

What to expect with the weather during ISNA-11 (August 14-18)

Dear ISNA guest,

St. John's has the reputation of having an inhospitable climate. However, the middle of August is typically very pleasant. The daytime high temperature for this time of year is typically 21-24 °C and the overnight low is 12-15 °C. Bearing in mind that the climate is variable and predicting the weather here is at best a lottery, it is not unreasonable to expect temperatures outside these ranges. We may easily have nothing but warm sunny days, but we could also have nothing but cloud and rain. For what it's worth, I would expect more sun than rain. More detailed information about the local and regional climate is given below.

General Weather Information about St. John's and Newfoundland/Labrador

Introduction

A land renowned for its independence and diversity, Newfoundland is home to a fascinating array of climates and weather. Its geography explains many of the unique features of the province's climate. The island covers 5 1/2 degrees of latitude, about the same as the Great Lakes. Its southern extremity lies close to the forty-seventh parallel, approximately the same latitude as Seattle and Paris. It covers an area of 108 860 km², with elevations ranging from sea level to above 800 m. There are few physical barriers to protect Newfoundland from weather systems sweeping across it. Its situation on the eastern side of North America favors strong seasonal contrasts in the visiting air masses.

Climatically, Newfoundland is the most maritime of the Atlantic Provinces, and this is evident in all seasons, but especially in spring and summer, which are quite cool by Canadian standards.

St. John's: Canada's Weather Champion

Of all the major Canadian cities, St. John's is the foggiest (124 days, next to Halifax's 122), snowiest (359 cm, next to Quebec City's 343), wettest (1514 mm, next to Halifax's 1491), windiest (24.3 km/h average speed, next to Regina's 20.7), and cloudiest (1497 hours of sunshine, next to Charlottetown's 1818 hours). It also has more days with freezing rain and wet weather than any other city. But the natives are proud of their climate, calling it character-building and invigorating. And they boast that their city happens to have one of the mildest winters in Canada (third mildest city next to Victoria and Vancouver). Perhaps Townies (those living in St. John's) also happen to appreciate a fine weather day more than the rest of Canadians.

To Know Newfoundland is to Know the Sea

It is said Newfoundlanders live on, by, and from the sea. No place is more than 100 km from the ocean, and therefore every part of the island is subject to the year-round modifying influences of the encircling cold waters. Surface water temperatures on the Atlantic side range from summer highs of 11 to 13 °C inshore and 8 to 11 °C offshore to winter lows of -1 °C inshore and +2 °C offshore. Sea temperatures on the Gulf side are warmer than the Atlantic side by 1 to 3 °C. The open sea keeps winter air temperatures a little higher and summer temperatures slightly lower on the coast than at places inland. The marine climate means generally more changeable weather, ample precipitation in a variety of forms (sometimes all at once), higher humidity, lower visibility, more cloud, less sunshine, and stronger winds than a continental climate.

Storm Fury

Ample amounts of low cloud, heavy precipitation, and strong wind over Newfoundland are evidence of the number of storms that pass over and near the island. Indeed, many of the storms that cross North America during the year from west to east, or develop and intensify off the East Coast of the United States, pass near the island while they move out to the North Atlantic. The result is that Newfoundland has a deserved reputation as one of the stormiest parts of the continent. It also has some of the most variable weather anywhere. At all times of the year Newfoundland is near one of the principal storm tracks. The severity and frequency of storms is greatest between November and March, although they may occur at any time of the year.

Winter cyclones are fast-moving storms (up to 80 km/h) that bring abundant and varied precipitation. They pose a serious threat to fishermen, commercial shipping, and offshore oil and gas exploration activities. Winds often mount to gale and sometimes hurricane force. Hardly a winter goes by without at least three or four East Coast gales.

Occasionally, throughout the year, mature cyclones are prevented from moving out of the region by an upper atmosphere block. The resulting cool, cloudy, and rainy weather associated with the system may persist for a week or more.

During the summer and early fall, Newfoundland weather is typically less stormy. However, in the fall, tropical storms spawned near the equator and developed in the Caribbean may bring windy, wet weather while they pass by the island before dying or redeveloping in the North Atlantic. Over the past thirty-five years, an average of one tropical storm per year has passed within 300 km of Newfoundland. One of the most notorious of these was the "Independence Hurricane" that struck eastern Newfoundland on September 9, 1775. About 4000 sailors, mostly from the British Isles, were reported to have been drowned. On September 5, 1978, another violent storm, Hurricane Ella, passed south of Cape Race. Her winds exceeded 220 km/h. At St. John's, 45 mm of rain fell and winds reached 115 km/h.

A Meteorological Moment

Early Monday morning on February 15, 1982, the giant drilling rig Ocean Ranger capsized and sank on the Grand Banks, 300 km east of St. John's. The entire 84-man crew perished in the violent winter seas, marking the worst Canadian marine disaster in decades. It was the world's second worst catastrophe in offshore drilling history, next to the North Sea tragedy on March 22, 1980, when 123 died.

The deadly Ocean Ranger storm began as a weak disturbance in the Gulf of Mexico on Friday the 12th. By Saturday evening it was centered south of Nova Scotia, collecting its strength and moving toward the Avalon Peninsula of Newfoundland. By Sunday afternoon the storm was located near St. John's and had a central pressure of 95.4 kPa. For most of the 14th the rig was battered by hurricane-force winds that reached 168 km/h and by waves as high as a five-storey building. The rig soon developed a list of 12 to 15 degrees on the port side. In the early hours of the 15th the order went out to abandon the Ocean Ranger for the stormy North Atlantic. Soon after daybreak the world's largest semi-submersible offshore rig slipped beneath the wild seas off Newfoundland.

Search and rescue crews battled poor visibility in freezing rain and snow, as well as freezing spray, turbulent seas, and buffeting winds in an attempt to locate survivors, but there were none. The storm also contributed to the sinking of the Soviet container ship Mekhanik Tarasov with a loss of 33 lives about 120 km east of the site where the Ocean Ranger sank.

Big Blow

Newfoundland as a whole has the strongest winds of any province, with most stations recording average annual wind speeds greater than 20 km/h. Generally, coastal stations have stronger winds than inland stations, valleys have lighter winds than elevated terrain, and winter is decidedly windier than summer.

Bonavista on the East Coast is the windiest location, with an average annual wind speed of 28 km/h. St. Albans, in the sheltered Bay d'Espoir on the south coast, is the least windy location with an average yearly speed of 11.5 km/h.

Winds are predominantly from the west year-round, but variations are common both from location to location and from month to month. Prevailing wind directions are west in winter and west-southwest in summer. Calm or light and variable conditions occur about 2 to 3% of the time along the coast but more than 10% of the time at inland stations.

Ocean Air

Temperatures in Newfoundland tend to be midway between those of Winnipeg and Vancouver. This is true of both average temperatures and extremes. Newfoundland's temperature range (the difference between the average temperatures of the warmest and coldest months) is 20 °C. By comparison, Winnipeg's is 39 °C and Vancouver's is 15 °C.

Winter temperatures in Newfoundland show the day-to-day variability that is characteristic of a stormy maritime climate. Incursions of moist, mild Atlantic air are frequent. There is also a noticeable difference between inland and coastal temperatures. In the interior, winter temperatures average between $-6\text{ }^{\circ}\text{C}$ and $-10\text{ }^{\circ}\text{C}$, whereas on the southeast coast, where the moderating influence of the ocean is greatest, the winter average is between $-2\text{ }^{\circ}\text{C}$ and $-4\text{ }^{\circ}\text{C}$. The lowest Newfoundland temperature on record is $-41.1\text{ }^{\circ}\text{C}$, set at Woodale Bishop's Falls on February 4, 1975.

Spring comes rather slowly and is short. Until late May, night-time averages in the interior are under $4\text{ }^{\circ}\text{C}$, and in many valley locations there is a 90% probability of frost on any night until the first week of June.

Summer is also short and somewhat cool. The glacial Labrador Current holds July average temperatures in coastal areas around $16\text{-}18\text{ }^{\circ}\text{C}$, but inland averages may climb over $18\text{-}20\text{ }^{\circ}\text{C}$. Sunny summer days in Newfoundland, however, are among the most delightful anywhere in Canada. With afternoon highs in the low to mid-twenties, they are warm enough to be comfortable and yet cool enough to permit vigorous outdoor activity. Summer 1987 was especially pleasant across central Newfoundland. Record high sunshine, scanty rainfall, and seasonable temperatures pleased most residents and tourists. The highest temperature ever recorded on the island is $36.7\text{ }^{\circ}\text{C}$, occurring at Botwood, northeast of Grand Falls, on August 22, 1976.

The frost-free period varies widely. Typical growing-season lengths are 150 days on the south coast, 125 on the Avalon Peninsula, and under 100 days in the interior. In some locations, where the landscape causes cold air to collect at night, frost-free durations may be only 70 days on average. The growing season in interior Newfoundland tends to start around June 8 and to end by September 15. Generally, frost is not a limiting factor for the growing of root vegetables, such as potatoes and turnips, which are the most important of the few crops grown in Newfoundland.

Wet and Wild

With the exception of some stations on the north coast, yearly precipitation totals exceed 1000 mm everywhere across the island. The greatest amounts occur inland along the south coast between Port aux Basques and St. Albans, which lies in the path of Atlantic storms, and over the Long Range Mountains, which lie in the lee of the Gulf of St. Lawrence. The south coast has annual totals exceeding 1650 mm, making this region the wettest in eastern Canada.

Approximately three-quarters of the total precipitation falls over the island as rain and one-quarter as snow. Although precipitation is well distributed throughout the year, it is heaviest in fall, with November being the wettest month. Spring is usually the driest time of the year. Newfoundland can experience the occasional drought; however, its intensity and duration are less than in central and western Canada. The summer of 1987 had rainfalls between 50 and 70% of normal, causing problems for farmers and keeping the forest fire hazard index high all season.

Snowfall dominates winter precipitation. It is heavy, with normal amounts exceeding 300 cm at most places in the province. Along the south coast, however, snowfall totals are in the 200-300 cm range, less than elsewhere because much of the storm precipitation falls as rain. Some of the heaviest snowfalls occur at higher elevations along the west coast, when cold air outbreaks crossing the Gulf of St. Lawrence meet the Long Range Mountains. Snowfalls here total over 400 cm a year and are heaviest in January before the Gulf has frozen over. Corner Brook, with an average of 410 cm of snow a year, and Gander with 405 cm are two of the snowiest locations on the island. St. John's, with 360 cm, is the snowiest major city in Canada.

Silver Thaw

Freezing rainstorms are a major hazard in many parts of Canada, but they are nowhere more frequent than in Newfoundland where they are known as silver thaws. Some of these storms can be very severe, causing extensive damage and bringing transportation and other essential services to a standstill. One of the worst ever experienced on the island struck St. John's on the evening of April 11, 1984, and continued intermittently until the 14th. Jackets of ice as much as 15 cm thick formed on overhead wires. The interruption of power supplies left 200 000 persons in the Avalon Peninsula without heat and light for days, causing a run on kerosene heaters at retail stores.

The area between St. John's and Gander is especially prone to prolonged periods of freezing precipitation that last for several hours or intermittently for two days or more, disrupting everyday activities and damaging trees and property. Freezing rain or freezing drizzle occurs an average of 150 hours each winter, with March being the worst month.

More "Smoke" than Sun

Newfoundland is not noted for its sunshine. The total number of hours of bright sunshine for the island is usually less than 1600 hours a year, which is below Summerside's average of 1959 hours, Calgary's 2314 hours, and the Canadian average of 1925 hours. The summer months are the sunniest, with an average of 187 hours of sunshine a month, about 42% of the total possible. The least sunshine is experienced in December, when the average daily duration is about 2 hours.

The waters off the Avalon Peninsula and over the Grand Banks are among the foggiest in the world. The fogs, sometimes known as "sea smoke", develop when warm, humid air from the south strikes the cold, sometimes ice-infested, waters of the Labrador Current. These fogs may occur in all seasons, but, on average, they are most frequent in the spring and early summer when the contrast between sea and air temperatures is greatest (anywhere between 5 °C and 15 °C). Argentia has 206 days of fog, Belle Isle and Cape Race over 160 days, and St. Lawrence on the Burin Peninsula 147 days.

Surprisingly, the fogs are often accompanied by strong winds. Normally, winds can be expected to disperse fog, but here the fog is frequently so dense and widespread that the winds have little

clearing effect. The resulting conditions can be hazardous for shipping and for drilling rigs, especially when icebergs are present.

Floes and Wintry Ghosts

During the first half of each year the waters off Newfoundland may become choked with ice floes and icebergs. The severity of ice varies considerably, depending on the strength and direction of the wind and the coldness of the air. In a normal year, ice enters the Strait of Belle Isle by the beginning of January. The ice edge usually reaches Notre Dame Bay by the end of the month and Cape Freels by the middle of February. On the west side, Labrador ice moves into the Gulf of St. Lawrence through the Strait of Belle Isle, but the vast majority of the ice is formed within the Gulf itself and the estuary. The ice edge reaches its maximum southern extent in March, filling the innumerable bays and coves and effectively retarding the advent of spring.

In April the rate of melting overtakes the southward ice drift and the pack slowly retreats. Normally by mid-month navigation through the Strait of Belle Isle is possible. By mid-June the median ice edge retreats to the mid-Labrador coast. In extreme years ice may linger south of Belle Isle after Canada Day (July 1).

Each year an average of 250 icebergs drift along in the cold waters of the Labrador Current onto the Grand Banks. These majestic, wintry ghosts worry mariners more than pack ice, chasing drill platforms off site or barricading fishermen in the many bays and harbours. Icebergs have been counted and tracked since the sinking of the Titanic off the coast of Newfoundland in 1912. Although 250 is an average number, the yearly extremes have ranged from none in 1966 to 2202 in 1984.