conditions are constantly changing, the value of reports of weather observations falls off rapidly with time and the delay between taking the observation and its use in a forecast must be as short as possible. For a country the size of Canada with many sparsely settled areas, rapid communication presents difficult problems and requires unique solutions.

Weather offices and weather stations are linked coast-to-coast by land line teletype and, in remote northern areas, by radio or radio teletype. The land line teletype circuits are leased from commercial wire companies and operated by the Atmospheric Environment Service; most of the radio circuits are operated by the Telecommunications and Electronics Branch of the Ministry of Transport. Relay of all weather data is controlled by a centrally located computer in Toronto.

Two long-line weather facsimile networks transmit information in the form of weather charts, from central forecast offices to weather offices from coast-to-coast and into the northern and ocean areas by radio facsimile. Icebreakers and other ships equipped with receivers thus have the latest weather charts regularly available for guidance in their operations.

Specialized services. Although weather services are organized on a regional basis, certain specialized services can be most economically provided from a central location. Such a service is the ice reconnaissance and forecasting program to support marine activity in ice-congested waters; the program is directed from Toronto and the Ice Forecast Centre is located in Ottawa. Specially equipped aircraft are used in the aerial phase of the program and ice charts can be passed from the aircraft directly to icebreakers via radio facsimile. Other phases of the program are the provision of valuable supplemental data from shipboard ice observers assigned to eight Canadian Coast Guard icebreakers, and the operation of 110 ice reporting shore stations and 70 weekly reporting stations where ice thickness is measured. Forecast ice charts are dispatched via facsimile circuits and mailed to a wide variety of personnel and organizations having need of this information.

There are more than 2,000 climatological observing stations in Canada where observers record the precipitation and temperature extremes and send their climatological reports on monthly data sheets to Regional Data Collection Centres and then to headquarters. These data are frequently used in investigations of agricultural potential and irrigation, hydro-electric, industrial and other problems of a wide variety.

The Meteorological Applications Branch of the Atmospheric Environment Service in Toronto, using the computer and large banks of weather data which have been quality-controlled and stored, is able to provide the full range of relevant historic weather information to be applied to an increasingly wide variety of problems in which human, economic and physical activities and their weather-sensitive factors are being examined. Hydrometeorological specialists are responsible for meteorological studies in support of water resources activities involving the rivers, reservoirs and lakes of Canada including the provision of criteria for the proper design and operation of water-control structures, techniques for use in lake level, river flow and flood forecasting, and assistance in water supply and pollution investigations.

World meteorology. Canada has always co-operated with other nations in the exchange of weather data and other matters relating to international meteorology. A major area of international co-operation is with the United States National Weather Service which is now a part of the National Oceanic and Atmospheric Administration (NOAA). The two national meteorological organizations exchange data freely. Co-operative arrangements are also made for the use by Canada of data processed by the large NOAA computer facilities in Washington. Other agreements cover the marine forecasting program on the Great Lakes relating to standardization of methods of ship observations, criteria for issuing weather warnings and other similar matters.

World meteorology is organized on a global basis through the World Meteorological Organization (WMO) with headquarters in Geneva and a participating membership of 136 states and territories. Canada is an active member of this organization and fully supports its many goals. A major portion of the WMO technical program is now devoted to the World Weather Watch (WWW) – a world-wide plan for upgrading and modernizing meteorological observing networks and national weather services.

The opportunities afforded by the development of earth-orbiting meteorological satellites