

# REFERENCE PAPERS



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## CANADA AND THE WORLD METEOROLOGICAL ORGANIZATION

The World Meteorological Organization is one of 13 intergovernmental organizations linked with the United Nations through special agreements arranged by the Economic and Social Council and approved by the General Assembly and by the organization concerned. The Specialized Agencies of the United Nations are expert in their respective fields: labour, health, education, food and agriculture, finance and banking, civil aviation, postal matters, telecommunications, meteorology, international development and maritime matters.

### History

The earth's weather and climate do not respect political frontiers and they create many similar problems all over the world. Realizing that large-scale international co-operation was necessary to solve these problems, the nations of the world have made a common effort to apply available knowledge of the weather and its evolution to the main activities of man. Canada, occupying as it does a considerable portion of the northern hemisphere, including a large part of the meteorologically vital Arctic, became one of the earliest participants in this international exchange of weather data.

From 1853 efforts were made to draw up a programme of meteorological observations over the oceans, based on the collaboration of shipping belonging to most of the maritime countries. This was still fourteen years before Canada attained her national status.

In 1878, the International Meteorological Organization, composed of the Directors of National Meteorological Services, was created during an international conference at Utrecht in the Netherlands. The infant Meteorological Service of Canada, established in 1839, was not represented at this meeting.

In 1882 the head of the Canadian Meteorological Service, C. Carpmael, sent a full report on the state of the Canadian service to the second meeting of the International Committee held at Copenhagen that year. By 1855 European meteorologists, recognizing the importance of data from Canada and the United States, were studying ways and means of getting weather reports from North America by cable.

During the present century the tremendous development of means of transport and communications (sea and air navigation, radio-telegraphy) and the increased requirements of modern economic activity have given rise to a large number of technical problems and have emphasized the importance of meteorology. At the same time, the surprising development of technology has enabled this relatively young science to make considerable progress. These new developments showed that reorganization at an international level was necessary in view of the increased interest in meteorology.



Consequently the Conference of Directors of the National Meteorological Services, which met at Washington in 1947 under the auspices of the International Meteorological Organization, adopted the World Meteorological Convention establishing a new organization founded on an agreement between governments. Just prior to this Conference, Canada had played host to the sessions of the Technical Commissions of the IMO which met in Toronto in the summer of 1947.

The Convention adopted at Washington was ratified by a large number of states and in 1951 the new World Meteorological Organization became active, the former organization having been dissolved. Furthermore, the General Assembly of the United Nations approved, in December 1951, the agreement between the United Nations and the World Meteorological Organization. The latter was thus recognized by the United Nations as a Specialized Agency.

The objectives of WMO are:

- (1) to facilitate world-wide co-operation in establishing networks of stations for making meteorological observations or other geophysical observations related to meteorology, and to promote the establishment and maintenance of centres for providing meteorological services;
- (2) to promote the establishment and maintenance of systems for rapidly exchanging weather information;
- (3) to promote standardization of meteorological observations and to ensure the uniform publication of observations and statistics;
- (4) to further the application of meteorology to aviation, shipping, agriculture, and other human activities;
- (5) to encourage research and training in meteorology and to assist in co-ordinating the international aspects of such research and training.

#### Structure and Activities

WMO's administrative and technical machinery consists of:

- (1) A World Meteorological Congress in which 110 member countries are represented by the heads of their meteorological services. It meets once every four years to adopt technical regulations on meteorological practices and procedures and to determine general policy.
- (2) An Executive Committee which supervises the carrying out of resolutions of the Congress, initiates studies, and makes recommendations on matters requiring international action. It provides members with technical information, advice, and assistance. Meeting at least once a year, its membership includes the President and the two Vice-Presidents of WMO, the President of WMO's six Regional Meteorological Associations, and 12 elected members.
- (3) Six Regional Meteorological Associations (Africa, Asia, South America, North and Central America, Europe and Southwest Pacific), composed of member countries whose meteorological networks lie in or extend into the region.



- (4) Eight Technical Commissions established by the Congress to study and make recommendations on technical subjects including agricultural, hydrometeorological, synoptic, maritime and aeronautical meteorology and aerology, climatology and instruments and methods of observation.
- (5) A secretariat under the direction of a Secretary-General.

It is necessary, for the practical use and the comparison of observations made at weather stations throughout the world, to standardize and co-ordinate them. Today, all stations make their observations at the same time in all countries of the world with instruments standardized and compared with international standard instruments. Reports from over 200 Canadian stations are included on one cable channel in the international exchange.

However, WMO does not merely draw up regulations. It also carries through projects of interest to all states, calling for action on more than a national scale. The Organization's programme includes assistance to member countries in developing their water resources, participation in tropical research, assistance in overcoming serious world-wide or regional deficiencies in meteorology. Weather forecasting for agriculture, international comparison of meteorological instruments and publication of a wide variety of international manuals and technical studies are other examples of the Organization's work.

WMO also keeps abreast of the spectacular current developments in science and technology and uses them to obtain a better understanding of the atmosphere. Rockets and artificial satellites provide valuable weather information, plans for the use of which in everyday forecasting are already well under way.

WMO also takes part in arid-zone research and contributes to the development of arid lands by studying the climatic conditions knowledge of which would help to improve living conditions in these areas. Locust control and the protection of crops from this pest is a collective undertaking to which WMO contributes. Another important activity of the Organization is to encourage by all possible means scientific research and instruction in meteorology.

An information periodical, the WMO Bulletin, is published in order to keep members and all interested persons informed of the Organization's activities and new developments in meteorology generally.

WMO plays a very active part in the United Nations programmes of technical co-operation and assistance towards economic development. It provides advice to facilitate the establishment and development of national meteorological services. Further, it promotes the training of meteorologists and specialists in all branches of weather science by fellowships, scholarships and training courses. Experts are also appointed to contribute their experience and skills and to co-operate with national authorities in solving the problems of the countries concerned.

New opportunities for an international contribution to large-scale national projects, such as water-resource development plans, have been opened up by the creation of the United Nations Special Fund.

#### Canadian Participation

The Canadian Meteorological Service has always played an active part in international meteorology. The first meeting of some of the Technical Commissions after the WMO was founded took place in Toronto in 1953. In 1954, and again in 1959, the Commission for Aeronautical Meteorology held sessions in Montreal simultaneously with the Meteorological Division of ICAO.



The Commission for Agricultural Meteorology met in Toronto in July 1962. The head of the Canadian Weather Service, Dr. P.D. McTaggart-Cowan, is a member of the Executive Committee, and is also President of Regional Association IV (North and Central America). Members of the Canadian Weather Service have served on all Technical Commissions, either as Chairman, full member, or technical adviser.

Canadian ships on the high seas report their weather by radio to the nearest land station, and receive in return forecasts and storm warnings for the area through which they are sailing. In return, vessels of foreign registry frequently provide reports of their local weather to Canadian coastal stations, and receive Canadian forecasts and storm warnings for marine areas contiguous to the Atlantic and Pacific shores of Canada. There is no charge made for any of these transmissions to the ships. The national weather service in question bears the cost of transmitting the ship reports to its own forecast centres and to those of neighbouring states. Under the aegis of the WMO, a substantial increase has also taken place in international co-operation by the facsimile exchange of analyzed weather maps among the countries of the northern hemisphere.

Through the good offices of the WMO, and other organizations, there exists an agreement to operate ocean weather stations by which ships are maintained at locations in the Atlantic and Pacific. Reports from these ships greatly facilitate trans-oceanic flights by Canadian air carriers. For its part, Canada operates an ocean weather station in the Pacific, Station Papa, 900 miles west of Vancouver.

The fact that the Canadian Meteorological Service, as well as the Weather Service of the United States and the West Indies, could accurately track and forecast the life history of hurricane "Hazel" (October 1954) is a tribute to the co-operation achieved internationally through the WMO. The meteorological history of Canada, and of other member countries, is filled with similar, almost daily examples of the benefits of international co-operation in the field of meteorology.

Canada pays 2.6 per cent of the regular budget of the WMO. In 1964, the net budget of the Organization for assessment proposes was \$1,267,599(U.S.).

RP/C