Chapter 7

Climate of Iceland

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ELSEVIER

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Introduction

Iceland is situated in the North Atlantic close to the Arctic Circle between latitudes 63°23′N and 66°32′N and longitudes 13°30′W and 24°32′W. The shortest distance to Greenland is about 290 km, to Scotland 800 km, and to Norway 970 km. The total area of the country is 103,100 km^2.

Because of Iceland's latitude, the solar altitude is never large and there is a great difference in the length of the day between summer and winter (Table I). In the northernmost part of the country, midnight sun is seen in midsummer and the nights are light in other parts at the same time.

Iceland is mountainous with an average height of 500 m above sea level, the highest peak Öræfajökull being 2,119 m. Only a quarter of the country lies below 200 m. The biggest lowland regions are in southern Iceland where the coasts are also sandy with a smooth outline. In most other parts, numerous fjords cut into the rocky landscape giving the coasts an irregular outline. In the innermost parts of the fjords are usually small lowland areas. This type of landscape is especially found in the basalt areas in the northwestern and eastern parts. Between them, in the middle zone, from southwest to northeast, the landscape is somewhat smoother and plateau-like with occasional, steep mountains.

Glaciers cover about 11,800 km^2 or 11.5% of the total area of Iceland. Vatnajökull with an area of 8,400 km^2 is by far the largest. The glaciers respond to climatic variations by retreating in warm periods and advancing in cold ones.

The history of meteorological observations in Iceland is not long. The first instrumental observations were carried out from 1749–1751 near Reykjavík and later similar observations were made temporarily at several locations. The first meteorological station with systematic and continuous weather observations was established at Stykkishólmur in 1845 and has been in operation ever since.

TABLE I

SOLAR ALTITUDE AT NOON AND THE LENGTH OF DAY AT THE SOLSTICES

Station	Latitude	Solar altitude at noon		Length of day	
		summer solstice	winter solstice	summer solstice	winter solstice
Vestmannaeyjar	63°27′N	50°00′	3°07′	20h37	4h30
Reykjavík	64°08′N	49°18′	2°25′	21h09	4h08
Akureyri	65°40′N	47°46′	0°53′	23h32	3h05
Grímsey	66°32′N	46°55′	0°01′	24h	2h13

The Danish Meteorological Institute was founded in 1872 and assumed in 1873 operation of the weather station at Stykkishólmur, along with the new station at Berufjördur (Teigarhorn). The Institute was responsible for all observations in Iceland until the Icelandic Meteorological Office was established in 1920. The number of stations increased gradually from 2 in the beginning to 17 in 1901 and 48 in 1931. In 1971, 127 stations functioned in Iceland—40 synoptic stations, 38 climatological stations, 42 precipitation stations, and 7 irregular stations. Agrometeorological observations were made at 7 stations, duration of sunshine was measured at 9 stations, global radiation was recorded at 2 stations, and there was 1 aerological station at Keflavík airport. Of all stations, 61% were located between 0 and 50 m above sea level, 18% between 51 and 100 m, 14% at 101 to 200 m, and 7% above 200 m, the highest being Hveravellir at 642 m. Fig. 1 shows synoptic and climatological stations in Iceland in 1971.

Climatic factors

Several meteorological as well as geographical factors influence weather and climate in Iceland to a great extent. At its latitudes, there is a considerable annual deficit in the total radiation balance of earth and atmosphere. Consequently, a transfer of heat from lower latitudes is carried out by oceanic and atmospheric circulations.

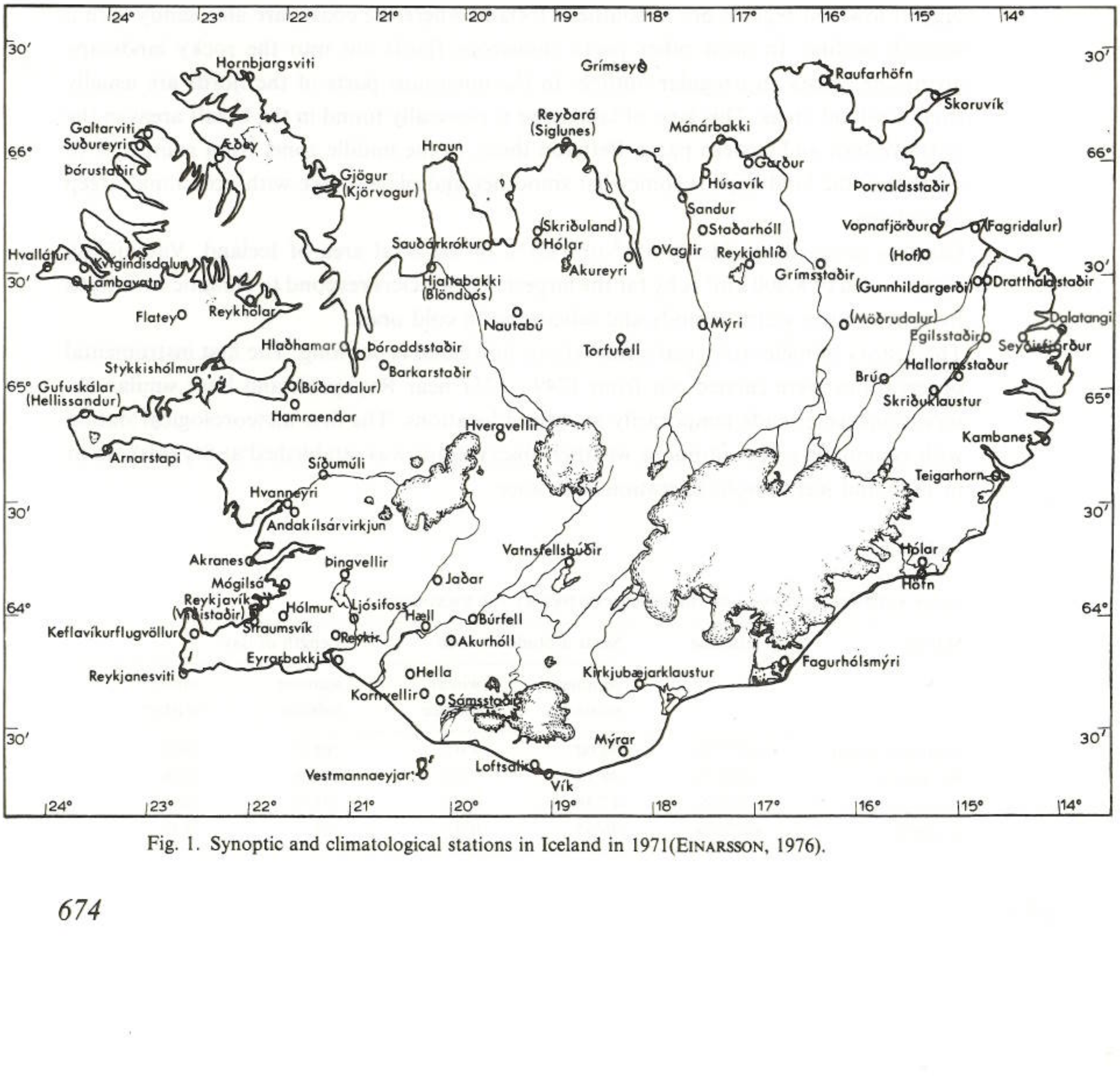

Fig. 1. Synoptic and climatological stations in Iceland in 1971(EINARSSON, 1976).

Iceland is situated near the border between warm and cold ocean currents. The North Atlantic Drift passes just to the south on its course northeastwards, and one of its branches—the Irminger Current—encircles the south, west, and north coasts. On the other hand, a branch of the cold East Greenland Current, known as the East Iceland Current, flows in a southerly and southeasterly direction along the east coast. Off the northwest and southeast coasts, a temperature front is found between these two different currents. It is obvious that the oceanographic conditions just described must influence weather and climate considerably, both directly at the coasts and also because all air masses arrive in Iceland after having passed over the sea.

A concomitant of climatic deterioration in Iceland and its vicinity is an increased extension of *sea ice*, which then may reach the coasts of Iceland in winter, particularly late winter. This sea ice is part of the main ice flow in the East Greenland Current. The extent of the ice flow varies from year to year and also with the time of year. Fig. 2 shows the limits of sea ice in October when it is near minimum and in March – May, the months of largest extent. It can be seen that under normal conditions the main ice edge does not reach the coast of Iceland, whereas in severe ice years the ice may extend along the northwest, north, and east coasts, and in extreme cases is even carried westward along the south coast. When sea ice is present near or at the coasts, the temperature of the coastal region falls appreciably and the largest negative deviations as a rule are then found at the north and east coasts.

As with ocean currents, warm and cold air masses often meet near Iceland. The polar front can almost always be found somewhere over the North Atlantic. Cyclones which form as disturbances on this front often intensify and pass close to Iceland and irregular

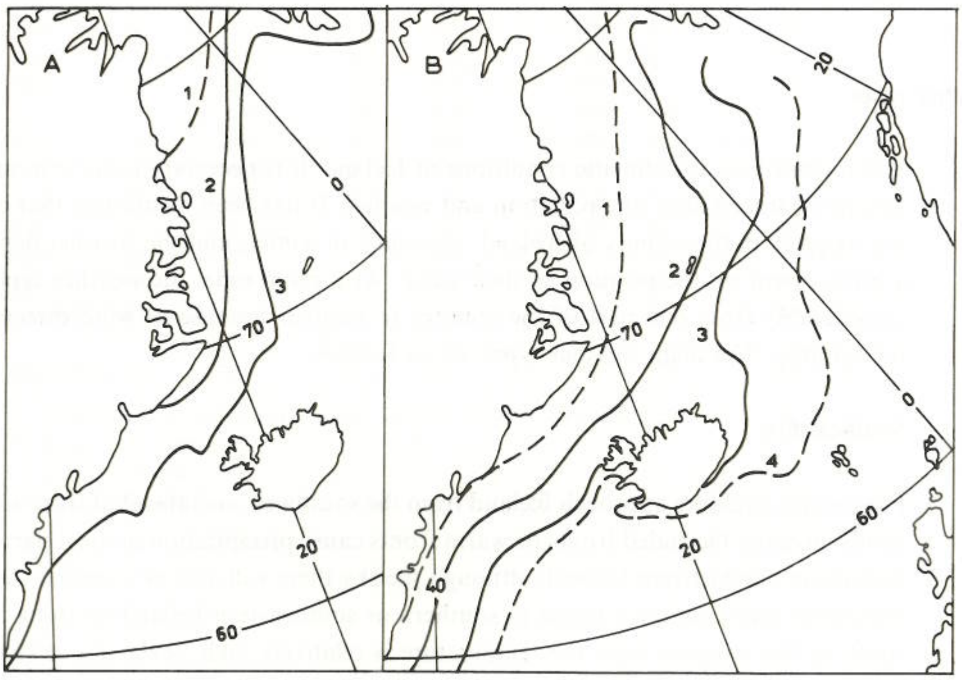

Fig. 2. A. Recent limits of sea ice in early October: *1* = minimum; *2* = normal; *3* = maximum. B. Limits of sea ice in March – May: *1* = recent minimum; *2* = recent normal; *3* = recent maximum; *4* = estimated maximum in historical times. (EYTHÓRSSON and SIGTRYGGSSON, 1971.)

and large pressure variations are therefore common. The lowest pressure ever measured in Iceland, reduced to mean sea level, was 920 mbar; the highest was 1,054 mbar.

Maps of annual mean pressure over the North Atlantic confirm that cyclones must be frequent near Iceland, as a mean low pressure centre—the *Icelandic Low*—is found a short distance southwest of the country. The travelling cyclones bring precipitation and strong winds, and rapid changes in weather may occur in their path. For instance, in winter it may change in a few hours from strong southerly winds with rain or drizzle and temperatures 5 – 10°C above freezing to northerly gale with temperatures 5 – 10°C below freezing. The temperature contrasts between tropical and polar air masses are largest in winter and, consequently, the lows are then more intense than in summer.

From mean pressure maps it may be seen that Greenland, over which a pronounced high often is situated, can have considerable influence on weather in Iceland, mainly by a strengthening of the northeasterly air flow.

The fact that Iceland is mountainous is important in many respects. The temperature conditions depend on the height above sea level and on the terrain; in addition, mountains may form barriers in places preventing maritime air from reaching the interior. Their influence on cloudiness and precipitation is obvious, as both elements increase windward of the mountains, but decrease leeward with resulting rain shadow and even clear weather.

The frequency distribution of wind direction depends considerably on the form and direction of valleys and fjords; local conditions also affect wind speed.

According to Köppen's classification, Iceland lies in a border region between two climatic types. In southern and western Iceland, a temperate rainy climate with cool and short summers (Cfc) exists, but in large parts of northern Iceland and the highlands the type is snow climate (ET).

Weather types

When describing the climatic conditions of Iceland, it is necessary to have in mind the general characteristics of circulation and weather. It has been mentioned that cyclones are frequent in the vicinity of Iceland, especially in winter, and the weather depends to a great extent on the position of their track. At a given time, the weather type differs considerably from one part of the country to another because of wind direction and topography. The main weather types are as follows.

Southeastern

Frequently, cyclones approach Iceland from the southwest and ahead of them southeast winds increase. Occluded fronts or warm fronts cause precipitation in most parts except perhaps in northeastern Iceland, although the sky there will also be overcast. As a rule, maximum precipitation is found in southern or southeastern Iceland or along the west coast; in this weather type, the temperature is relatively high—even above freezing in winter.

For considerable periods, Iceland may experience a series of cyclones from the southwest or even south. This happens when a blocking anticyclone over the British Isles or Scandinavia steers all cyclones northward just west of Iceland. The weather then alternates between the southeastern and southwestern types.

Southwestern or western

Following the passage of a cold front or an occlusion, the wind usually turns from southeast to southwest or sometimes even to west. The air mass which then invades the country is cold, often originating in the polar regions of North America. While passing the North Atlantic, it becomes unstable so that gusty winds and showers are common in southern and western Iceland when the air mass arrives. In the northeast and east, the clouds dissolve and fair weather prevails. When the air comes directly from the Greenland ice cap, the showers abate and even dry weather may occur.

Southern with warm air mass

Low-pressure systems are sometimes almost stationary for days east or southeast of Cape Farewell in Greenland, and at the same time an anticyclone is usually situated over western Europe. Then tropical air reaches Iceland from the south. It is stable in the lower layers after flowing over a relatively cool sea surface and thus fog and drizzle are common in southern Iceland. If the wind is strong, orographic rain may also result. When the air descends on the leeward side in northern and eastern Iceland, clouds disappear and föhn will bring locally warm and dry weather.

Warm air mass originating in Europe

This weather type is often associated with southeasterly winds which carry air laden with industrial dust from the British Isles or the continent. In most parts of Iceland, the weather is hazy with rather poor visibility and when the air blows over the cold East Iceland Current, fog frequently forms off the north and east coasts. In this type of weather, the temperature is usually relatively high in western Iceland.

Eastern

This weather type is caused by cyclones to the south of Iceland and can be rather persistent if they are almost stationary. New lows may arrive from the west and join the primary low.
East winds then prevail on the south coast. Occluded fronts lying from west to east are often found near the south coast and bring precipitation to the south and east. Fog occasionally forms at the northeast and north coasts, but in western Iceland the weather is usually favourable.

Northeastern

When the high over Greenland is strong, northeast winds prevail in Iceland. The cyclone tracks then lie south of Iceland, pointing east and later often northeast. If the cyclones are deep and close to the country when they reach the ocean between Iceland and

Norway, the northeast wind will be strong with snow (rain or drizzle in summer) in northern and eastern Iceland. At other times, the wind is so gentle that the weather may be tolerable in the inner parts of these regions, even if some precipitation falls in the outer parts. In southern Iceland, fair weather prevails in this situation.

Northern

In winter, deep lows east or northeast of Iceland cause strong northerly winds with heavy snowfall in northern Iceland which may last for days. The snowfall often extends southwards along the west and east coasts, but the weather will be dry in southern Iceland. Usually, such weather first abates farthest west when the low moves off, so that in northern Iceland the wind may be weak and the weather fair in the west while it is still snowing on the northeast coast. In many instances, the northeastern and the northern weather types are much alike.

A high over Iceland

The monthly mean pressure in Iceland is highest in spring. In all seasons, however, it may happen that a high over Iceland, often connected to the Greenland high, rules the weather. The winds are then generally light and variable and the weather fair with occasional fog at the coasts, especially in summer.

Climatic variations

Some evidence of climatic variations in geological as well as historical times can be found in Iceland, and the observations at Stykkishólmur have provided a continuous record of temperature variations from 1845 on.

It is considered (Th. Einarsson, 1969) that the temperature rise after the last glacial peak started some 15,000 – 18,000 years ago. Then the glaciers generally retreated and the sea level rose. During this period of generally improving climate, however, there is evidence of two periods of deterioration—one a little more than 12,000 years ago, called the *Álftanes stage*, and the other, *the Búda stage,* some 11,000 years ago.

About 10,000 years ago, temperature suddenly began to rise and it is believed that the Ice Age glacier completely disappeared 2,000 years later. The vegetation which had survived began to spread; the birch advanced rapidly over most of the country about 9,000 years ago, indicating a warm and dry climate. This period has been named the *earlier birch stage*. Later, about 6,000 – 7,000 years ago, precipitation increased while temperature remained high so that the birch retreated and bogs expanded. This is the *earlier bog stage*. Approximately 5,000 years ago, the climate became drier again and the birch increased (*later birch stage*).

It is generally believed that the period from 9,000 to 2,500 years ago was as a whole several degrees warmer than now. But, 2,500 years ago, a sudden deterioration of the climate resulted in a second bog period (*later bog stage*), and the climate gradually gained the characteristics it had when Iceland was settled between 874 and 930 A.D.

No contemporary accounts from the first centuries following settlement can be found. The Icelandic sagas deal with this period, but because they were written down much later, their accounts of weather are unreliable. Nevertheless, such indirect information as mention of barley cultivation indicates relatively favourable conditions.

During the 13th century, the writing of annals began and gradually increased, except during the 15th century (after 1430), a period of almost no reliable records.

THORODDSEN (1916–1917) collected all available information on weather and sea ice in annals and sagas from settlement until 1900. On the basis of Thoroddsen's work and other sources, several authors (see, for instance, BERGTHÓRSSON, 1969) discussed the main characteristics of climatic changes from the time of settlement. The principal conclusions are that the climatic conditions have been subject to the following changes.

It is believed that during the first centuries after settlement (9th–12th centuries) conditions were at least as favourable as in the warm part of the present century (1920–1964). At that time, glaciers were small and barley was cultivated. About 1200, the climate deteriorated, temperature decreased and from that time the climatic conditions were more or less unfavourable until about 1920, when a marked improvement was experienced. Nevertheless, appreciable temperature variations took place during these cold centuries. A temperature minimum occurred around 1300, but some increase followed in the last part of the 14th century. The 15th century is thought to have been rather mild, but records of that time are sparse. After 1500, the climate deteriorated again and the 17th, 18th, and 19th centuries were very cold.

In 1845, systematic meteorological observations started in Iceland; a weather station still in operation was set up at Stykkishólmur in western Iceland. Temperature observations from this station give a fairly good picture of the conditions for the country as a whole because temperature variations tend to be in phase in different parts of the country. In winter, temperature variations are more extreme than in summer. It is possible to divide the entire period from 1846 into several distinct shorter periods according to the mean temperature of that season (December–March) at Stykkishólmur, as shown in Table II (SIGFÚSDÓTTIR, 1970).

The table indicates that low temperatures prevailed from 1853 to 1920, especially during the first part, whereas a relatively warm period followed in 1921–1965 (1921–1964 in northern Iceland). A dramatic change took place around 1965; the annual temperature dropped to a level comparable with the cold period before 1920, and 1966–1971 were all much below normal values. This decrease in temperature was most pronounced in northeastern and eastern Iceland and was associated with the presence of sea ice, one of several serious attendants of climatic deterioration in Iceland.

Fig. 3, showing 10-year overlapping means of temperature for six stations in Iceland, illustrates the above. At Stykkishólmur, the curve has a minimum in 1859/68, but it then rises slowly until 1889/98. The following 25 years it is nearly horizontal with some irregular variations, but from 1916/25 it rises suddenly until 1925/34. A maximum is found for 1932/41 and 1933/42. Later, the curve descends in general, although a minimum occurs in 1947/56 to 1949/58 and a maximum after 1951/60.

Iceland represents an environment in many respects very sensitive to climatic changes. A deterioration in the climate as a rule is accompanied by increased sea ice near the coasts, which in extreme cases can obstruct navigation and hinder the fisheries. A lowering of temperature often causes winter-killing of grasses and retards growth during

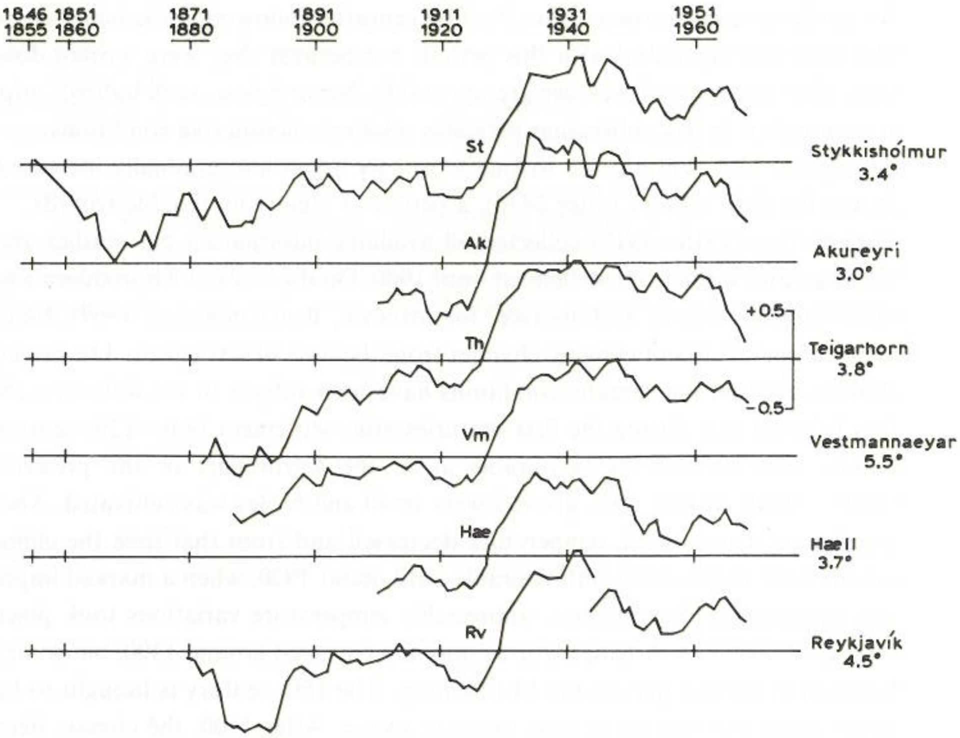

Fig. 3. Ten-year overlapping means of temperature at six stations in Iceland (EYTHÓRSSON and SIGTRYGGSSON, 1971).

TABLE II

MEAN TEMPERATURE (°C) IN WINTER AT STYKKISHÓLMUR

Period	Temperature
1846–1852	−0.7
1853–1892	−2.3
1893–1920	−1.7
1921–1965	−0.1
1966–1971	−2.0

the growing season. In both cases the result is a failure of hay, the most important crop in Iceland.

Temperature

The climate of Iceland is maritime with cool summers and mild winters. *Annual mean temperature* ranges from 2.0°C to 5.7°C in the lowlands. It is above 5°C at several stations along the south coast, but generally 4 – 5°C elsewhere in southern Iceland and 3 – 4°C in the interior of western Iceland. Nowhere in northern Iceland does it reach 4°C, but it is 3 – 4°C in the outlying areas and 2 – 3°C in some inland areas. In the highlands, of course, it is lower.

The *annual range of temperature,* i.e., the difference between the average temperatures of the warmest and coldest month, is rather small. Lowest values are found at the coasts, usually 9 – 11°C, except in the west where it is 11 – 12°C. The lowest single value is 8.7°C at Dalatangi on the east coast. In most inland regions, the range is 12 – 13°C, but 13 – 14°C in the interior of southwestern and northeastern Iceland, and in the latter are the highest values—above 15°C. *July* is the warmest month in most parts except at the north and east coasts where *August* is a little warmer. In southwestern Iceland, *January* is the coldest month, but in all other parts it is *February*. The difference between these two months is always very small, however.

Figs. 4 and 5 show the mean temperatures of *January* and *July* for 1931 – 1960 based on all available temperature data.

The January map shows that only in a few places does the temperature of this month exceed 0°C—at Reykjanes and some parts of the south and east coasts. The highest single value is 1.4°C at Vestmannaeyjar. At the west and partly also at the north coast, the temperature is 0° to −1°C, but already in the fjords it decreases to −2°C. Temperature generally decreases towards the interior, partly because of an increase in altitude and partly because temperature in winter decreases with increasing distance from the shore. This decrease is on the average approximately 2°C/100 km. In the highlands, except for the highest mountains and glacier caps, the January temperature is from −4° to −8°C.

In Fig. 5, which shows the mean temperature for July, one should first note the regions

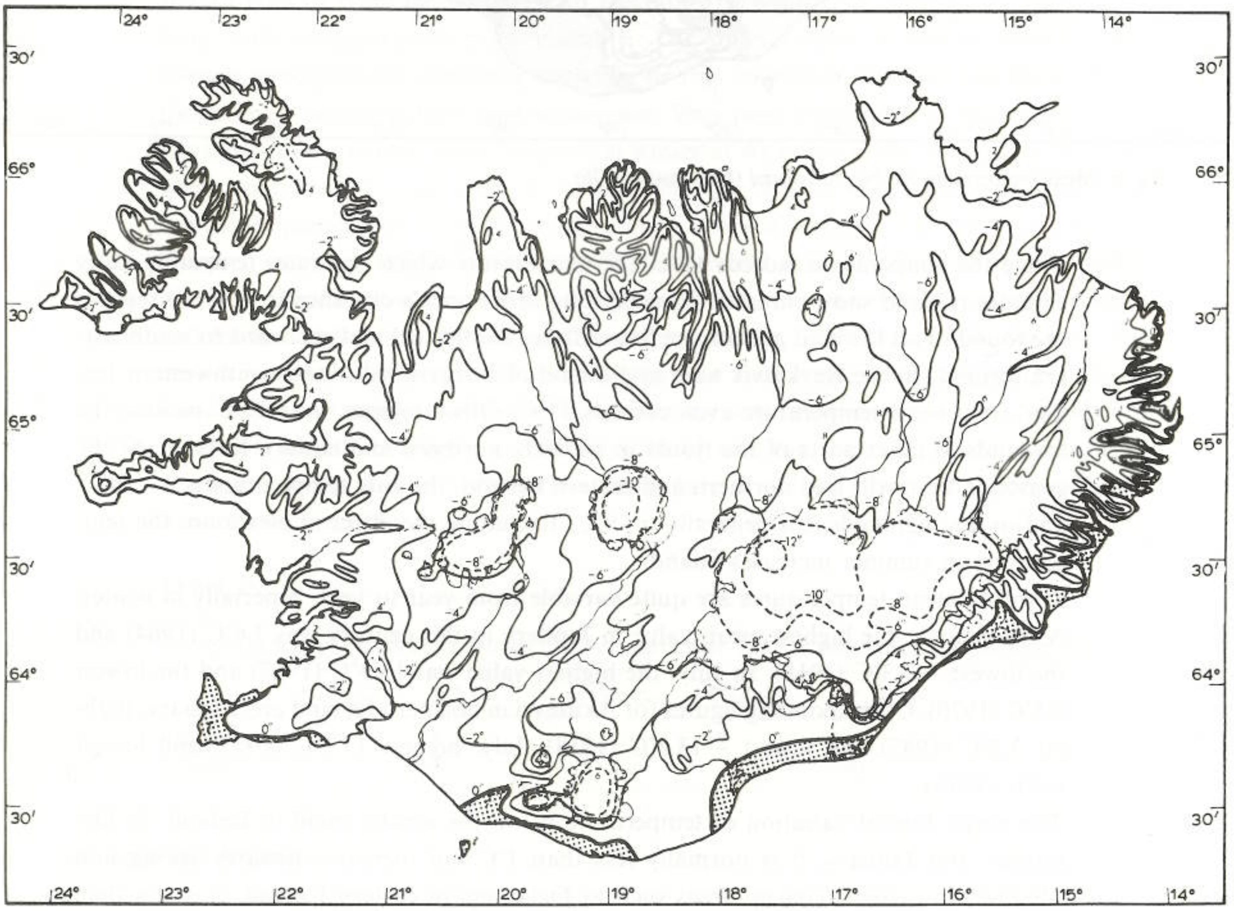

Fig. 4. Mean temperature for January in Iceland (Einarsson, 1976).

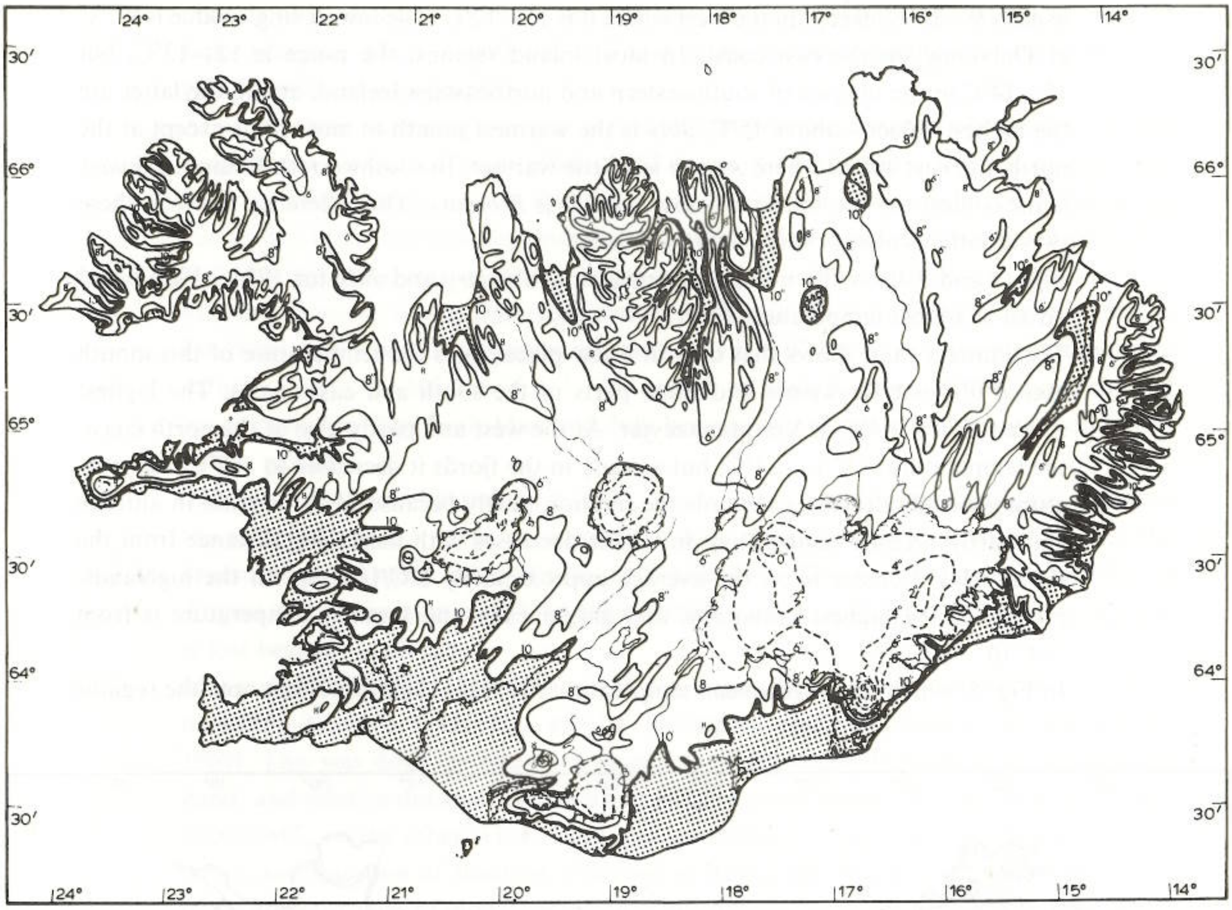

Fig. 5. Mean temperature for July in Iceland (EINARSSON, 1976).

where the temperature exceeds 10°C, the temperature which separates temperate rainy climates (C) and snow climates (E) according to Köppen's classification. These regions are found in all lowland areas from Snaefellsnes southward and eastward to southeastern Iceland. In the Reykjavík area and inland of Borgarfjördur and southwestern Iceland, the mean temperature even exceeds 11°C. Other regions over 10°C include the lowlands in inner parts of the fjords in western, northern and eastern Iceland. At the coasts of Vestfirdir and northern and eastern Iceland, the July temperature is 8 – 10°C, and in the highlands it is generally 6 – 9°C. Excluding the effect of elevation, the temperature in summer increases inland.

Monthly mean temperatures are quite variable from year to year, especially in winter. At Reykjavík, the highest mean value in January in this century was 3.6°C (1964) and the lowest −7.3°C (1918). In July, the highest value was 13.3°C (1917) and the lowest 9.5°C (1970). Corresponding figures for Akureyri in northern Iceland are: January, highest 3.2°C (1947) and lowest −13.5°C (1918); July, highest 13.6°C (1927) and lowest 6.6°C (1915).

The mean diurnal variation of temperature is, on the whole, small in Iceland. In December and January, it is normally less than 1°C but increases towards spring and summer. In extreme coastal areas such as Dalatangi in eastern Iceland, it is less than 2°C even during summer. It is 3 – 5°C at Reykjavík and 4 – 6°C at inland stations in summer.

It may be noted that the range between the mean maximum and the mean minimum temperatures of each month shows very little variation during the year, contrary to the diurnal amplitude. Irregular temperature variations caused by frontal passages and air mass changes are responsible for the range in winter, whereas the influence of the regular diurnal cycle and insolation prevails in summer, even though air mass changes are also rather frequent during that season.

Temperature changes caused by advection of air masses are often sudden and large. A notable example of such an abrupt change occurred on 9 April 1963 when the temperature at Reykjavík was 7°C at noon, but had dropped to −7° to −8°C the same night. Similar drops in temperature were experienced in all parts of the country, and because this occurred in spring considerable damage was caused, especially to trees.

In spite of the maritime character of the climate, extreme values of temperature deviate considerably from the averages. At Reykjavík, for instance, the highest maximum in 1931−1960 was 23.4°C and the lowest minimum −17.1°C. At Akureyri, corresponding figures are 28.6°C and −22.1°C. There is, of course, a significant difference in the extremes between coasts and inland. The maximum temperature also shows a distinct difference between the north and east and the south and west. In summer, fair weather in northern and eastern Iceland is associated with warm air of a southerly origin, and a föhn may add to the temperature, which may thus rise to 20−25°C in the afternoon. In the south and west, fair weather, in contrast, occurs with cool, northerly air so that here the maximum temperature will be lower as a rule.

The highest reliable temperature measured in Iceland is 30.5°C at Teigarhorn in June 1939, and the lowest −37.9°C at Grímsstadir in January 1918.

Frost is frequent in Iceland, but does not normally last long as winter thaws are common; as a matter of fact, thaws are a peculiarity of Icelandic weather.

Table III shows the average number of *frost days* for five weather stations during 1951−1960, i.e., days during which the minimum temperature at 2 m height was below freezing. Frost days are rare in June−August except at highland stations (Grímsstadir).

In December−February, the number of frost days per month is about 20 or more except at Vestmannaeyjar. The annual number is highest, commonly above 150, in northern and eastern Iceland, but lowest at Vestmannaeyjar, an extreme maritime station off the south coast.

In Table IV, the average dates of last frost in spring and first frost in autumn are shown

TABLE III

AVERAGE NUMBER OF FROST DAYS AT 2 M HEIGHT, 1951-1960

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Reykjavík	24	20	16	10	4	0.1	–	0.1	2	6	12	21	115
Akureyri	26	22	22	17	8	0.9	–	0.3	2	12	16	25	151
Grímsstadir	29	26	25	24	15	6	0.5	1	9	20	22	28	206
Hólar i Hornaf.	22	19	16	11	5	0.3	–	–	0.8	6	10	19	109
Vestmannaeyjar	14	13	11	6	3	–	–	–	0.6	3	6	13	70

TABLE IV

AVERAGE DATE OF LAST FROST IN SPRING AND FIRST FROST IN AUTUMN AT 2 M HEIGHT, 1951–1960

	Last frost	First frost
Reykjavík	10/5	1/10
Akureyri	31/5	15/9
Grímsstadir	20/6	20/8
Hólar í Hornaf.	15/5	9/10
Vestmannaeyjar	5/5	16/10

for the same five stations. Usually, the frost-free period in summer is shorter in the interior than at the coasts. The period is also shorter in northern Iceland than in the south, as cold air from the north causes frost there later in spring and earlier in autumn.

Precipitation

A large part of precipitation in Iceland falls with winds between east and south which prevail in the forward part of cyclones arriving from the southwest. Fig. 6 shows that the annual precipitation is distributed accordingly and that topography influences the pattern. The highest precipitation is in the southeast, with estimated maximum annual values of more than 4,000 mm on the ice caps Vatnajökull and Mýrdalsjökull and values above 1,600 mm in the lower areas. The highest annual value for a weather station is over 3,300 mm at Kvísker. In southwestern and western Iceland, the amount in the lowlands is 1,000 – 1,600 mm at the coasts, but 700 – 1,000 mm farther inland. The northern and northeastern districts have the least precipitation, with values of 400 – 600 mm in lower areas and less than 400 mm in an extensive area north of the huge glacier Vatnajökull, which creates a rain shadow for the southeasterly winds.

Precipitation depends to a great extent on local conditions and can vary much within a short distance. A good example is the Reykjavík area. At Reykjavík airport, the annual precipitation is about 800 mm; in the eastern part of town, it is 900 mm; on a small hill less than 10 km southeast of town, it is 1,040 mm; and in the mountains farther southeast, estimated values reach 3,000 mm.

Rain gauges, which in Iceland have openings about 1.5 m above the ground, give too low precipitation values, especially where wind velocities are high and where considerable precipitation falls as snow. No systematic investigations have been made in Iceland to quantify this point, but preliminary figures indicate that measured values for rain on the average may be approximately 25% too low. This figure is highly dependent on wind velocity and a higher value is to be expected for snow (F. H. Sigurdsson, pers. comm., 1972). Unfortunately, no reliable corrections could be applied when this was written and this fact must be considered when interpreting the precipitation measurements.

Autumn and early winter represent the seasons of greatest precipitation in most of Iceland, with a maximum usually occurring in *October*. An exception is interior northeastern Iceland where maximum precipitation occurs in July or August. *May* and *June*

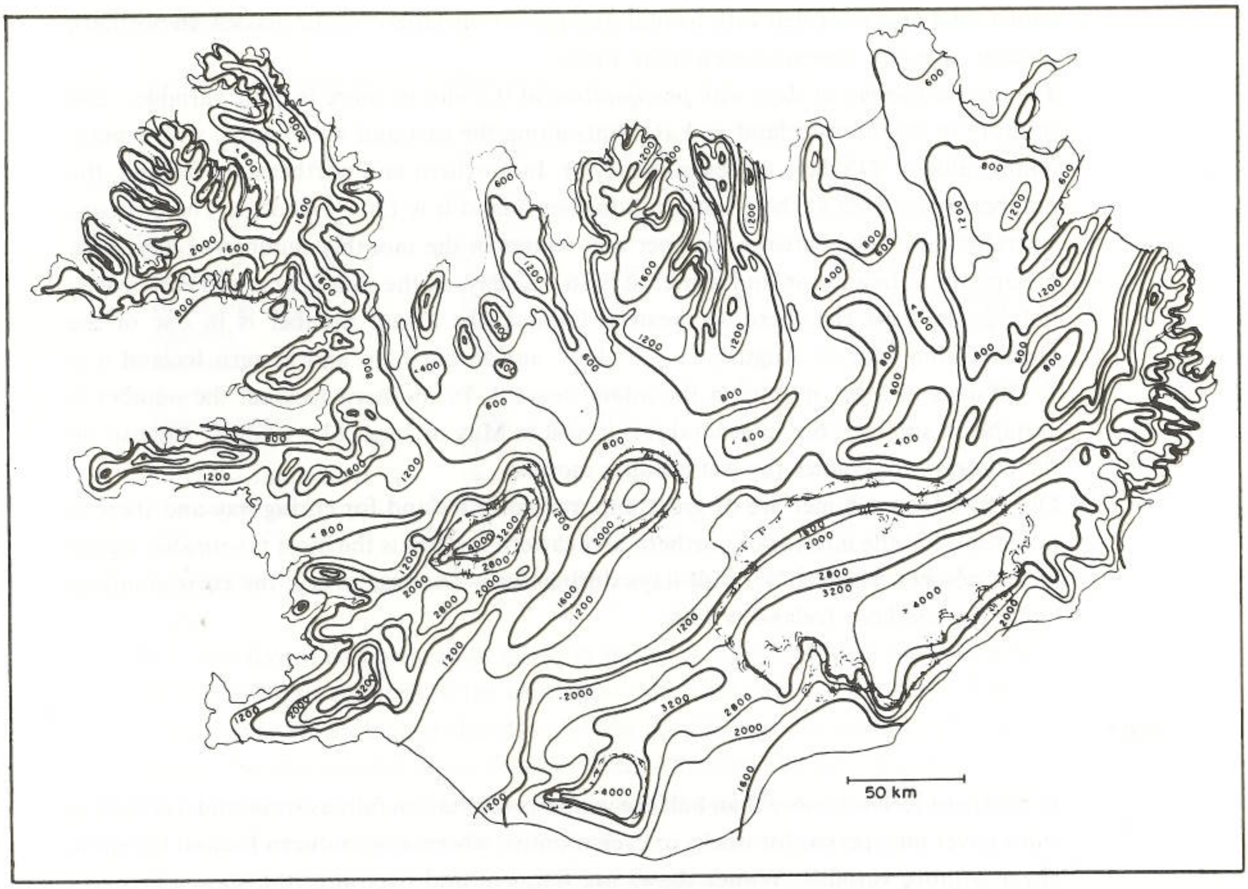

Fig. 6. Annual precipitation in Iceland (after Sigfúsdóttir, published in EINARSSON, 1976).

are the driest months of the year. As an average for the country as a whole, October's share of the annual precipitation is about 12% and that of May about 5%.

In most parts, some 50 – 65% of the annual precipitation falls during the months of October to March, except in some places in northeastern Iceland where the winter share is 40 – 50%.

Monthly values of precipitation show large year-to-year variations, and months with no precipitation at all exist. Very dry months are more likely to occur from January to August than in autumn. At Reykjavík, for example, the mean precipitation in October is 97 mm; the highest value for this month from 1931 – 1960 is 181 mm and the lowest 33 mm. In May, the mean value is 42 mm, the highest 96 mm and the lowest 0 mm. As a rule, maximum values deviate much more from the mean than the minimum values, especially for wet regions.

The largest monthly amount of precipitation measured in Iceland was 769 mm at Kvísker in southeastern Iceland in October 1965. The maximum precipitation measured in 24 h was 242.7 mm at Kvísker in October 1979.

As convective precipitation during summer is not an essential part of the total amount, it follows that intense rain of short duration is rare. Intensity measurements are sparse, but as an example, the highest 10-min value for Reykjavík is 4.6 mm and the highest 1-h value 17.3 mm. Thunderstorms are accordingly very infrequent; they may occur 1 – 2 days per year on the average in southern and southwestern Iceland, usually in winter, and are connected with frontal passages or unstable cold air masses. In northern Iceland, they are observed even more rarely.

The annual number of days with precipitation of 0.1 mm or more is quite variable—200 or more in southern Iceland and at points along the east and west coasts, with a maximum value of 235 days at Vestmannaeyjar. In northern and northeastern Iceland, the number is less even at the coasts, and farther inland it is 130–140 days. There is considerable difference between summer and winter in the monthly number of days with precipitation. In autumn and winter, it is 16–23 days at the south, west and east coasts, but 12–16 days elsewhere. In western Iceland, the lowest number is in one of the months from May to August, 11–15 days, and in northern and eastern Iceland it is 7–10 days in May or June in the inland regions. In southern Iceland, the number is variable in summer, but in general it is lowest in May or June, 13–17 days. August, on the contrary, resembles the wet autumn months.

Dry periods in summer are of great importance in Iceland for curing hay and there is no doubt that the interior of northern and eastern Iceland is the most favourable region in this respect. Here 66% of all days during June–August is dry; the corresponding figure for southern Iceland is 47%.

Snow

In northern Iceland, more than half the winter precipitation falls as snow and a complete snow cover may persist for weeks or even months, whereas in southern Iceland the snow cover is more variable. Winter thaws are frequent and may alter the snow cover, especially in the south where the thaws are usually accompanied by rain. It is difficult to classify precipitation as rain or snow because a considerable part of precipitation falling between observation times is mixed, or of both types, which is also classified as mixed. According to average values for several weather stations during 1965–1972, snow alone is only about 5–10% of the total precipitation in southern Iceland during December through March. In northern Iceland, in contrast, snow amounts to 50–70% of total precipitation from November to March and only 3–15% is classified as rain.

The snow cover, expressed in percent of total cover and taken as the average for October–May, is largest in northern and northeastern Iceland and in the northernmost part of Vestfirdir, where it is 50–70%, with the highest monthly mean values of 80–90%. In the south and in most of the west, the values are much lower, 15–38%, with minimum values at the south coast.

Table V shows the average dates for 1951–1970 of first and last snowfall, first and last day of complete snow cover, and first day of no snow cover in spring for several weather stations.

The first snowfall in autumn usually occurs in October in southern and western Iceland, but in September in the northern districts. At Hornbjargsviti in the extreme northwest and at Grímsstadir in the northeastern highlands, the first snowfall is in late August.

The last snowfall in spring is in early May in southern and western Iceland, in late May or early June in the northern and eastern districts, and even later at Hornbjargsviti and Grímsstadir.

The first day of complete snow cover in autumn is on the average in the first part of

TABLE V

SNOWFALL AND SNOW COVER, AVERAGE DATES 1951–1970

	First snowfall	Last snowfall	Complete snow cover		First day of no snow cover
			first day	last day	
Reykjavík	14/10	30/4	4/11	9/4	19/4
Sídumúli	5/10	9/5	2/11	25/4	2/5
Hornbjargsviti	27/8	13/6	23/10	20/5	4/6
Akureyri	25/9	27/5	23/10	22/4	13/5
Grímsstadir	23/8	16/6	7/9	30/5	2/6
Raufarhöfn	10/9	4/6	23/10	12/5	1/6
Hallormsstadur	6/10	29/5	30/10	22/4	4/5
Hólar (Höfn)	23/10	29/4	10/11	8/4	22/4
Kirkjubaejarklaustur	19/10	9/5	8/11	10/4	29/4
Vestmannaeyjar	8/10	7/5	19/11	8/4	22/4

November in southern and western Iceland, but in the last days of October in other parts.

The last day of complete snow cover in spring is rather variable, but it generally occurs in the first part of April in the south and late April or May elsewhere. The date of no snow cover varies from a few days to one month after the last day of complete snow cover—on the average about 15 days later. Although the last date of snow cover is on the average in April or May, shorter or longer periods of no snow cover are common in all winter months in southern Iceland.

Snow depth is quite variable and difficult to measure. The deepest snow will be found in the north, and several times since 1931 the coastal stations Hornbjargsviti and Raufarhöfn have reported depths in excess of 200 cm, the highest known values for that period.

Wind

The distribution of annual mean pressure over the North Atlantic with the *Icelandic Low* to the southwest indicates that, where unobstructed, wind directions between northeast and southeast should be frequent. Fig. 7, showing the annual frequency of the different wind directions for 1965 – 1971 confirms this, at least at the coastal stations in southern and northwestern Iceland and at Grímsey off the north coast. Apart from these places, the wind roses are rather irregular. Local conditions, landscape, and direction of fjords or valleys control the frequencies, as seen for instance at Sídumúli, Thóroddsstadir, Akureyri, and Egilsstadir. Although west and northwest winds are rare, especially in the west, some are found in the east, particularly at Raufarhöfn in the northeast corner.

The frequency of calms is given at each station. Unfortunately, the figures are hardly comparable between stations as estimates of calms differ, especially between stations with and without anemometers. Nevertheless, one can conclude that calms are uncommon on the south coast and in the highlands, but are rather frequent in lowland regions of the interior.

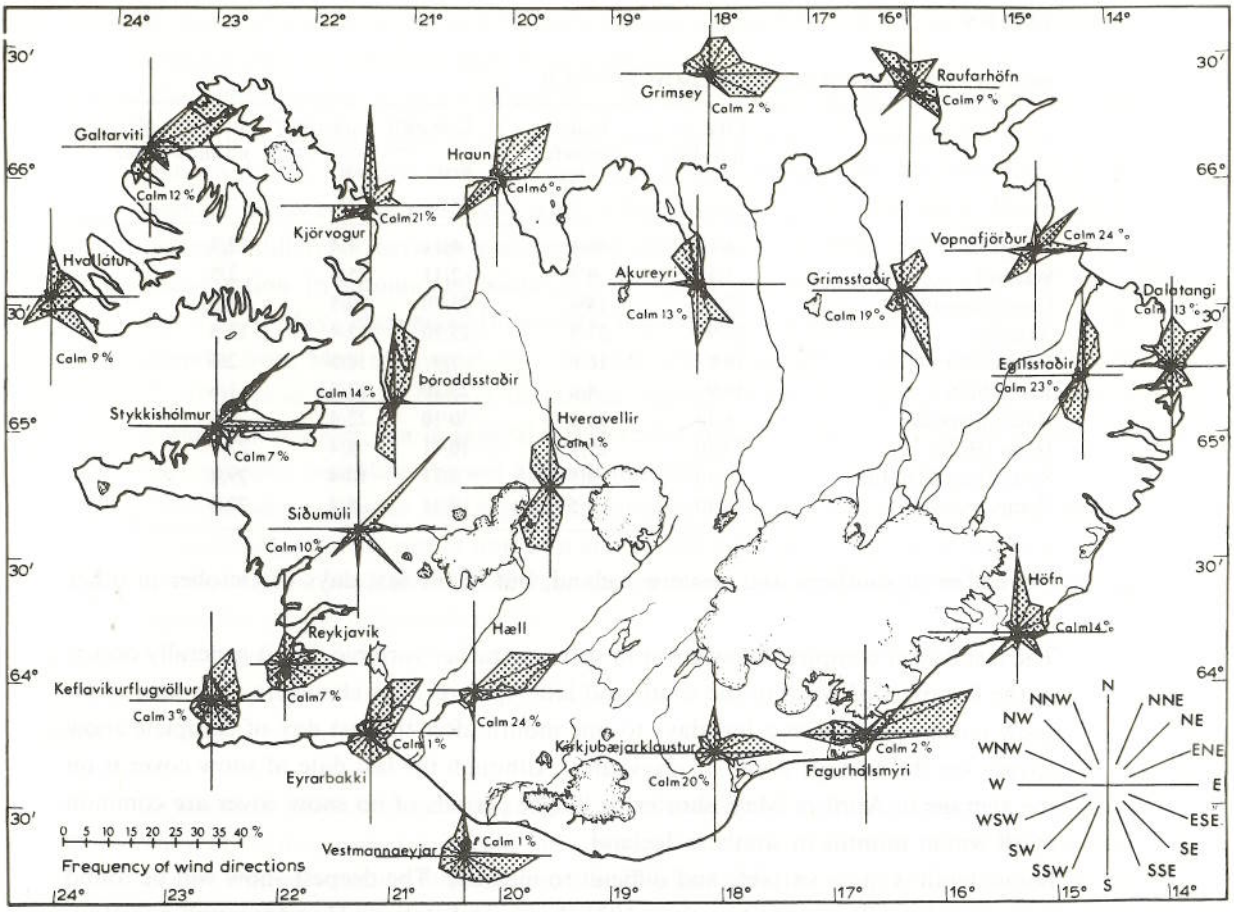

Fig. 7. Annual frequency of different wind directions at several Icelandic weather stations, 1965–1971. (EINARSSON, 1976).

In summer, sea breezes influence the frequencies of wind directions considerably at the coasts. At Reykjavík, for instance, the average frequency of the sea breeze directions, west to north, is 44% in July but 11% in January. At Akureyri, the frequency of the directions northwest to north is 54% in July but 21% in January.

As expected in a country where low pressure systems pass frequently, wind velocities are generally high, especially at the coasts and in winter when the cyclones are most intense. Typical winter values of mean monthly wind velocity are $6-7$ m s^{-1} at the coasts, while summer values are $4-6$ m s^{-1}. The southernmost station, Vestmannaeyjar, has exceptional wind conditions with a highest monthly mean value of about 13 m s^{-1}, partly caused by the height (120 m) of the station and its position on a cape. Otherwise, wind speeds are without doubt highest at the south coast. At lowland stations in the interior, the mean wind speed is $3-4$ m s^{-1}, but in the highlands it is rather high.

The annual number of days with gale force winds (≥ 8 Beaufort) is in general highest at the coasts and in the highlands, as seen in Table VI, where the numbers ≥ 9, ≥ 10, ≥ 11, and ≥ 12 Beaufort are also given for several weather stations. The number for Vestmannaeyjar is extremely high for the reason described above.

The highest measured 10-min average of wind speed in Iceland is 55.6 m s^{-1} at Vestmannaeyjar in October 1963 and 51.5 m s^{-1} in January 1957. In January 1949, the wind force was estimated 17 Beaufort ($56.1-60.7$ m s^{-1}) at the same place. A few values

TABLE VI

ANNUAL MEAN NUMBER OF DAYS, 1965–1971 WITH DIFFERENT BEAUFORT WIND VALUES
(after ÓLAFSSON and BERGTHÓRSSON, 1972)

	⩾8	⩾9	⩾10	⩾11	⩾12
Reykjavík	43	16	5	0.7	0.1
Galtarviti	40	18	7	2.3	1.6
Saudárkrókur	46	15	9	0.6	0.2
Akureyri	18	7	3	0.6	0.3
Raufarhöfn	45	16	4	0.6	
Dalatangi	27	8	1	0.1	
Höfn	33	12	5	1.1	0.4
Vestmannaeyjar	199	135	82	41	17
Hveravellir	92	45	18	4	0.5

between 36.0 and 49.4 m s^{-1} are known from other stations. The highest measured value for Reykjavík is 39.6 m s^{-1} in February 1981.
Measurements of wind gusts have only recently become available from a few stations, in addition to the airports at Reykjavík and Keflavík where older records are available. The highest gust velocity measured till now is 61.8 m s^{-1} at Thyrill in Hvalfjördur, beneath a mountain, but further measurements are likely to yield higher values. The occurrence of gusts depends greatly on topography. Extreme gusts probably do occur near mountains, but this has not been sufficiently confirmed owing to lack of measurements.

Humidity

Because the climate of Iceland is maritime, the humidity of the air is comparatively high. Monthly mean vapour pressure for 1958–1967 (computed from mean relative humidity and saturation vapour pressure at monthly mean temperature) is generally lowest in December and January (4–5 mbar) and highest in July (9–11 mbar), with maximum values in southern Iceland. The annual means are on the order of 6–7 mbar. For the same period, the monthly mean relative humidity is mostly in the interval 75–90%. The variation from month to month is rather small and irregular, and the same applies to the variation between different parts of the country. It is common to find the lowest monthly means in one of the months from January to June, frequently in May. The highest monthly means, on the other hand, are found in the latter half of the year, usually in August or October. In Iceland, relative humidity is measured by a psychrometer which is often unreliable when the temperature is below freezing.

Cloudiness

The mean cloud cover is high in Iceland with monthly mean values (1931–1960) of 5.0–7.0 oktas. In western and northern Iceland, the highest monthly means are most

TABLE VII

AVERAGE MONTHLY AND ANNUAL NUMBER OF OVERCAST DAYS, 1961–1970

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Reykjavík	14	13	15	16	13	19	15	16	15	15	11	13	174
Galtarviti	21	17	20	17	17	18	18	20	17	22	20	19	226
Grímsey	20	18	23	18	20	17	22	22	19	23	22	23	247
Akureyri	16	13	15	14	18	15	18	19	16	18	17	17	196
Grímsstadir	13	10	12	12	12	11	11	14	13	14	13	13	148
Hallormsstadur	15	11	13	14	15	14	15	16	16	16	12	13	170
Dalatangi	17	13	16	16	19	17	18	19	18	17	16	14	200
Hólar (Höfn)	15	12	14	15	16	19	17	18	15	16	10	11	178
Kirkjubaejarkl.	12	12	13	15	16	17	12	14	13	12	9	11	156
Vestmannaeyjar	17	16	17	16	16	20	15	16	17	16	13	14	193

often found in one of the months August – December, but in July – September in eastern and southern Iceland. Lowest monthly values are found in January or February in the south and in May or June in the north. The variation between months is very small. The cloud cover is lowest in the interior of northeastern and eastern Iceland and in the south. The highest values are, on the other hand, found in the northwest.

Tables VII and VIII give the average number of overcast and clear days at several weather stations for 1961 – 1970. The definition of an overcast day is that the sum of the cloud cover values from 8 daily observations is 52 oktas or more. A day is considered clear when the sum of the cloud cover from 8 daily observations is not more than 12 oktas. The 10-year period used here is hardly representative in the southwest, as the cloud conditions in June were exceptional there during the period with almost no clear but many overcast days.

The monthly number of overcast days is rather variable, mainly in the range 15 – 23 at

TABLE VIII

AVERAGE MONTHLY AND ANNUAL NUMBER OF CLEAR DAYS, 1961–1970

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Reykjavík	2.5	2.5	3.0	1.3	1.7	0.1	1.1	1.0	2.3	2.1	2.5	2.2	22.3
Galtarviti	0.9	0.5	0.8	0.6	1.9	1.3	1.5	1.1	0.9	0.5	0.4	0.2	10.6
Grímsey	0.8	0.3	0.3	0.5	0.6	0.4	0.0	0.3	0.6	0.4	0.2	0.2	4.6
Akureyri	2.4	2.4	1.1	1.5	1.2	0.9	1.0	0.3	1.5	0.6	0.7	1.2	14.8
Grímsstadir	1.8	2.0	2.0	2.3	1.7	1.1	1.5	2.0	1.1	1.3	0.4	1.0	18.2
Hallormsstadur	2.0	3.8	2.7	2.3	2.0	1.9	1.8	0.9	1.3	0.9	1.8	2.3	23.7
Dalatangi	0.8	1.5	0.3	0.5	1.2	0.8	0.6	0.4	0.8	0.3	0.5	0.7	8.4
Hólar (Höfn)	2.2	3.1	3.2	1.6	1.6	0.7	0.1	0.4	1.6	1.7	3.6	3.7	23.5
Kirkjubaejarkl.	3.0	2.6	3.8	1.8	0.8	0.2	1.2	0.9	2.0	2.2	3.8	3.8	26.1
Vestmannaeyjar	2.7	1.9	2.9	2.3	1.1	0.1	1.6	1.4	2.0	2.4	2.4	2.4	23.2

the coasts, but lower at inland stations where it is as low as 9 – 12 days in some months. The annual values show a distinct difference between the coasts and interior, with the highest number of overcast days, 247, at Grímsey off the north coast. It is about or over 200 days at the coasts, but less than 200 at inland stations, with 148 (Grímsstadir) the lowest value in the table.

Clear days are few, as expected. In some months, they hardly occur and in the most favourable regions one can expect only 3 – 4 clear days per month on the average. The lowest number of clear days is found at the northwest, north, and east coasts (Galtarviti, Grímsey, Dalatangi). On the other hand, the number is relatively high inland, especially in the northeast and east and in southern Iceland where it is highest (Kirkjubaejarklaustur).

Visibility and fog

Iceland is sparsely populated with little industrial activity, and even domestic heating is to a large extent accomplished in a smokeless way, i.e., with water from hot springs. Consequently, the amount of dust particles in the air is usually small, and in fine weather the visibility is extremely good—mountains 100 – 200 km away may be clearly seen. It happens, however, that southerly or southeasterly winds bring industrial dust from the British Isles or from the continent to Iceland. The weather in most parts will then be hazy with comparatively poor visibility. The main causes of limited visibility are, though, precipitation, especially snowfall, or fog. In winter, visibility less than 10 km, therefore, is more frequent than in summer. Very poor visibility (less than 5 km) is for the same reason (snow) more frequent in winter at Akureyri in the north than at Reykjavík where only a small part of the precipitation falls as snow. Table IX shows the annual frequencies of visibility within certain limits in percent of all observations.

The frequency of fog (horizontal visibility less than 1 km) in Iceland is quite variable. The annual mean number of days with fog is on the whole much higher in northeastern and eastern Iceland (40 – 60 days at the coasts) than in other parts of the country. The reason is without doubt the influence of the cold East Iceland Current which flows in a southerly and southeasterly direction along the east coast. In other parts, the annual number is usually between 5 and 17 days. Days with fog are by far more numerous in summer than in winter, with maximum in July, 8 – 10 days in the regions of most frequent occurrence.

TABLE IX

ANNUAL FREQUENCY OF VISIBILITY WITHIN CERTAIN LIMITS 1961–1970, IN PERCENT OF ALL OBSERVATIONS

	< 1 km	1-5 km	6-10 km	11-20 km	> 20 km
Reykjavík	1	4	10	18	67
Akureyri	2	6	5	7	80

Sunshine and radiation

Duration of bright sunshine has been measured at 6 weather stations in Iceland for a considerable period, but only 2 stations have 30-year normals—Reykjavík with 1,249 h per year and Akureyri with 962 h. These figures are not directly comparable because of differences in topography.

At all sunshine-recording stations, the maximum possible duration of sunshine, S_o, has been found for the 10 years 1958–1967 by plotting all values from clear days and drawing a best-fitting curve so that the majority of the single values lies on or below the curve. In March through September, the fraction of possible monthly mean sunshine, S/S_o, for the same years is mostly in the interval 25–40% at these stations.

Global radiation, G, has been recorded at Reykjavík since July 1957. Ten-year means for 1958–1967 show an annual mean value of $3.1 \cdot 10^9$ J m^{-2} with the highest monthly value in July, $2.1 \cdot 10^2$ J m^{-2} s^{-1}. The month of highest solar altitude, June, showed lower radiation than both May and July because of unfavourable weather conditions in this period.

The fraction of possible radiation, G/G_o, (G_o is global radiation on clear days, found in the same way as S_o), gives an estimate of how much clear sky radiation reaches the ground. Annual mean value of G/G_o at Reykjavík is 57% with a maximum of 63% in August and a minimum of 51% in June. On the average, 43% of the clear sky radiation is lost because of clouds.

Mean global radiation for 1958–1967 has been calculated for 5 stations in Iceland recording duration of sunshine and for 30 stations observing cloud cover (EINARSSON, 1969). This was done by means of equations of regression between G/G_o, on the one hand, and relative duration of sunshine, S/S_o, or mean cloud cover at 0900, 1500, and 2100 GMT, on the other. These equations were based on the values of radiation, cloud cover, and duration of sunshine observed at Reykjavík. According to these computations, annual values of global radiation at the different stations range from $2.5 \cdot 10^9$ to $3.6 \cdot 10^9$ J m^{-2}.

Maximum insolation is found in southern Iceland west of the icecap Mýrdalsjökull, and from there a zone of relatively high radiation reaches north of the glacier Vatnajökull to another maximum in the interior of northeastern Iceland. A minimum area in the inner parts of the district Skagafjördur and the western highland Kjölur is also characteristic. The radiation shows considerable variation and is influenced by local differences in cloud cover and weather conditions.

Potential evapotranspiration

Potential evapotranspiration, E_p, has been estimated with the aid of Penman's equation for a grass-covered surface (EINARSSON, 1972). The calculations were based on the computations of global radiation mentioned in the foregoing section and meteorological data for 28 stations from 1958–1967. Penman's method has been rather widely used in neighbouring countries and it was considered worthwhile to make estimates also for Iceland.

Comparisons at Reykjavík between the evaporation from a class "A" pan and potential evapotranspiration according to Penman have shown that the ratio, class "A"/E_p, is 1.10 on the average for the summer (June–September), being lowest in June but increasing towards autumn.

The calculations of E_p and E_o, the evaporation from an open water surface, showed that the ratio, E_p/E_o, is for Icelandic stations on the order of 0.81 – 0.87, the annual average value for all stations being 0.84.

By far, the greatest part of the potential evapotranspiration, or some 75 – 95%, takes place in the summer half of the year, April – September. The monthly maximum values, which in 1958 – 1967 occurred in July at the southwest coast but in June elsewhere, reach 100 mm in places. On the other hand, small negative values appear at 5 stations in January and 4 stations in November and December, most of them situated some distance from the coast.

The annual values of E_p lie mainly in the range 360 – 540 mm, and minimum and maximum zones are found in the same areas as in the case of global radiation. The area of minimum is in the western highlands near Kjölur, whereas there are areas of maximum evaporation at the southwest coast and in the eastern part of the country north of Vatnajökull.

The potential water balance, i.e., the difference between precipitation and E_p, has been calculated for the year and for the two shorter periods April – September and May – August, using precipitation normals for 1931 – 1960 (Fig. 6) and the above values of E_p.

The main characteristics of the precipitation distribution are reflected in the distribution of potential water balance. By far, the largest part of the country has a positive annual balance, and the highest values are found, as expected, in the southeastern part. Only in the interior of northeastern Iceland north of Vatnajökull is the annual balance negative, as low as about – 100 mm.

Considering the summer half of the year, April – September, and excluding accumulated snow which melts in spring and also water in the soil, one finds that most of the lowlands in the northern part of Iceland show a slight negative balance. This is not surprising, as the greatest part of the potential evapotranspiration takes place in this period, whereas precipitation is generally less in summer than in winter.

In the still shorter period of May – August, which includes the most important part of the growing season, some areas in the southwest show a negative balance. It must be remembered, however, that correct precipitation measurements would probably alter this somewhat.

Acknowledgements

The author is indebted to Mrs. Adda Bára Sigfúsdóttir and Mr. Flosi Hrafn Sigurdsson of the Icelandic Meteorological Office and to Professor Thorbjörn Karlsson for reading the manuscript and offering valuable suggestions.

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Appendix – Climatic tables

TABLE X

CLIMATIC TABLE FOR REYKJAVÍK
Latitude 64°08′N, longitude 21°56′W, elevation 13 m

Month	Mean sta. press. (mbar)	Temperature (°C) daily mean	mean daily range	extremes max.	min.	Mean vap. press. (mbar)	Precipitation (mm) mean	max. in 24 h
Jan.	997.6	−0.4	5.2	10.0	−17.1	5.0	90	36
Feb.	1003.0	−0.1	5.6	10.1	−15.6	5.3	65	40
Mar.	1004.7	1.5	5.8	14.2	−14.3	5.3	65	57
Apr.	1006.7	3.1	5.8	15.2	−12.0	6.2	53	22
May	1012.4	6.9	6.2	20.6	−7.2	7.5	42	19
June	1009.6	9.5	5.9	20.7	−0.2	9.5	41	30
July	1006.8	11.2	5.7	23.4	3.9	10.6	48	31
Aug.	1006.0	10.8	5.8	21.4	−0.4	10.2	66	35
Sept.	1003.6	8.6	5.4	20.1	−2.7	9.0	72	49
Oct.	1000.5	4.9	5.0	15.7	−10.2	7.5	97	37
Nov.	999.8	2.6	4.6	11.5	−10.5	5.6	85	44
Dec.	996.5	0.9	5.1	11.4	−15.3	4.9	81	55
Annual	1003.9	5.0	5.5	23.4	−17.1	7.2	805	57
Rec.(yrs.)	30	30	30	30	30	10*1	30	30

Month	Number of days with precip. (⩾0.1 mm)	thunder-storm	fog	Mean cloud-iness (oktas)	Mean sun-shine (h)	Wind most freq. direct.	mean speed (m s^{-1})	Solar radiation (J m^{-2} s^{-1})
Jan.	20	0.4	0.6	5.6	21	E	6.8	5.8
Feb.	17	0.3	1.1	5.6	57	E	7.1	25.7
Mar.	17	0.1	0.5	5.7	106	E	6.8	79.4
Apr.	18	0.1	0.7	5.8	138	E	6.2	140.0
May	15	0.1	0.9	5.8	185	E	5.5	208.8
June	14	0.0	1.1	5.8	189	SE	5.4	199.6
July	15	0.1	1.1	6.1	178	N, WNW	4.9	212.2
Aug.	17	0.1	0.7	5.9	159	SE	4.8	170.0
Sept.	19	0.1	0.9	6.0	105	E	5.7	87.2
Oct.	20	0.1	0.5	5.8	71	E	6.1	39.2
Nov.	19	0.2	0.8	5.7	32	E	6.8	10.2
Dec.	21	0.2	0.8	5.7	8	E	6.7	1.9
Annual	212	1.7	9.7	5.8	1249	E	6.1	98.3
Rec.(yrs.)	30	30	30	30	30	7*2	10*1	10*1

*1 Period 1958–1967.
*2 Period 1965–1971.

TABLE XI

CLIMATIC TABLE FOR AKUREYRI

Latitude 65°41′N, longitude 18°05′W, elevation 4 m

Month	Mean sta. press. (mbar)	Temperature (°C)				Mean vap. press. (mbar)	Precipitation (mm)	
		daily mean	mean daily range	extremes			mean	max. in 24 h
				max.	min.			
Jan.	1001.1	−1.5	6.5	14.0	−20.3	4.6	45	17
Feb.	1005.8	−1.6	6.2	13.2	−19.8	4.8	42	21
Mar.	1008.1	−0.3	6.5	16.0	−22.1	4.8	42	27
Apr.	1009.7	1.7	6.6	16.0	−16.9	5.9	32	16
May	1014.9	6.3	7.3	21.5	−9.0	7.1	15	24
June	1011.5	9.3	6.8	28.6	−3.0	8.9	22	19
July	1008.8	10.9	6.4	24.3	0.5	10.1	35	27
Aug.	1008.0	10.3	6.5	25.0	−2.2	9.6	39	52
Sept.	1005.8	7.8	6.3	22.0	−8.4	8.1	46	92
Oct.	1003.0	3.6	5.8	17.6	−11.2	6.8	57	30
Nov.	1002.8	1.3	5.6	15.5	−15.5	5.3	45	27
Dec.	1000.1	−0.5	6.0	13.4	−20.8	4.6	54	33
Annual	1006.6	3.9	6.4	28.6	−22.1	6.7	474	92
Rec.(yrs.)	30	30	30	30	30	10*1	30	30

Month	Number of days with			Mean cloud-iness (oktas)	Mean sun-shine (h)	Wind	
	precip. (≥0.1 mm)	thunder-storm	fog			most freq. direct.	mean speed (m s^{-1})
Jan.	13	0.0	0.0	6.0	6	S	3.8
Feb.	13	0.0	0.3	6.0	32	S	3.8
Mar.	11	0.0	0.4	6.0	76	S	3.2
Apr.	11	0.03	0.4	6.2	105	S	2.9
May	7	0.0	1.1	5.7	172	N	3.1
June	8	0.03	1.5	5.9	172	N	3.5
July	11	0.1	1.8	6.2	147	NNW	3.3
Aug.	11	0.0	1.3	6.3	113	N	3.3
Sept.	12	0.0	1.4	6.2	75	N	3.2
Oct.	14	0.0	0.6	6.0	51	SE, S	3.2
Nov.	13	0.0	0.4	6.1	13	SE, S	3.8
Dec.	15	0.03	0.3	6.1	0	SE, S	3.6
Annual	139	0.2	9.5	6.1	962	S	3.4
Rec.(yrs.)	30	30	30	30	30	7*2	10*1

*1 Period 1958–1967.

*2 Period 1965–1971.

TABLE XII

CLIMATIC TABLE FOR HÓLAR Í HORNAFIRDI*1
Latitude 64°18'N, longitude 15°12'W, elevation 16 m

Month	Mean sta. press. (mbar)	Temperature (°C)				Mean vap. press. (mbar)	Precipitation (mm)	
		daily mean	mean daily range	extremes			mean	max. in 24 h
				max.	min.			
Jan.	999.2	0.3	5.0	11.1	−13.2	4.9	191	134
Feb.	1003.5	0.0	5.0	10.0	−14.6	5.0	115	107
Mar.	1006.1	1.5	5.2	12.0	−13.5	5.1	132	78
Apr	1007.0	3.0	5.5	17.1	−12.2	6.0	108	90
May	1013.0	6.5	5.6	21.1	−7.9	7.2	90	107
June	1010.0	9.3	5.0	26.6	−1.5	8.9	83	84
July	1007.0	10.9	5.4	25.5	2.6	10.2	93	61
Aug.	1006.5	10.4	5.5	20.2	0.6	9.5	116	56
Sept.	1004.1	8.2	5.4	17.9	−3.9	8.6	162	122
Oct.	1001.4	4.9	4.8	17.6	−7.5	7.3	170	100
Nov.	1000.9	2.7	4.9	15.2	−9.6	5.5	187	106
Dec.	998.1	1.2	4.9	10.9	−13.0	4.7	185	92
Annual	1004.7	4.9	5.2	26.6	−14.6	6.9	1632	134
Rec.(yrs.)	30	30	9*2	30	30	10*3	30	30

Month	Number of days with			Mean cloudiness (oktas)	Mean sunshine (h)	Wind	
	precip. (≥0.1 mm)	thunderstorm	fog			most freq. direct.	mean speed (m s⁻¹)
Jan.	17	0.4	0.6	5.4	32	N	5.6
Feb.	13	0.2	0.5	5.2	72	N	5.7
Mar.	16	0.1	0.8	5.6	116	N	5.6
Apr.	13	0.03	0.7	5.6	133	E	5.2
May	12	0.0	1.4	5.9	181	E	4.6
June	11	0.0	1.6	6.1	145	SW	4.1
July	16	0.03	1.7	6.6	149	SE	3.2
Aug.	16	0.03	2.1	6.3	140	SE	3.3
Sept.	16	0.03	1.9	5.9	110	N	4.1
Oct.	17	0.2	1.6	5.6	79	N	4.6
Nov.	16	0.1	0.9	5.6	49	N	5.7
Dec.	19	0.2	0.3	5.4	19	N	5.8
Annual	182	1.3	14.1	5.8	1225	N	4.8
Rec.(yrs.)	30	30	30	30	10*3	7*4	10*3

*1 From June 1965: Höfn í Hornafirdi, 64°15'N 15°11'W, elevation 8 m.
*2 Period 1957–1965.
*3 Period 1958–1967.
*4 Period 1965–1971.