

Canadian Meteorology and WMO

by Morley Thomas

Introduction

If most Canadian meteorologists and oceanographers ever think about the World Meteorological Organization at all, they must find it to be somewhat of a mystery. Is it a supernational body that makes the rules, definitions and procedures for the Atmospheric Environment Service and other foreign meteorological services to follow? Is it an international body that organizes vast global research programs? Or is it sort of an old-boys' club in which privileged Canadians go to meetings in Geneva and other world-class cities to experience the good life? Perhaps it is a bit of each and certainly a whole lot more.

Like the United Nations General Assembly, most WMO Congresses offer remarkable theatre where representatives of the different countries usually play predictable roles, and politics often turn out to be more important than the science of meteorology. But, as a Canadian delegate to Congresses and other WMO meetings, one does learn more about the science, the scientists and the management of meteorology than he or she might otherwise learn. And you do get to travel and to meet and form lasting friendships with meteorologists from other countries.

Canadian meteorologists are fortunate. Representing a large country without aspirations of global dominance but with a reputation for sound meteorological education and training, Canadians usually play influential roles in WMO and are often elected to offices for which meteorologists from other countries would gladly pay dearly. But a Canadian who is elected to a WMO post should not become over-inflated; there is very little national prestige for such posts in this country and quite a lot of a Canadian's regular work may have piled up and be waiting at home when he or she returns from WMO duties.

The Organization

The World Meteorological Organization is a specialized agency of the United Nations. Its purpose is to facilitate worldwide cooperation in the establishment of reporting stations and to promote the standardization of observations, their exchange and the publication of data; to promote operational hydrology and the application of meteorology to human activities; and to encourage research and training in meteorology. A rather huge task! The reader will note, however, that all the verbs used in describing the purpose of WMO are ones like facilitate, promote and encourage. Although a sizeable Secretariat is located in Geneva, the work of WMO is largely done in the member countries and by their representatives on commissions, working groups, at conferences and planning meetings and whatever. The Secretariat staff

coordinate the work of these bodies and meetings and handle the bureaucracy. (Secretariat people might well argue that they play a much larger role than this in planning and running the organization!)

WMO History

The present WMO came into existence in March 1950 when a specified number of countries, including Canada, had ratified the Convention. There was an earlier body, the International Meteorological Organization, which was founded following the Vienna Meteorological Congress of 1873. For practical considerations associated with the daily exchange of data between Canada and the United States, a unique system of data coding and transmission was developed in North America. However, the early Meteorological Service of Canada directors, Kingston and Carpmael, monitored the work of the IMO and attempted to adhere to its definitions, standards and observer instructions. Shortly after he became director of the Canadian service in 1896, R.F. (later Sir Frederic) Stupart travelled to a Conference of Directors in Paris; he was the first Canadian to directly participate in IMO affairs. And it might be noted that, to make the most of his travel time and expenses, Stupart inspected observing stations in Atlantic Canada both going over and coming back by sea.

Although the attendance of directors at IMO meetings was approved by their respective countries, IMO was an informal organization, a sort of directors' club. The directors had no power or authority to commit their countries to binding rules and regulations. IMO did, however, play a real role in the early standardization of observations and the exchange of data in real time for operational weather forecasting. IMO was also active in promoting atmospheric research and in the application of climate data and information to agriculture, aviation, marine transportation and other social and economic endeavours. To facilitate this work, IMO began to set up technical commissions as early as the early 1880s. With the meetings always held in Europe, Canadian participation in IMO affairs was limited to that of the director until about the time of World War II.

After the war, in August 1947, Canada hosted meetings of all the technical commissions in Toronto. Both John Patterson and Andrew Thomson were enthusiastic meteorological internationalists; the commissions had been invited to Toronto in 1941 but the war intervened. Since most European services had been impoverished by the war, the Canadian directors felt it was important to show the European directors that meetings could be held on the veritable shoe string. And the Toronto meetings were; the month-long meetings were held in the far-from-luxurious and then quite shabby basement of the old

McMaster University building on Bloor Street near the Meteorological Office and delegates were billeted in university residences. It is uncertain what effect such spartan surroundings had on the 100 or so foreign delegates but that brief exposure to international meteorology made a lasting effect on young Canadian meteorologists who sat in as observers at some of the meetings.

Every country with a sovereign national meteorological or hydrometeorological service is entitled to membership in the World Meteorological Organization (along with having a flag, a seat at the United Nations and a national airline!). The WMO Convention calls for the director of each national service to be his country's Permanent Representative and every four years they and other delegates meet at a World Meteorological Congress. There, general policy is determined, programs and budgets are debated and approved, consideration is given to new and amended technical regulations and officers are elected for the next four year period. Numerous factors are used to determine each country's assessment; Canada's annual financial contribution amounts to about three percent of the Organization's budget. Of the 176 members (as of February 1996), only seven are assessed more than Canada; the United States leads with an assessment of about twenty-five percent of WMO's budget.

An Executive Council (earlier the Executive Committee), composed of thirty-six directors of national services, meet annually with advisors to implement the decisions made at Congress and to supervise the approved programs. Also, to coordinate activities in various parts of the world, there are six Regional Associations (RAs) based on geography. Canada belongs to RA-IV, North and Central America. Although there are no Regional Secretariats as such, Regional Offices and officers have been put in place in some Regions to assist developing countries.

Canadian Participation

Canada sends several delegates to each WMO Congress and to the RA-IV sessions, both of which meet every four years. Canadian meteorologists have played a leading role in WMO. In 1951, Andrew Thomson, then director, became the first president of RA-IV and thus a member of the WMO Executive Council. His successor, Patrick McTaggart-Cowan, was elected a member of the Executive Committee in 1960 and later became president of the Region. The next head of the Canadian service, Reg Noble, was elected RA-IV president in 1966 and later directly to the Executive Council. Because of our continuing and substantial contribution to international meteorology, Canada has rarely been without representation on the Executive Council. In addition to those already named - Warren Godson, Arthur Collin, Howard Ferguson, Elizabeth Dowdeswell and Gordon

McBean have, in turn, been elected to the Executive Council. Since 1973 there have not been any Canadian presidents of the Regional Association but Jim Bruce served as a WMO vice-president from 1983 to 1986.

Technical Commissions

Canada has always sent two or more experts to sessions of the technical commissions which meet every four years to study and recommend on subjects within their specific mandates. Members of the commissions write and edit the WMO technical notes, reports, manuals and guides as well as organize and participate in training sessions for staff members of developing countries, seminars and conferences on specific subjects.

There are eight WMO technical commissions dealing with basic operations and facilities, atmospheric sciences research, and applications to economic and social activities. Canada has been very active in the work of the technical commissions and has provided one or more presidents for seven of the eight. John Patterson was the first president of the Commission for Instruments and Methods of Observation in the early 1950s. During the 1960s, Clarence Boughner was elected president of the Commission for Climatology and Keith McLeod of the Commission for Marine Meteorology. During the 1970s and early 1980s, Warren Godson served a term as president of the Commission for Atmospheric Research; Wolfgang Baier (Agriculture Canada), of the Commission for Agricultural Meteorology; Bob Clark (Inland Waters), of Hydrology; Bob Dodds of Aviation Meteorology and Morley Thomas of Climatology. In fact, for a period in the late 1970s, Canadians headed four of the eight technical commissions! Currently (1996), Jan Kruus is serving as president of the Commission for Instruments and Methods of Observation. The only commission never to have been presided over by a Canadian is that for Basic Systems.

WMO Programs

The work of WMO is organized into seven major scientific and technical programs. The basic program, and the one with the highest priority, is that for the World Weather Watch. This program deals with the operational exchange of weather observations amongst countries and has subprograms to advise and plan on the density of surface and upper air observing stations, on the quality of data and on data transmission. All observing, processing and transmission facilities are, of course, operated by the individual countries. WMO's World Weather Watch Program ensures there are standards in place to allow countries to provide efficient services within their borders.

Another program of great importance is the World Climate Program. The WCP exists to promote the improvement of the understanding of climate processes through internationally coordinated research and the monitoring of climate change. WMO is the lead agency in the World

Climate Program in which such other international bodies as the UN Environment Program, the Intergovernmental Oceanographic Commission, Food and Agriculture Organization and the International Council of Scientific Unions also participate. The WCP provides significant contributions to the work of the Intergovernmental Panel on Climate Change, whose scientific assessments are very newsworthy of late.

There are three other somewhat smaller programs - Atmospheric Research and Environment, Applications of Meteorology and Hydrology and Water Resources Programs. The first promotes atmospheric research with emphasis on weather-prediction research, tropical meteorology, droughts and weather modification. Within this program, the Global Atmospheric Watch integrates monitoring and research activities in ozone, precipitation chemistry and carbon dioxide. The second deals with four vital areas of the application of meteorological services - public weather, agricultural meteorology; aeronautical meteorology and marine meteorology. Finally, the Hydrology and Water Resources Program is concerned with the assessment of the quantity and quality of water resources, and water-related hazards. This program is coordinated with UNESCO's International Hydrological Program.

Two additional programs concern the broad reach of WMO activities - the Education and Training and the Technical Cooperation Programs. The first promotes all kinds of training and is closely interrelated with the work of the technical and scientific programs. The second deals with the transfer of meteorological and hydrological knowledge and proven technology among member countries.

Canadian Honours

To mark the work accomplished by its predecessor, the International Meteorological Organization, the WMO annually gives an award, the IMO Prize - the highest distinction which can be offered by the Organization. Over the past twenty-five or so years three Canadians have been singled out for this award - Warren Godson in 1974, Kenneth Hare in 1988 and James Bruce in 1994. It must also be mentioned that Canada has contributed several meteorologists, technicians, translators, etc. to the WMO Secretariat over the decades. Secretariat positions are advertised for competition amongst nationals of all member countries and there is usually one or more Canadians on staff in term appointments. In recent years, some Canadian appointments have been at a high level. During the period from 1982 to 1989, the Deputy Secretary-General position has been held by three Canadians - Roland List (University of Toronto), Don Smith and Jim Bruce. There have been two World Climate Conferences and Canadians have played leading roles in organizing and coordinating these large and important

meetings - Ken Hare in 1979 and Howard Ferguson in 1990.

Your Participation

Participation in WMO activities can be very rewarding to a Canadian scientist. Introduction to WMO activities is usually through appointment to a specialist working group or as a rapporteur (one who researches a specific subject over a year or two and reports with recommendations for future action). Such appointments are by no means limited to AES employees. Take every opportunity to participate in WMO activities. If no opportunities appear, make one! Scores of Canadians have participated in recent decades and few, if any, ever regret their WMO experiences.
