	1	46.4	3.2			49.6
6600 Research - Other						
6700 Air Qua & Res. Sup. Sys.						
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH	1	46.4	3.2			49 6
GRAND TOTAL	266	9833 7	3852 3	245 0		13931 0

1983-84 Budget by Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)
($000)

CENTRAL REGION

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
1100 Public Weather Services	58	2158 2	345.8	-	-	2504 0
1200 Marine Weather Services						
1300 Aviation Weather Services	15	530 6				530.6
1400 Economic Weather Services	4	149 9				149 9
1500 Canadian Forces Wx Service						-
2000 Data	86	3363.7	3838 5	-	-	7202 2
3000 Wx Services Support Sys.	70	2350.6	1907.8	897 0		5155.4
1000 WEATHER SERVICES	233	8553.0	6092 1	897 0	-	15542.1
4100 Climate Services	10	332 0	84.8	-		416 8
4500 Climate Research	-	-				
4600 Climate Program Sup Sys.	2	67 9	10 5	10 0		88.4
4000 CLIMATE PROGRAM	12	399 9	95 3	10 0		505.2
GRAND TOTAL	245	8952 9	6187 4	907 0	-	16047 3

ONTARIO REGION

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
1100 Public Weather Services	68	2228 1	187.5			2415.6
1200 Marine Weather Services	4	146.6	2.7			149 3
1300 Aviation Weather Services	16	571.9	23 5			595 4
1400 Economic Weather Services	17	555 3	30 9			586 2
1500 Canadian Forces Wx Service						
2000 Data	30	905 9	840 3	59 0		1805 2
3000 Wx Services Support Sys	50	1850 8	960 3	257 0		3068 1
1000 WEATHER SERVICES	185	6258 6	2045 2	316 0		8619 8
4100 Climate Services	9	284 2	82.5	11 0		377 7
4500 Climate Research	-	-	-	-		-
4600 Climate Program Sup Sys	3	93 9	19 2			113 1
4000 CLIMATE PROGRAM	12	378 1	101 7	11.0		490 8
GRAND TOTAL	197	6635 7	2146 9	327 0	-	9110 6

1983-84 Budget by Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)
($000)

5 3.10

REGION DU QUEBEC

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
1100 Public Weather Services	59	2285.8	194 4	13.0		2493.2
1200 Marine Weather Services						
1300 Aviation Weather Services	21	776.8	52.6			829.4
1400 Economic Weather Services	8	276.1	17.0			293.1
1500 Canadian Forces Wx Service						
2000 Data	57	1932.8	1607.6	50.4		3590.8
3000 Wx Services Support Systems	53	2045.3	1459.3	270 4		3775.0
1000 WEATHER SERVICES	198	7316.8	3330.9	333.8		10981.5
4100 Climate Services	5	194.4	511.3			705.7
4500 Climate Research						
4600 Climate Program Sup. Sys.			.9	1.2		2.1
4000 CLIMATE PROGRAM	5	194.4	512.2	1.2		707.8
GRAND TOTAL	203	7511.2	3843.1	335.0		11689.3

5.3.11

ATLANTIC REGION

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
1100 Public Weather Services	98	3524.0	221.5	16.8		3762.3
1200 Marine Weather Services	3	124 5	56.7			181.2
1300 Aviation Weather Services	16	587.5	25.3			612.8
1400 Economic Weather Services	1	29.7	1 0			30.7
1500 Canadian Forces Wx Service						
2000 Data	32	1107.4	1219.7	72.6		2399.7
3000 Wx Services Support Systems	69	2211 4	1276.0	212.3		3699.7
1000 WEATHER SERVICES	219	7584.5	2800 2	301.7		10686 4
4100 Climate Services	9	328 2	69 8			398.0
4500 Climate Research						
4600 Climate Program Sup Sys	2	72 2	7 0	18 3		97 5
4000 CLIMATE PROGRAM	11	400 4	76 8	18 3		495 5
6100 Air Quality Services	2	104.6	10.2			114 8
6300 Air Quality Research						
6600 Research - Other						
6700 Air Qua. & Res Sup. Sys.						
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH	2	104 6	10 2			114.8
GRAND TOTAL	232	8089 5	2887.2	320 0		11296 7

1983-84 Budget by Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)
($000)

5 3 12 CANADIAN FORCES WEATHER SERVICE

SUB-ACTIVITY Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
1100 Public Weather Services					
1200 Marine Weather Services					
1300 Aviation Weather Services					
1400 Economic Weather Services					
1500 Canadian Forces Wx Service	106	4293 9	2245.0		6538.9
2000 Data					
3000 Wx Services Support Systems					
1000 WEATHER SERVICES	106	4293.9	2245.0		6538.9
4000 CLIMATE PROGRAM					
5000 ICE SERVICES					
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH					
7000 DEPARTMENTAL INTEGRATED PROGRAMS					
0800 MANAGEMENT AND COMMON SUPPORT					
GRAND TOTAL	106	4293.9	2245.0		6538.9

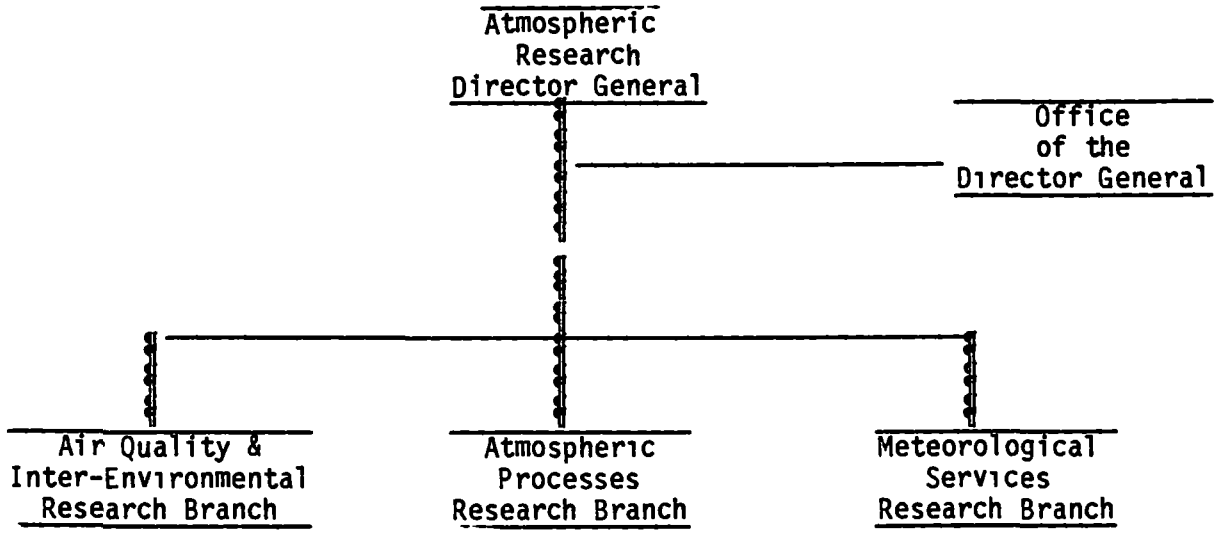
1983-84 Budget
($000)

FIELD SERVICES DIRECTORATE

5 3 13 BY ORGANIZATIONAL UNIT

	PY	SALARY	O&M	CAPITAL	TOTAL
OFFICE OF DG	37	1151 5	1351.6	982.0	3485.1
FIELD METEOROLOGICAL SYSTEMS BRANCH	39	1579.5	419 8	3819.5	5818.9
CANADIAN METEOROLOGICAL CENTRE	77	3040.1	236 2	10 0	3286.3
PACIFIC REGION	197	7181 2	2847.5	248.0	10276.7
WESTERN REGION	266	9833.7	3852 3	245 0	13931 0
CENTRAL REGION	245	8952.9	6187 4	907.0	16047 3
ONTARIO REGION	197	6635.7	2146 9	327.0	9110.6
QUEBEC REGION	203	7511.2	3843.1	335 0	11689.3
ATLANTIC REGION	232	8089.5	2887 2	320.0	11296.7
FSD TOTAL	1493	53976.3	23772 0	7193 5	84941 8
CANADIAN FORCES WEATHER SERVICE	106	4293 9	2245 0		6538.9

5 4 ATMOSPHERIC RESEARCH DIRECTORATE



5 4 1 FUNCTIONS ATMOSPHERIC RESEARCH DIRECTORATE (172 PY, $16,766K)

Office of the Director General (8 PY, $593K)

Provides executive and scientific direction and management of the Atmospheric Research Directorate, provides scientific leadership and long-term direction to Service scientific programs, and ensures representation of the science and the Service nationally and internationally on scientific research matters.

Air Quality and Inter-Environmental Research Branch (64 PY, $5,521K)

This Branch carries out research on the transport, transformation, and deposition of air pollutants and on the related chemistry and physics of the lower atmosphere It also provides air quality services such as review of environmental impact assessment, support to regional environmental emergency response, and training and consultation for regional air quality service staff A major part of the research effort is in support of the departmental integrated program for Long-Range Transport of Air Pollutants (LRTAP)

Atmospheric Processes Research Branch (32 PY, $4,972K)

The two Divisions that constitute this Branch, Cloud Physics and Experimental Studies, have emphasized field programs and measurements which are designed to help better understand atmospheric processes in the troposphere and stratosphere

The Cloud Physics Division remains current in all aspects of cloud and precipitation physics, weather radar (includes severe weather detection) and weather modification (includes precipitation enhancement or suppression, modification of hailstorms, etc.). Two major new initiatives involve using instrumented aircraft to study cloud and precipitation scavenging in relation to the acid rain problem and study of weather radar and satellite data for development of improved short-term (less than 12 hours) forecasts.

The Experimental Studies Division is concerned with the gathering and interpretation of data on radiation and composition of the stratosphere (especially ozone). Such information is paramount for discussions of important questions such as the effects of fluorocarbons on the ozone layer (and hence the amount of energy in the ultraviolet portion of the solar spectrum reaching the earth which has serious effects on plant and animal life). Even small changes in stratospheric composition can also have very significant effects, in the long-term, related to changing the Climate.

Meteorological Services Research Branch (68 PY, $5,680K)

This Branch carries out research and development in support of the prediction services of the AES for weather, sea-state, ice and other environment related elements.

The Aerospace Meteorology Division develops systems to receive and exploit data from satellites. It includes an operational group, the Satellite Data Lab which provides satellite data on a real-time basis to all components of the AES.

Division de la Recherche en Prëvision Numërique located in Dorval develops numerical weather forecasting models in support of the forecasting operations at the Canadian Meteorological Centre.

Forecast Research Division develops statistical/dynamical models and procedures for forecasting various weather elements and environmental parameters such as sea-state, ice and ice-related variables. Models are also developed to enable AES response to marine environmental emergencies.

System Design Division supports the activities of the Forecast Research Division (FRD) by creating and maintaining current and historical data bases, and implementing and making FRD's products operational

1983-84 Budget by Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)
($000)

5 4 2 ATMOSPHERIC RESEARCH DIRECTORATE

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
1100 Public Weather Services						
1200 Marine Weather Services						
1300 Aviation Weather Services						
1400 Economic Weather Services						
1500 Canadian Forces Wx Service						
2000 Data						
3000 Wx Services Support Sys.	67	2869.2	1917.4	2114.6		6901.2
1000 WEATHER SERVICES	67	2869.2	1917.4	2114.6		6901.2
4000 CLIMATE PROGRAM						nil
5000 ICE SERVICES						
6100 Air Quality Services	10	381.9	107.8	102 0		591.7
6300 Air Quality Research	44	1836.1	503.4	468.9		2808.4
6600 Research - Other	36	1550.0	1377.3	950.0		3877.3
6700 Air Qua & Res Sup. Sys.	14	624 9	323 1	69 0		1017.0
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH	104	4392.9	2311 6	1589 9		8294.4
7200 LRTAP	1	56 1	1092.0	422.0		1570.1
7300 Toxic Chemicals						
7400 Great Lakes Water Quality						
7500 Baseline Studies						
7000 DEPARTMENTAL INTEGRATED PROGRAMS	1	56.1	1092 0	422 0		1570 1
0800 MANAGEMENT AND COMMON SUPPORT						
GRAND TOTAL	172	7318 2	5321 0	4126 5		16765.7

1983-84 Budget by Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)
($000)

5 4.3 OFFICE OF THE DIRECTOR GENERAL (ARD)

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
6100 Air Quality Services					
6300 Air Quality Research					
6600 Research - Other					
6700 Air Qua. & Res. Sup Sys	8	373 5	218.5	1.0	593 0
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH	8	373.5	218.5	1.0	593 0
GRAND TOTAL	8	373.5	218 5	1.0	593.0

1983-84 Budget by Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)
($000)

5.4.4 AIR QUALITY AND INTER-ENVIRONMENTAL RESEARCH BRANCH

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
6100 Air Quality Services	10	381.9	107.8	102.0	591.7
6300 Air Quality Research	42	1775.7	498.5	467.5	2741.7
6600 Research - Other	7	311.7	48.6	27.0	387.3
6700 Air Qua. & Res Sup Sys.	4	164 4	60.3	5 0	229 7
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH	63	2633.7	715.2	601.5	3950.4
7200 LRTAP	1	56 1	1092.0	422.0	1570.1
7300 Toxic Chemicals					
7400 Great Lakes Water Quality					
7500 Baseline Studies					
7000 DEPARTMENTAL INTEGRATED PROGRAMS	1	56 1	1092.0	422 0	1570 1
GRAND TOTAL	64	2689 8	1807.2	1023 5	5520 5

1983-84 Budget by Sub-Activity (SA 1) and Sub-Sub-Activity (SA 2)
($000)

5.4 5 ATMOSPHERIC PROCESSES RESEARCH BRANCH

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
1010 Public Weather Services					
1200 Marine Weather Services					
1300 Aviation Weather Services					
1400 Economic Weather Services					
1500 Canadian Forces Wx Service					
2000 Data					
3000 Wx Services Support Sys.	4	193.0	276.2	1083.0	1552.2
1000 WEATHER SERVICES	4	193.0	276.2	1083.0	1552.2
6100 Air Quality Services					
6300 Air Quality Research					
6600 Research - Other	26	1102.0	1250.9	873 0	3225.9
6700 Air Qua & Res. Sup. Sys.	2	87.0	44.3	63.0	194 3
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH	28	1189.0	1295.2	936.0	3420 2
GRAND TOTAL	32	1382 0	1571.4	2019 0	4972.4

5 4.6 METEOROLOGICAL SERVICES RESEARCH BRANCH

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
1100 Public Weather Services					
1200 Marine Weather Services					
1300 Aviation Weather Services					
1400 Economic Weather Services					
1500 Canadian Forces Wx Service					
2000 Data					
3300 Wx Services Support Sys	63	2676 2	1641 2	1031 6	5349.0
1000 WEATHER SERVICES	63	2676 2	1641 2	1031 6	5349 0
6100 Air Quality Services					
6300 Air Quality Research	2	60 4	4 9	1.4	66.7
6600 Research - Other	3	136 3	77 8	50.0	264 1
6700 Air Qua & Res Sup. Sys.					
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH	5	196 7	82 7	51 4	330 8
GRAND TOTAL	68	2872 9	1723.9	1083.0	5679 8

1983-84 Budget
($000)

ATMOSPHERIC RESEARCH DIRECTORATE

5.4 7 BY ORGANIZATIONAL UNIT

	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
OFFICE OF DG	8	373 5	218.5	1 0		593.0
AIR QUALITY & INTER-ENVIRONMENTAL RESEARCH BRANCH	64	2689 8	1807.2	1023.5		5520 5
ATMOSPHERIC PROCESSES RESEARCH BRANCH	32	1382.0	1571.4	2019 0		4972.4
METEOROLOGICAL SERVICES RESEARCH BRANCH	68	2872.9	1723.9	1083 0		5679.8
ARD TOTAL	172	7318.2	5321.0	4126 5		16765 7

5 5 CANADIAN CLIMATE CENTRE

5.5.1 FUNCTIONS THE CANADIAN CLIMATE CENTRE (117 PY, $6,078K)

The Canadian Climate Centre was organized in 1978 to provide a focus for climate activity in Canada. The Centre consists of a Climatological Applications Branch with four Divisions, a Research Component with a chief scientist and two Divisions and the Canadian Climate Program Office.

Office of the Director General, Climate Program Office, and Research Component (28PY, $1,641K)

The Office of the Director General provides the executive scientific direction and management of the Canadian Climate Centre.

The Climate Program Office is a focal point for Canadian Climate Program activities, provides secretariat support for the Climate Planning Board of Canada and other committees associated with the Canadian Climate Program, and promotes the achievement of Climate Program objectives. The Office provides up-to-date information and advice concerning CO_2 issues to EMR, DOE and the Climate Planning Board.

The research component of the Centre consists of two divisions working under the functional supervision of the Chief Scientist of the Centre. The Numerical Modelling Division undertakes research to gain improved knowledge of climate as a physical system and to simulate climate through numerical modelling. The Monitoring and Prediction Division develops improved systems for monitoring the current climate situation across Canada for a weekly publication. In addition to this, the Division analyzes and assesses statistical and other methods of climate prediction.

Climatological Applications Branch (89 PY, $4,437K)

This Branch consists of a Director's Office and four Divisions

The Data Management Division is responsible for the collection and final quality control of all surface, upper air and supplemental data entering the national climate archives. The archives are managed to serve the needs for climate data in applications and research.

The Climatological Services Division has referral and marketing sections which assist Regional offices in handling enquiries, and which process directly those enquiries that are complex and/or national in scope. A publications section is responsible for issuing national historical and statistical climate publications, while a developmental section is responsible for the maintenance of files of abstracts, microfilm, microfiche and hard copy as well as the original climate report forms

The Hydrometeorology Division consists of sections dealing with services for river, lake and marine applications, special projects and research and development.

The Applications and Impact Division has extensive applications expertise dealing with agriculture and forestry meteorology, biometeorology, arctic meteorology, energy, industrial applications, and the overall implications of climate variability and change upon Canada.

1983-84 Budget by Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)
($000)

5.5.2 CANADIAN CLIMATE CENTRE

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
1000 WEATHER SERVICES						nil
4100 Climate Services	93	3184 0	1007 8	355 0	-	4546 8
4500 Climate Research	14	627 1	42.0	15.0	-	684.1
4600 Climate Program Sup Sys.	10	404 1	383 5	59 5	-	847.1
4000 CLIMATE PROGRAM	117	4215.2	1433.3	429.5	-	6078.0
5000 ICE SERVICES						nil
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH						nil
7000 DEPARTMENTAL INTEGRATED PROGRAMS						nil
0800 MANAGEMENT AND COMMON SUPPORT SERVICES						nil
GRAND TOTAL	117	4215 2	1433.3	429 5		6078 0

5.5.3 OFFICE OF THE DIRECTOR GENERAL INCLUDING RESEARCH

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
4100 Climate Services	6	191.9	6.0	12.0	209.9
4500 Climate Research	14	627 1	42.0	15.0	684.1
4600 Climate Program Sup. Sys.	8	318 5	369.5	59 5	747.5
4000 CLIMATE PROGRAM	28	1137.5	417.5	86.5	1641.5
GRAND TOTAL	28	1137 5	417.5	86.5	1641 5

5.5.4 CLIMATOLOGICAL APPLICATIONS BRANCH

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
4100 Climate Services	87	2992.1	1001 8	343 0	4336.9
4500 Climate Research					
4600 Climate Program Sup Sys.	2	85 6	14.0		99 6
4000 CLIMATE PROGRAM	89	3077 7	1015.8	343 0	4436 5
GRAND TOTAL	89	3077.7	1015 8	343.0	4436 5

1983-84 Budget
($000)

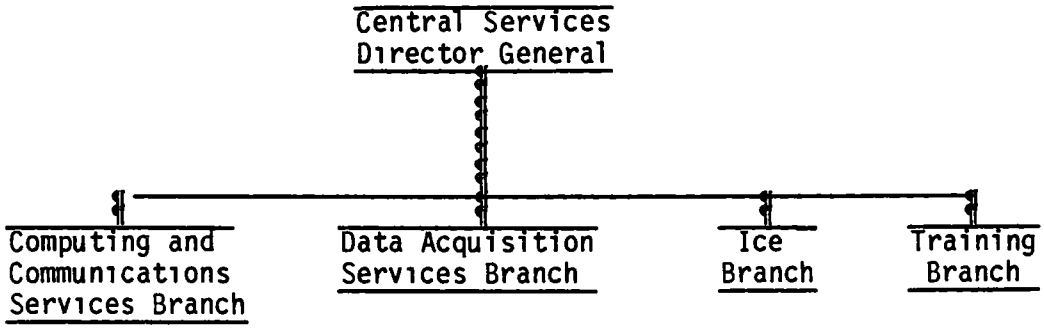
CANADIAN CLIMATE CENTRE

5 5 5

BY ORGANIZATIONAL UNIT

	PY	SALARY	O&M	CAPITAL	TOTAL
OFFICE OF THE DIRECTOR GENERAL AND RESEARCH	28	1137	417	87	1641
CLIMATOLOGICAL APPLICATIONS BRANCH	89	3078	1016	343	4437
CCC TOTAL	117	4215	1433	430	6078

5.6 CENTRAL SERVICES DIRECTORATE



5.6.1 FUNCTIONS CENTRAL SERVICES DIRECTORATE (344 PY, $41,795 3K)

This Directorate is responsible for information and advisory services on sea ice distribution, computing and communications services, technical and professional training, and the centralized design, implementation and sustenance of data acquisition systems. The Directorate has four Branches, each of which is responsible for one of the services listed above The Director-General is the AES Coordinator of Scientific Capital Programs

Computing and Communications Services Branch (111 PY, $17,765 5K)

This Branch is responsible for the design, planning and operation of AES' national EDP and the communications facilities, and for ensuring that AES has the EDP and the information-processing and telecommunication services and facilities to meet current and future requirements. The Branch has four Divisions, three in Downsview and one in Montreal The Branch Director is Program Area Manager for Computers and Communications

The Communications Management Division is responsible for the management, operation and maintenance of AES national communication systems including the Canadian Weatherfax System, the Meteorological Teletype Collection and Distribution Systems, and the communications portion of the Radar data distribution system

The Centre d'Informatique Dorval, co-located with the Canadian Meteorological Centre, operates a CDC Cyber 176 computer system, the most powerful computer in the Federal Government, along with two CDC Cyber 170-720 computers as front ends It provides centralized computing services to the AES and other government departments A Cray 15 will be installed in November 1983 and after implementation will also serve users from the research community outside government

The Downsview Computing Centre in Downsview operates a National Advanced Systems AS-6 computer system It provides computing and user services primarily to support the Canadian Climate Centre and other users at AES Headquarters

Planning Division develops plans and coordinates activities to ensure that AES' needs for EDP and communications services are satisfied.

Data Acquisition Services Branch (104 PY, $5,914.7K)

The Branch is responsible for the design, specification, acquisition, implementation and standards of instrumentation for the measurement of meteorological and related environmental conditions to be used in AES' national data collection networks There are four Divisions in the Branch all located in Downsview Most activities within the Branch are project oriented and as a result many activities cross Divisional boundaries and become cooperative ventures The Branch Director is AES Program Area Manager for both Meteorological Instruments and for Meteorological Satellite activities

Development Division and Network Planning and Standards Division together are responsible for the design, procurement and testing of new and replacement instruments and systems, the development and evaluation of prototype meteorological instrumentation for AES operational networks and research programs, and the establishment of specifications, measurement standards and procedures to meet data requirements They also carry out investigation of new techniques and technologies applicable to the AES data acquisition systems, and are responsible for the planning and coordination of the development and implementation of data acquisition systems, publication of technical manuals, logs and forms, and the provision of general and project inspection services

Maintainance Division supports the installation of new systems, provides maintenance services for field instrument systems and checks instrumentation against their appropriate standards.

Technical Services Division provides technical services in support of the development and acquisition of data acquisition systems, the installation of new instrumentation and the maintenance of stores inventory It also operates a repair and exchange service for instruments

Ice Branch (53 PY, $14,740 8K)

Ice Branch is responsible for the Canadian information and advisory service for sea ice distribution and type It maintains an ice data archive, prepares ice climatology reports and supplies climatological ice information to users upon request It also provides a daily and seasonal ice forecast service to shipping interests in ice infested waters and conducts research into new and improved techniques for ice data collection and analysis.

The Ice Centre Environment Canada has 3 Divisions in Ottawa Ice Forecasting, Ice Climatology and Ice Research.

The Director's office and the Ice Reconnaissance Division are located in Downsview Reconnaissance involves the provision of observations of the distribution and type of sea ice from aerial ice reconnaissance (approximately 2200 hours per year), ship reports (including about 1800 person days per year logged on ice breakers), shore reports and satellite pictures in support of marine users in ice-congested waters during appropriate seasons

Training Branch (71 PY, $3,170 9K)

Training Branch is responsible for the recruitment and training of professional meteorologists and meteorological technicians to meet AES human resource needs, and for establishing and maintaining contact with Canadian universities and other educational institutions to encourage the training of atmospheric scientists and the development of studies in the atmospheric sciences

Professional Training and Development Division conducts professional training courses at Downsview (English) and in Montreal (French) for newly recruited meteorologists to qualify them for positions in operational weather offices In addition, the Division develops and conducts advanced and specialized training courses, including correspondence courses, in applied and operational meteorology to meteorologists in civilian and military weather offices and sponsors workshops and seminars relating to environmental issues such as environmental emergencies, air quality, acid rain, etc

Technical Training and Development Division conducts technical training courses in both official languages at the Transport Canada Training Institute in Cornwall for employees of AES and Transport Canada and at the DEW Line Training Centre in Winnipeg, Manitoba for DEW Line personnel under contract to the U S A F The courses presented include the following Basic, Advanced, Presentation and Aerological Technician courses, and Radar, Ice, Weatheradio and Maintenance courses

Training Coordination, Evaluation and Services Division is responsible for the recruitment of new meteorologists, liaison with universities and colleges concerning meteorological training, counselling of student applicants, educational enquiries and evaluation of educational and training requirements, and provides French and English Technical Editing/Publishing services and graphic art, audio visual and computer services to Training Branch and AES clients

1983-84 Budget by Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)
($000)

5.6.2 CENTRAL SERVICES DIRECTORATE

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
1100 Public Weather Services						
1200 Marine Weather Services						
1300 Aviation Weather Services						
1400 Economic Weather Services						
1500 Canadian Forces Wx Service						
2000 Data	-	-	-	119 0	-	119.0
3000 Wx Services Support Sys	239	8957.9	12135 4	2855.0	-	23948.3
1000 WEATHER SERVICES	239	8957 9	12135.4	2974.0	-	24067.3
4100 Climate Services	1	32.0	7 4	200 0	-	239.4
4500 Climate Research	-					
4600 Climate Program Sup Sys.	49	1561 2	1002.9	108.0	-	2672.1
4000 CLIMATE PROGRAM	50	1593.2	1010 3	308 0	-	2911.5
5100 Ice Recon & Data Acq.	30	1370 0	11632 6	141 5	-	13144.1
5200 Ice Anal. & Forecasting	15	559 3	250 0	45 0	-	854.3
5300 Ice Climate Services	4	165.5	34.0	-	-	199.5
5400 Ice Services Support Sys	4	194.7	355 7	5.0	-	555 4
5000 ICE SERVICES	53	2289 5	12272.3	191 5	-	14753.3
6100 Air Quality Services						
6300 Air Quality Research						
6600 Research - Other						
6700 Air. Qua. & Res. Sup. Sys	2	63 2	-	-	-	63.2
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH	2	63.2	-	-	-	63 2
7000 DEPARTMENTAL INTEGRATED PROGRAMS						nil
0800 MANAGEMENT AND COMMON SUPPORT SERVICES						nil
GRAND TOTAL	344	12903 8	25418 0	3473.5	-	41795.3

1983-84 Budget by Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)
($000)

5.6 3 OFFICE OF THE DIRECTOR GENERAL

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
1100 Public Weather Services					
1200 Marine Weather Services					
1300 Aviation Weather Services					
1400 Economic Weather Services					
1500 Canadian Forces Wx Service					
2000 Data					
3000 Wx Services Support Sys	5	162.2	28.7	-	190.9
1000 WEATHER SERVICES	5	162.2	28.7	-	190 9
5100 Ice Recon. & Data Acq.					
5200 Ice Anal & Forecasting					
5300 Ice Climate Services	-	-	12.5	-	12.5
5400 Ice Services Support Sys.					
5000 ICE SERVICES	-	-	12.5	-	12.5
GRAND TOTAL	5	162 2	41.2	-	203 4

5 6 4 COMPUTING AND COMMUNICATIONS SERVICES BRANCH

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
1100 Public Weather Services					
1200 Marine Weather Services					
1300 Aviation Weather Services					
1400 Economic Weather Services					
1500 Canadian Forces Wx Service					
2000 Data					
3000 Wx Services Support Sys.	62	2318.1	11213.8	1561 5	15093 4
1000 WEATHER SERVICES	62	2318.1	11213.8	1561.5	15093 4
4100 Climate Services					
4500 Climate Research					
4600 Climate Program Sup Sys.	49	1561.2	1002.9	108.0	2672 1
4000 CLIMATE PROGRAM	49	1561.2	1002.9	108.0	2672 1
GRAND TOTAL	111	3879 3	12216.7	1669.5	17765 5

1983-84 Budget by Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)

5.6.5 DATA ACQUISITION SERVICES BRANCH

SUB-ACTIVITY Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
1100 Public Weather Services					
1200 Marine Weather Services					
1300 Aviation Weather Services					
1400 Economic Weather Services					
1500 Canadian Forces Wx Service					
2000 Data					
3000 Wx Services Support Sys	99	3638 5	598.6	1375.0	5612.1
1000 WEATHER SERVICES	99	3638.5	598.6	1375 0	5612.1
4100 Climate Services	1	32.0	7 4	200 0	239.4
4500 Climate Research					
4600 Climate Program Sup. Sys.					
4000 CLIMATE PROGRAM	1	32.0	7 4	200 0	239 4
6100 Air Quality Services					
6300 Air Quality Research					
6600 Research - Other					
6700 Air. Qua & Res Sup Sys.	2	63 2	-	-	63.2
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH	2	63.2	-	-	63 2
GRAND TOTAL	104	3733.7	606 0	1575 0	5914 7

5 6.6 ICE BRANCH

5100 Ice Recon & Data Acq.	30	1370 0	11632.6	141 5	13144.1
5200 Ice Anal & Forecasting	15	559.3	250 0	45 0	854 3
5300 Ice Climate Services	4	165.5	21.5	-	187.0
5400 Ice Services Support Sys.	4	194 7	355 7	5 0	555.4
5000 ICE SERVICES	53	2289.5	12409.8	191.5	14740.8
GRAND TOTAL	53	2289 5	12259 8	191 5	14740 8

1983-84 Budget by Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)
($000)

5.6.7 TRAINING BRANCH

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	TOTAL
1100 Public Weather Services					
1200 Marine Weather Services					
1300 Aviation Weather Services					
1400 Economic Weather Services					
1500 Canadian Forces Wx Service					
2000 Data					
3000 Wx Services Support Systems	71	2839 1	294.3	37.5	3170.9
1000 WEATHER SERVICES	71	2839.1	294.3	37.5	3170.9
GRAND TOTAL	71	2839.1	294.3	37.5	3170.9

1983-84 Budget ($000)

CENTRAL SERVICES DIRECTORATE

5.6.8 BY ORGANIZATIONAL UNIT

	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
OFFICE OF DG	5	162.2	41.2	-	-	203 4
COMPUTING AND COMMUNICATIONS SERVICES BRANCH	111	3879.3	12216.7	1669.5	-	17765 5
DATA ACQUISITION BRANCH	104	3733.7	606.0	1575.0	-	5914.7
ICE BRANCH	53	2289.5	12259 8	191 5	-	14740.8
TRAINING BRANCH	71	2839.1	294 3	37 5	-	3170.9
CSD TOTAL	344	12903.8	25418 0	3473.5	-	41795.3

5 7 Organization FINANCE AND ADMINISTRATION BRANCH

5.7.1 FUNCTIONS FINANCE AND ADMINISTRATION BRANCH (81 PY, $9,654K)

This Branch provides services to AES headquarters elements, Regions, and those organizations whose central elements interface with AES headquarters. There are four Divisions.

Finance Division is responsible for the processing and payment of all invoices and bills, preparation of budget data and allocations, provision of guidance and advice on financial matters to senior management, preparation of financial forecasts and interpretation of the financial status of the AES, development of AES financial policies and systems, and development and modification of AES Work Planning policy, procedures and processes.

Materiel Management Division is responsible for the requisition, storage and distribution of special meteorological instruments, equipment and supplies and providing procedural recommendations and advice on materiel matters. This Division also has responsibility for the equipment-in-use system, facilities inventory system, and fleet management. In addition, the Division is responsible for the development of related Service policies, procedures and systems.

Library Services Division is responsible for acquiring and making available for reference and loan a collection of books, journals and other resource material, arranging for interlibrary loans and translations from foreign languages, providing policies, procedural recommendations and advice on library matters.

General Administration Division provides services including the support services to AES in Facilities Management, real property management, communication, records management, mail and distribution, health, safety and security, coordination of printing and drafting, and providing policy, procedural and systems recommendations and advice on general administrative matters

This Branch also maintains the Incentive Award Program in AES, coordinates the planning, implementation (as appropriate) and monitoring activities for AES Affirmative Action Programs (EOW and Handicapped Programs) and for French correspondence editing services, and maintains administrative systems for the Career Development Plan for Meteorologists and the Development Leave Program

1983-84 Budget by Sub-Activity (SA-1) and Sub-Sub Activity (SA-2)
($000)

5 7.2 FINANCE AND ADMINISTRATION BRANCH

SUB-ACTIVITY / Sub-Sub-Activity	PY	SALARY	O&M	CAPITAL	G&C	TOTAL
1100 Public Weather Services						
1200 Marine Weather Services						
1300 Aviation Weather Services						
1400 Economic Weather Services						
1500 Canadian Forces Wx Service						
2000 Data						
3000 Wx Services Support Sys.	10	1512.5	2339.4	-	726 0*	4577.9
1000 WEATHER SERVICES	10	1512.5	2339 4	-	726 0	4577.9
4100 Climate Services						
4500 Climate Research						
4600 Climate Program Sup Sys	1	217.1	446.8	-	-	663.9
4000 CLIMATE PROGRAM	1	217.1	446 8	-	-	663.9
5100 Ice Recon & Data Acq						
5200 Ice Anal. & Forecasting						
5300 Ice Climate Services						
5400 Ice Services Support Sys.	1	261 1	537.4	-	-	798.5
5000 ICE SERVICES	1	261 1	537.4	-	-	798.5
6100 Air Quality Services						
6300 Air Quality Research						
6600 Research - Other						
6700 Air. Qua & Res. Sup Sys.	1	184.8	380.4	-	369.0**	934.2
6000 AIR QUALITY SERVICES AND ATMOSPHERIC RESEARCH	1	184.8	380.4	-	369.0	934.2
0810 Management	3	112 0	52.5	5.0	-	169.5
0830 Common Support Services	65	1429 3	931 5	149 0	-	2509.8
0800 MANAGEMENT AND COMMON SUPPORT SERVICES	68	1541.3	984 0	154 0	-	2679.3
GRAND TOTAL	81	3716 8	4688 0	154.0	1095 0	9653 8

*Comprised of $590 K contribution to the World Meteorological Organization, $16K Contribution to Canadian Meteorological and Oceanographic Society and $120K in Studentship Grants

**Almost entirely Science Subvention grants and Post-Graduate Fellowships.