A Brief History of Weather Observing in Canada

The 150th anniversary of continuous weather observing in Canada reminds us that people have always been concerned with weather and climate. Even the oldest civilizations had their weather signs and proverbs, usually associated with astronomy, harvests or religion. Some climate information exists from the early Oriental, Greek and Roman civilizations, but taking systematic weather observations only became possible after the invention of basic instruments like the thermometer, the barometer and the anemometer.

The history of weather observing in this country becomes clearer if we try to explain what weather, meteorology and climate mean.

Weather observing in the 1850s — this formally dressed observer reads maximum and minimum thermometers while a companion notes down data in the log book.

Weather is the condition of the atmosphere at any particular time and place. Meteorology is the scientific study of the atmosphere. Climate is average and/or extreme weather conditions at any place or region. Weather observing is often called meteorological or climate observing. Climate data for specific times and places is often referred to as historical data.

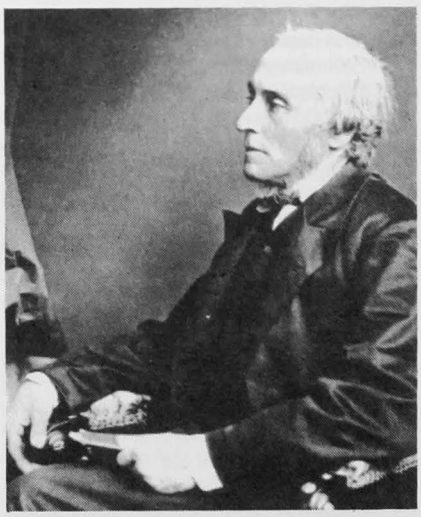
Instrumental weather observations have been recorded in Europe for about 350 years and for around a century less in North America.

In Canada, casual remarks about the weather were recorded by Jacques Cartier as early as 1535-36, but the earliest climate observations to be compiled systematically were collected by Dr. J. F. Gaultier at Quebec City from 1742 to 1758 and subsequently published in France. Twenty years later, around 1769, two English scientists came to Fort Prince of Wales (Churchill, Man.) to take several kinds of observations connected with their work. Their climate observations for the period were later published. Then, in the 1770s, climate observing began at several posts of the Hudson's Bay Company in Western Canada.

During the 1830s, the British Imperial Government, at the urging of British and European scientists, ordered the establishment of several magnetic and meteorological observatories. Canada was selected as a site for one of these and in the winter of 1839-40, it was temporarily located in the barracks of what is now called Old Fort York. About eight months later, observers from the Royal Artillery moved to a proper observatory in a log cabin on the grounds of King's College, now the University of Toronto. On September 5, 1840, with all equipment installed, climate observations began and have continued at or near this site ever since.

In 1853 the military observers withdrew and the Observatory became the responsibility of Canada. Financed by the government, the station was supervised by the University of Toronto, an arrangement which lasted for about 20 years.

Shortly after his arrival in Toronto as director of the Observatory and professor of Meteorology, George Kingston was struck with the vision of making the site a "climate centre" for the whole country. From here, assistance could be given to a number of professional people such as doctors, lawyers and teachers interested in voluntary observing work. In this way, the data would be collected and an archive of Canadian climate data maintained. Kingston contacted such people as Lieutenant E. D. Ashe of the Quebec Time Observatory and Dr. Charles Smallwood, a physician of St. Martin near Montréal. Smallwood sent observations to Toronto for publication in the **Canadian Journal** as early as 1852. A decade later, he moved his observatory to McGill University in Montreal where he became a professor. William Craigie, a doctor practicing in the Hamilton area and C. J. McGregor of Stratford were two early Ontario observers corresponding with the Toronto Observatory.



Professor George Kingston, superintendent of the meteorological service to 1880.

Perhaps Kingston's most innovative move was to help Education Department officials in Upper Canada organize a weather observing program in grammar schools. After an unproductive start in the late 1850s, ten schools in southern Ontario took climate observations over a 20-year period beginning in 1867 and these data still provide an excellent base for Ontario climate observing. In the Lower Provinces, Gilbert Murdock of Saint John, New Brunswick, and Frederick Allison of Halifax, both seasoned observers, began to correspond with Kingston in the later 1860s.

Within a few years of Confederation, Professor Kingston was in correspondence with many amateur weather hobbyists in the four provinces. He then began to lobby the new Dominion government to finance a national meteorological office where the different observing programs could be standardized and a central repository for the climate data maintained. A small grant for this purpose was obtained in 1871 but almost immediately, Kingston was swept up in "weather telegraphy". The Americans had just started a storm warning program and needed weather data telegraphed to them from Canada every day. In exchange for these weather telegrams, the Americans were willing to provide warnings of storms that might affect Canada. The Department of Marine and Fisheries, the responsible government office, was eager to participate in the new storm program, so Kingston felt obliged to co-operate. Work began in early 1872 with regular daily exchanges of data with the Americans.

Although deeply engrossed in weather telegraphy, Professor Kingston also made rapid strides in developing climate observing networks. Principal Stations were established at Montréal, Halifax, Saint John, N.B., Fredericton and Ottawa in 1871. Later, stations were opened at Winnipeg in 1872, at Spence's Bridge, B.C. in 1873, and at Quebec and Kingston, Ontario, in 1874. At these posts, complete observations were recorded three times a day and the observers were paid a small salary. Most climate observing, however, was done voluntarily at ordinary stations by farmers, lawyers, doctors, housewives, clergy, etc. At first, these stations were all in the eastern provinces, but climate observing stations were opened throughout the West as settlement progressed in the 1870s and 1880s. The total number of climate observing stations "in correspondence" with Toronto grew slowly from 129 in 1871 to 154 by 1880.

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Frederic Stupart became director of Canada's Meteorological Service in 1894 and did much to expand the observing network in western Ontario. As a result, daily weather forecasts issued in the East since 1876 became available in the West by the turn of the century. Stations were established in the Yukon and Northwest Territories and by the 1920s there were more than 500 observing stations in the country.

In the 1930s more stations were required to serve the rapidly expanding needs of aviation. After World War II, there was a marked increase in the number of stations as Canadians became much more weather-and climate-conscious. In 1990, the 150th Anniversary year, there are about 3000 observing stations from coast to coast.

The first stone observatory near the site of Convocation Hall was erected on the University of Toronto campus in 1855.