

Supplementary material to “Haze, Hunger Hesitation: Disaster Aid after the 1783 Laki eruption”: Socio-economic aspects of the Laki eruption in contemporary reports

C.E.Wieners

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The following is a summary of historical reports on various socio-economic aspects of the Laki eruption, in particular food production, trade, potential volcano-induced illness, and famine.

For a detailed compilation regarding geophysical aspects of the eruption, in particular the volcanic haze and symptoms in animals, the reader is referred to [Thordarson, 1995]. Numbers of lost animals, although partly reported in some of the sources used here, are not reproduced here, because the reporting methods differ widely among districts, from anecdotal evidence to detailed tables, and the reports are from summer 1784, while some regions experienced further losses in the following months. Instead, the reader is referred to the analysis of census data in [Rafnsson, 1984a], part of which is summarised in the main paper (fig. 2). The same holds for the number of abandoned farms.

Almost all reports used are taken from [Gunnlaugsson and Rafnsson, 1984]. They are letters (in Danish) to the Rent Chamber from Icelandic officials: the governor, the deputy governor (responsible for north- and east Iceland), and the district commissioners (sýslumenn). “Þingvitni” are official statements from communal gatherings of local farmers. Since there is no letter from the district commissioner of Vestur-Skaftafellssýsla, the district closest to the volcano, I included information from the “eldrit” (description of the volcanic fire) by Jón Steingrímsson, who described the effects of the eruption for the parishes closest to the volcano [Steingrímsson, 1788]. The districts are ordered clockwise, starting from Vestur-Skaftafellssýsla in the south. No report exists for Árnessýsla.

1. Weather

The sources agree fairly well on the following:

The winter 1782/83 was harsh, at least in the northeast.

The spring 1783 was favourable.

The summer 1783 was very cold, due to the eruption.

In autumn 1783, winter weather arrived early, with a storm around September 29th, and frosty weather until the end of October. November and the first part of December were milder, though unsteady.

The winter 1783/84, from the second half of December (the exact timing differs per region) till the end of April, was very cold, with ice crusts forming (snow partly thawing during brief warm spells, then re-freezing.)

Sea ice was reported in the northwest, north and east, from winter (around Christmas in the north, beginning of march in the east) to early summer (end of April in the west, after mid-may in the north). Fjords and bays were mostly covered with locally-formed ice, while the open sea was covered with drift ice from Greenland.

In May 1784, the weather improved, although the ground remained widely frozen. The sudden thawing of snow caused floods in Norður-Múlasýsla.

The summer 1784 was rather cool, with occasional snow, and the latter part very wet, especially in the south and west.

2. Grass growth, hay harvest, winter grazing

Governor, 28th April 1784: The grass grew little and was everywhere of little nutritional value, due to the eruption. Winter with snow and cold arrived about 14 days earlier than usual and interrupted the hay harvest on the outlying meadows, which usually can continue well into October. Some of the mown grass was lost. - The hay was of such bad quality that animals needed 4/3 of the usual quantity. During winter, snowfall followed by a little thaw and then frost, repeated several times, hindered winter grazing by causing a crust of ice on the meadows.

Governor, 17th June 1784: Grass growth started late, so now there is rather less grass than average except on the mountain pastures, where no thaw has temporarily molten the snow to cause ice crusts. It seems that it will become a good grass year.

Governor, 4th October 1784: Grass growth ended up less good than expected, and hay harvest even less, from Skaftafellssýsla to the west of Iceland, due to strong rain during the harvest time, although there are some local variations. In Kirkjubæjar- and Leiðvallahreppur [the communes closest to Lakagígar], grass growth and hay harvest went reasonably well, but in Dyrholahreppur [another commune in Vestur-Skaftafellssýsla] and Rangárvalla- and Árnessýsla, the hay was so insufficient that cows had to be sold. In Eyjafjarðar- and Skagafjarðarsýsla, the harvest was reasonably good, in Kjósar- and Borgarfjarðarsýsla it was mediocre, and in Mýrarsýsla worse, likewise in the rest of the west.

Dept.Governor, 14th May 1784: Grass growth and hay harvest were little during the past two years, especially the last year [1783].

Dept.Governor, 23th September 1784: Grass growth in the north below average, especially in Pingeyjar- and Eyjafjarðarsýsla, somewhat better in Skagafjarðar- and Húnavatnssýsla; in mid August, harsh and wet weather lasting 3 weeks spoilt the hay harvest; strong wind also caused losses. The harvest was hindered by lack of men and weakness due to lack of food. However, the meagre harvest may suffice to feed the few surviving animals.

Vestur-Skaftafellssýsla (eldrit): [In the summer 1783] all the earth's plants burnt and withered. - People who did not fly harvested whatever hay they could, obtaining enough for 1-2 cows, but it was so befouled that when cast on a fire resulting flames were blue, as if sulphur had been burnt. In the summer of 1784, the grass grew fairly well in most areas near the volcano, except in Fljótshverfi where the turf had all been burnt away, so that there was a sufficient harvest for the few remaining animals. The weather was favourable for harvesting, but the weakness of the men was a hindrance.

Rangárvallasýsla, 14th September 1784: Last summer, the grass growth was miserable due to the eruption, and the bit that could be harvested was of extremely low nutritional value. From the end of December till the beginning of May, sheep and horses had to be given fodder, because they could not graze. In the summer of 1784, the grass growth was worse than anyone can remember. On the home fields, not more than 2/3 of the usual amount could be mown, and when the harvest began, it started to rain so much that the little hay that was collected self-ignited [because it was stored wet].

Gullbringusýsla, 29th April 1784: There was little hay and of low nutritional value.

Kjósarsýsla, 29th April 1784: Last year there was little grass last year, and due to the eruption and some strange insects, its quality was bad, and animals had to be fed twice the ordinary quantity.

Kjósarsýsla, 3rd September 1784: This summer, hay harvest was very mediocre, not so much because of bad grass growth, despite the fact that some home fields were much damaged by winter frosts, but because rainy weather spoilt the hay.

Borgarfjarðarsýsla, 1st September 1784: Last summer [1783], the grass grew badly and could not be harvested unspoiled. This year, the lack of grass was almost as large, because the ground has not thawed. The harvest went very badly so that the people will again loose animals, although it is hoped that this year's harvest is not as infected [from volcanic pollution] as last year.

Mýrarsýsla, 31st August 1784: Last year [1783], the grass grew badly and could not be harvested unspoiled. This year, the lack of grass is as large as last year, because the ground has not thawed. The harvest did not go well, but there are few animals left, and it is hoped that this year's harvest is not as infected [from volcanic pollution] as last year.

Hnappadalssýsla, 30th July 1784 In the spring of 1783 an unusual smoke was noticed, which was followed by cold, so that one could seldom feel the summer's natural warmth: This was followed by an excessively bad growth of the grass. The fodder was not only insufficient, but of such a low quality, that the animals did not thrive on it. In the middle of December all grassland was covered with snow and ice, until May.

Snæfellsnessýsla, 30th September 1784: In 1783, the hay harvest of most farmers was 1/2, and for some 1/3 less than average, and during winter it turned out that the hay was unhealthy due to the sulphurous air. After December 24th, ice and snow prevented grazing until May. This year, 1784, the grass grew badly on the home fields because frost in the ground had damaged the grass roots; grass growth on the other pastures was average. Nonetheless, it is feared that in case of a harsh winter, not all of the few remaining animals can be kept, due to rainy weather from mid August until now [which hampers the hay harvest].

Dalasýsla, 13th August 1784: Meagre hay harvest last year (1783). No winter grazing for horses and sheep between Christmas and end of April. Grass growth this summer is very little, because in particular the home fields are damaged by the strong frosts and will take years to recover. The worst for this year's harvest is the continuously wet weather.

Barðarstrandarsýsla, 29th March 1784/30th June 1784:¹ The hay harvest continued till end of September [1783] and was ended by snow and frost on October 2nd. From the end of October to the middle of December, the weather was good without snow, but thereafter freezing rain caused an ice crust which blocked grazing, with no improvement before April 28th.

Ísafjarðarsýsla, 15th September 1784: Thick air and dust from the eruption reduced the warmth of the sun, so that the grass withered and vanished. The hay harvest last autumn was difficult due to snow and frost and in some places quite insufficient.

Þingvitni Strandarsýsla, end of April 1784: 1782 already was a summer with little grass, and the winter 1782-83 was hard. Nonetheless, people more or less kept their animals alive, using old fodder. In summer 1783, the volcanic haze poisoned the grass and led to a very bad grass growth by blocking sun light and warmth. The quality of the hay was so bad, that three times the usual amount was needed to feed the animals.

Húnavatnssýsla, 16th September 1784: Last summer, little grass growth due to the eruption. This summer, again little grass growth due to the cold and long winter. The harvest is hampered by wet weather, and by the fact that many use their remaining horses to go to the south and west to buy dried fish, rather than harvesting.

Skagafjarðarsýsla, 23rd May 1784: Grass growth last summer was the smallest in memory.

Skagafjarðarsýsla, 16th September 1784: Grass started to grow mid-May 1784. The growth varied greatly, in some places it was average, in others very little, even less than last year. Due to rainy weather, the harvest goes badly.

Eyjafjarðarsýsla, 7th May 1784: Lack of grass and hay occurred during the last years.

Eyjafjarðarsýsla, 26th August 1784: The grass growth was worse than last year, due to frost.

Þingvitni Eyjafjarðarsýsla, around 4th December 1783: Already summer 1782 had been a very poor grass year. Spring 1783 seemed to start well, but due to the eruption, the grass was even more scarce than the year before. The harvesting in 1783 suffered from the fact that many were too weak to work due to lack of milk, and went fishing to save their lives. The moist weather further spoilt the meagre harvest.

Þingeyjarsýsla, 16th September 1784: Grass, as well as other vegetation, was ruined by the eruption. Summer 1784, very little grass growth on the home fields and dry areas, but better on marshy ground.

Norður-Múlasýsla, 15th September 1784: Grass growth had been bad since 1782. Last year's [1783] hay was useless. Grass growth this year was not better, on the higher land even worse, than last year. Icelandic moss not recovered from the eruption.

Suður-Múlasýsla, 10 June 1784: Last summer, cold weather and volcanic ash and smoke stunted grass growth. End of September, extreme frost and snowfall stopped the hay harvest.

Suður-Múlasýsla, 28 September 1784: During this summer, misty weather blocked the sunlight and warmth and therefore hindered grass growth, except on high grounds which were above the mist.

Austur-Skaftafellssýsla, 28th September 1784: Despite the warm summer 1784, the lack of grass was as large as last year, and the hay harvest was correspondingly little.

¹Many passages in the second letter are identical to the first, hence they are treated together.

3. Livestock

Governor, 28th April 1784: In previous autumn, cows and lambs had been slaughtered due to lack of hay; but during the bad winter, additional animals had to be killed, because the hay had little nutritional value and winter grazing was hindered by the frost. Thousands of horses have died over the whole country, and it can surely be concluded that not 1/20 of the horses remain [Note: the analysis by Rafnsson, 1984, suggests that about 1/2 of the horses died]. Many of the older sheep, which had to graze outside but could not reach the grass under the ice also died.

Governor, 4th October 1784: In Rangárvalla- and Árnessýsla, cows had to be sold due to lack of hay. People from Eyjafjarðar- and Skagafjarðarsýsla bought more than 80. Thereupon governor Thodal instructed the district commissioner of Vestur-Skaftafellssýsla to buy cows for his district (organising payment via the trade company).

Dept.Governor, 14th May 1784: There was lack of hay, the hay was of low nutritional value, and an unknown bone sickness caused by the eruption attacked the animals, except the few that were fed with old hay. Many households report not to have a single living animal left. The north of Þingeyjarsýsla was likely the worst hit by animal loss. Hardly any news has come from the east [Múlassýslur], but the winter was said to be milder there and people expected to keep their animals, so hopefully farmers from the north will be able to buy new livestock there.

Vestur-Skaftafellssýsla (eldrit): Strong drop of milk production (to about 1/8) within a week after onset of the eruption. Immediate strong illness in sheep, which died or scattered. In the late summer 1783, people slaughtered as many sheep as they could, since they could not feed them during the winter; but it would have been better to slaughter them immediately after the eruption started, while they still had meat and tallow. Farmers from Síða and Fljótshverfi [the regions closest to the eruption] brought their herds southwest to Meðalland, where no tephra had fallen, but to no avail. Horses died in the course of autumn; only one horse was left in Síða in winter.

Rangárvallasýsla, 14th September 1784: Lack of fodder and the unhealthiness of the hay together with the harsh winter weather have lead to a massive loss of cows, sheep and horses.

Gullbringusýsla, 29th April 1784: The animals did not give enough milk. As the winter started so early and was so severe, that horses and sheep, which normally graze in the winter, would need to be fed hay, additional animals were slaughtered around Christmas, to leave more fodder to sustain the others, but this did not help, due to the bad spring weather, so that most horses and sheep died and the few remaining cows are in danger of dying.

Gullbringusýsla, 15th June 1784: Large numbers of animals died. Near the shore, animals were successfully fed with seaweed, and many cows had been kept alive with barley. Cows and sheep are suffering from feebleness, and scurvy in the jawbones and limbs. The remaining horses are miserable and the cows so gaunt that they give only little milk.

Kjósarsýsla, 29th April 1784: Last autumn, half of the cattle had been slaughtered due to the bad hay harvest. The hay caused illness [consistent with fluorine poisoning] in animals.

Kjósarsýsla, 3rd September 1784: Due to the bad hay harvest this summer, most farmers were again forced to slaughter half of their remaining animals.

Borgarfjarðarsýsla, 1st September 1784: Due to volcanic fumes, animals did not thrive last winter but died in heaps. Losses are again expected this summer due to the bad hay harvest.

Mýrarsýsla, 31st August 1784: The grass and hay was so infected that did not thrive last winter but died in heaps.

Hnappadalssýsla, 30th July 1784: After new year, many farmers slaughtered their cows and sheep, in some cases 1/2 of the herds, but could nonetheless not sustain their animals, and had to watch them dying of hunger in the end of April.

Snæfellsnessýsla, 30th September 1784: Many of the surviving cows have no calf, which will slow down the recovery of the stock.

Dalasýsla, 13th August 1784: No contagious disease among animals, but part of the livestock died of unknown illnesses. After the early onset of winter in 1783 (snowy weather from mid-September on) the animals were unusually thin, which was due to last summer's sulphurous fumes. Most farmers slaughtered 1/3 of their cattle, all young lambs and part of the adult sheep, but no one slaughtered as many animals as he should have. During the frosty winter, farmers gave some of the fodder normally reserved for the cows to save the sheep and even horses, but then the cows had too little fodder and had to be slaughtered, and horses and sheep died in numbers. Milk yield during winter was below average. - Many of the surviving cows have no calves, which makes them useless for milk production until next winter.

Barðarstrandarsýsla, 29th March 1784/30th June 1784: Most people slaughtered in October most or all of their lambs and 1/4 of the cows. - Horses have died by hundreds since January. Cows are daily slaughtered together with the remaining lambs, whereas the older sheep only now start to die, but if God does not send help before Easter, one after the other must perish. People have done everything to preserve their livestock, for example dug out seaweed. Some have bought grain at the trade post as fodder for horses and sheep, and this is seen as reasonable concerning costs versus benefits. Liver of Greenland shark has been given to sheep with a bit of hay. No illness has been observed in animals.

There were no illnesses in animals; the lung sickness which people lamented to have killed sheep, was caused by protracted hunger.

Ísafjarðarsýsla, 15th September 1784: The hay was insufficient to feed the increasing number of animals which people had acquired in the last few years, which was ruined by the extraordinary harshness of the winter. An enquiry on April 6th revealed a good store of hay on the farm of two brothers. On the 13th of April, the district commissioner forced the farmers to provide hay, without compensation, to a poor farmer with many children. Thereafter the two brothers provided hay, against payment, to neighbouring farmers, saving 50 cows that otherwise would have perished.

Pingvitni Strandarsýsla, end of April 1784: Last autumn, prudent farmers slaughtered about 1/2 of their cows, but even very experienced farmers later had to kill many of their remaining animals.

Húnavatnssýsla, 16th September 1784: A large loss of animals has occurred, partly because the fodder was scarce, partly because it was poisoned, and further losses are anticipated next winter due to lack of fodder.

Skagafjarðarsýsla, 23rd May 1784: Massive loss of livestock due to insufficient and poisoned fodder. Last autumn people slaughtered some of their cows and sheep, but most kept more animals than they could have fed (with their store of hay) in an average winter, even though they knew that the hay was of low nutritional value and even unhealthy.

Eyafjarðarsýsla, 7th May 1784: Due to lack of fodder over the last years, farmers could not raise new sheep to replace the ones that had been culled during the sheep pest [1760-1780]. - Last summer, ewes and cows were of little use; seemingly healthy cows gave 1/2 of the usual milk, others suggest that the milk yield of ewes and cows dropped to 1/5. Wide-spread symptoms [consistent with fluorine poisoning] in livestock. Due to lack of fodder, again cows, all lambs and many adult sheep were slaughtered.

Pingvitni Eyafjarðarsýsla, around 4th December 1783: Due to poor grass growth in 1782, some cows and most lambs had been killed (except on a few farms which had sufficient old hay), but few adult sheep. Many poor families had only one cow left, some 2-3. Despite harsh weather, the sheep more or less survived the winter 1782-83 because the weather improved around April. - In summer 1783, the cows gave very little milk, some nothing, some 1/2 the average; some have no calf. Animals were very thin and provided hardly any meat. Many sheep have been culled; also cows.

Pingeyjarsýsla, 16th September 1784: Many animals have died, some before winter [1783-84], most towards spring, and this continued until summer, but now most animals that survived seem to be getting better.

Pingvitni Pingeyjarsýsla, May 1784: The "bone sickness" began in autumn-winter 1783, depending on the region, and was stronger in the mountainous regions. Lack of fodder added to the loss of animals; some also were slaughtered to provide meat for the people. Reduced milk yield. In each commune there are households that have no cow and/or no horse and/or no more than six sheep left.

Suður-Múlasýsla, 10 June 1784: Volcanic ash and smoke weakened the animals. Some animals were buried under snow end of September. During the winter (1783-84), many of those animals which had survived the previous two hard years, died, especially in the inland communes.

Austur-Skaftafellssýsla, 28th September 1784: Many animals have died.

4. Fisheries

Governor, 28th April 1784: In Isafjarðarsýsla normal yield from autumn to January, then less, by end of February none; in the three western communes, fishing in late autumn was little and none in winter. Sea ice appeared but did not attach to the coast; fish did not return yet [spring fishing season]. In Barðastrandasýsla, there was in some fishing stations some autumn fishing but below average; in other places, none. In Dala- and Hnappadalssýsla similar; in Snæfellsýsla rather good fishing. In Gullbringusýsla catches differed by region, in the northern part mediocre, partly due to bad weather, in the south and in Eyrarbakki [in Árnessýsla], the fishing went well.

Governor, 17th June 1784: Fishing now going well everywhere in Gullbringusýsla.

Dept.Governor, 23th September 1784: Summer fishing 1784 in the north was very little (with some local exceptions). Due to hunger, much of the catch was eaten immediately, rather than being dried as winter store. Some men were too weak to go fishing.

Vestur-Skaftafellssýsla (eldrit): Sea fishing is hardly mentioned. There were insufficient materials to make enough fishing or seal-hunting gear. Nonetheless, an exceptional seal catch on the beach (190 animals) in autumn 1785 helped to end the famine locally.

Rangárvallasýsla, 14th September 1784: Like in the last few years, no fish was caught in the winter and spring.

Gullbringusýsla, 29th April 1784: Some fishing took place all winter, in two places catches were almost average, elsewhere less, due to bad weather. More than half of the fishermen have to eat the fish immediately to save their life [rather than drying fish as store or for trade].

Gullbringusýsla, 15th June 1784: Fishing improved in May, so that overall the spring fishing season can be called average. The fish processing went well thanks to dry weather.

Kjósarsýsla, 29th April 1784: Fishing along the coast of Gullbringusýsla [from where fishermen from Kjósarsýsla were operated] during the winter was partly average, partly below average, in one place quite good.

Kjósarsýsla, 3rd September 1784: Although those who managed to go fishing had good yields, these were mostly needed to pay trade debts and land taxes.

Borgarfjarðarsýsla, 1st September 1784: Fishing was average; the greatest obstacle was the ice, which was present for a long time.

Mýrasýsla, 31st August 1784 The inhabitants could not, as usually, go fishing in Snæfellsnessýsla, due to lack of horses. Some walked there, but many were not able to do so and tried to fish from the shore of Mýrasýsla, but the fishing here failed.

Snæfellsnessýsla, 30th September 1784: 23 fishing boats of various sizes, plus 22 boats with eight oars, could not go out during the fishing season due to lack of healthy seasonal workers from other districts. - The fishing in Ólafsvík last winter went well, the dried fish was damaged by frost and only little of it will be good enough for the trade, but it will still be good enough for domestic consumption. In other fishing stations, there was very little winter fishing. The spring fishing was average in most places, but the processing did not go well, only half of it was accepted by the merchants, so that the farmers cannot pay their land tax or obtain the most necessary goods for their household.

Dalasýsla, 13th August 1784: The fishing in spring 1784 was good on the Bjarneyjar islands in Barðastrandarsýsla, to which people fled to get fish. Those who rowed from Snæfellsnessýsla were less lucky with the spring fishing, but the winter fishing had been better.

Ísafjarðarsýsla, 15th September 1784: The winter and spring fishing was the poorest in 20 years, and even now nothing is caught within the fjord Ísafjörður, and only little outside it.

Strandarsýsla, 18th September 1784: The sea does not provide much fish.

Pingvitni Strandarsýsla, end of April 1784: In 1783, sea ice from February till pentecost hindered fishing. In 1783/84, the fjords froze over and drift ice covered the sea and is still present.

Húnavatnssýsla, 16th September 1784: The loss of horses made it difficult to travel to the fishing stations in the south and west, so many farmers tried walking there. - Fishing here in the district was strongly hindered by sea ice both this and last spring. After the ice was gone, people got average catches, but no whale appeared in the bays here.

Skagafjarðarsýsla, 23rd May 1784: Fishing is impossible this spring due to sea ice, which also prevents bird hunting on Drangey island.

Skagafjarðarsýsla, 16th September 1784: Fishing failed in most places in this district. People could not do their usual journey to the south and west to buy fish, due to lack of horses, but were forced to sell their own catches from the fishing season [unclear: Is this the fish caught locally in Skagafjarðarsýsla, which was needed for the trade, despite the humane merchant at Hofsós? Or fish caught in the south and west by migrating fishermen that could not be transported home?]

Eyjafjarðarsýsla, 7th May 1784: Since February, the sea is locked with drift ice and locally formed ice near the shore.

Eyjafjarðarsýsla, 26th August 1784: Fishing this summer was very poor, hardly enough for the fishermen to eat. In July, there had been much whales at the mouth of Eyjafjörður, and good shark hunting.

Pingvitni Eyjafjarðarsýsla, around 4th December 1783: The haze strongly hampered fishing in summer 1783. In the autumn, little catches, fish were small, and waves were often an obstacle.

Pingeyjarsýsla, 16th September 1784: In summer 1783, fishermen could not go out during calm weather due to the haze. No catches in winter due to ice (which remained until mid-May). Spring/summer fishing started late, and has been only mediocre in most places, and in the northern part of the district (as far as the district commissioner is aware) nothing was caught, but there is still hope that this can improve.

Norður-Múlasýsla, 15th September 1784: Like in the previous years, fishing failed in Vopnafjörður and surroundings, but may have been somewhat better in the three easternmost fjords. No seal catches, because the ice has kept the seals away from the shore. Only half the usual catches of shark. Numerous Dutch fishing vessels have stayed for 3 weeks outside Vopnafjörður and reported that fish was there, and that they had followed the fish all the way from west Iceland along the north coast. Unfortunately, a seaworthy vessel, for which the Danish authorities had provided building material, is not yet ready.

Suður-Múlasýsla, 10 June 1784: Even the so-called coastal farmers have for many years lived on animal husbandry rather than fishing, are not entrusted by the merchant with the necessary equipment.

Suður-Múlasýsla, 28 September 1784: Fishing in summer 1784 began end of June, a few weeks earlier than normal, and was mediocre, partly because of the misty weather. Shark fishing was in some places very mediocre, elsewhere apparently better. Few whales have been seen. In Berufjörður and Álftafjörður, fishing failed except for a few well-manned boats which could venture out of the fjords, to where English fishing vessels had unusually good catches. Since overall fishing gave so small catches, the coastal farmers had nothing to spare for the inland farmers. Some of the letter had been near the coast until hay harvest, but their catches were so small as not to repay the travel costs.

Austur-Skaftafellssýsla, 28th September 1784: Fishing and shark fishing provided some catches, and there was a good seal hunt in Hof.

5. Human symptoms that might be connected to air pollution or fluorosis (or absence of symptoms)

Vestur-Skaftafellssýsla (eldrit): No one was killed outright by volcanic lightning (or lava flows). - The foul smell of the air was such that many people, especially those with chest ailments, could no more than half-fill their lungs with air. But despite the harmful and contaminated air, there was no sudden death or mortal sickness. Bad air quality remained for more than a year. - What passed for meat was foul-smelling, bitter and full of poison, so that many a person died as the result of eating it. Those people who did not have

uncontaminated supplies of food suffered from ridges, growths and bristle on their rib joints, rubs, backs of their hands, feet, legs and joints. Their bodies bloated, the insides of their mouths swelled and cracked. Sinews contracted, especially in the back of their knee, in an illness known as scurvy in its most advanced stage. Their inner functions were affected by feebleness, shortness of breath, rapid heartbeat, excessive urination. Other symptoms: diarrhoea, dysentery, worms, sore growths on necks and thighs, and (in young and old persons) loss of hair.

Among other remedies, fresh milk is mentioned as curing swollen gums, and broth of dandelion leaves as curing knotted sinews, bloated flesh and swollen joints [both are sources of vitamin C, curing scurvy, but milk also contains calcium, which may relieve fluorosis].

Borgarfjarðarsýsla, 1st September 1784: No pests occurred, except here and there an unusual scurvy, which attacked nerves and bones, but killed very few people. The same type of illness has very severely attacked animals living from grass.

Mýrarsýsla, 31st August 1784 No pests occurred, except here and there an unusually severe scurvy, which occasionally also attacked nerves and bones, and killed some people here and there. The same illness, but still more severe, has attacked the animals that live on grass.

Barðarstrandarsýsla, 29th March 1784/30th June 1784 No illness has been observed in humans except the usual ones. In spring, there appeared a fever with swellings which did not kill many persons.

Pingvitni Eyjafjarðarsýsla, around 4th December 1783: In three communes, health effects of the haze are mentioned:

- Due to the disgusting stench and odour, people with pre-existing breast illnesses had to remain in bed for some time.
- The stench of this smoky haze has also caused some ill health in humans.
- There were more complaints than in earlier times about breast illnesses, weakness and feebleness of the whole body, due to lack of food and unhealthiness both of the food and the air.

Pingeyjarsýsla, 16th September 1784: It is uncertain whether all the deaths are purely due to hunger, some may have died in the same way as the animals, either out in the fields or in the houses, due to feebleness in the limbs and powerlessness, which many complained about, but hunger may still have been the main cause.

Pingvitni Pingeyjarsýsla, May 1784: [answering the question whether humans have been affected by the same “bone illness” as the animals] It is suspected that swellings, especially near the knees and limbs, in particular in young persons, could be due to this reason, as well as the feebleness in the body. Several people are thought to have died from it. - The answers disagree on whether these symptoms, in particular feebleness, were more prevalent in those persons who ate much meat of deceased animals. One commune also reports that those who died suffered from “pressure on the hearts, excessive thirst, and other symptoms resembling the illnesses of the animals”, and that in many cases it is unclear whether this illness or hunger or both are the cause of death.

6. Hunger and mortality

Governor, 28th April 1784: No famine in Isafjarðarsýsla and Barðastrandarsýsla. [For other regions, famine or absence thereof is not explicitly mentioned.]

Dept.Governor, 14th May 1784: In the north, there may have never been as bad a famine as the current one. The animal's milk yield was insufficient even to sustain people during last summer, let alone to make stores. In Eyjafjarðarsýsla, people starved and are still starving in every commune; those refusing to eat horse meat have nothing but cooked hides. In the north of Pingeyjarsýsla, the population had already declined in winter 1782-83, partly due to death, partly by migration. In April 1784, 24 unburied dead bodies had accumulated in the church of Presthólar (Pingeyjarsýsla), because people were too weak to dig graves in the frozen ground. Several parishes are feared to become totally abandoned.

Dept.Governor, 23th September 1784: In Pingeyjarsýsla, 700 people are reported to have died in this and the previous year, mostly of hunger. In Eyjafjarðarsýsla, 355 are reported to have died of hunger, in Skagafjarðarsýsla, 100, and probably not fewer in Húnavatnssýsla; this does not include deaths from known illnesses. Mortality is still elevated, but mostly due to illness, and otherwise without doubt due to the recent famine, which surely also was a main contributor to the bloody diarrhea this summer.

Vestur-Skaftafellssýsla (eldrit): Lava and/or haze and tephra fall ruined wild food supplies: lyme grass (used as grain substitute), angelica root, Iceland moss, swan hunting, trout fishing in rivers. During the famine, people ate hides, old fish bones and hay. Some ate horse meat, though others would rather die than eating it. - Until new year 1784, the number of deaths was not great. But from the beginning of that year onwards, their number grew and grew. On certain days, numerous bodies would have collected up; sometimes 6, sometimes 8, sometimes 10 were buried in a single grave.

Rangárvallasýsla, 14th September 1784: The loss of animals leads to great dearth and death due to scarcity of food is feared to occur next winter. [No hunger deaths are mentioned to have occurred in the winter of 1783-84.]

Kjósarsýsla, 3rd September 1784: People will starve in the coming winter, as fugitives from other districts already began to do, unless the trade or an exceptionally good fishing seasons save them.

Mýrarsýsla, 31st August 1784 The inhabitants of this district have already started to die of starvation.

Hnappadalssýsla, 30th July 1784: Already some little children [of the families who fled to the fishing stations to beg] have died from hunger.

Dalasýsla, 13th August 1784: During winter, farmers suffered hunger due to lack of milk, but saved their lives by eating the dead cows and sheep. Only a few people by now have died from hunger in this district, thanks to good fishing. Many are now living on fish alone. - Although the fish is currently keeping many persons alive, most of it is already eaten (i.e. there will be no store for next winter), because there is no dairy product to supplement it, and the poor inland farmers cannot buy grain. It seems probable that 1/3 of the population will be dead before Christmas.

Dalasýsla, 16th September 1784: The Icelandic moss, which people in this district used to collect for food, has withered away during the volcanic eruption, and people believe that it will take three years to recover. - Several people have been found dead in the open, but those were fugitives from the north of Iceland.

Barðarstrandarsýsla, 29th March 1784: Up to now, people have in general not experienced famine, but now that the cows no longer contribute [provide milk?], one hears in some places of bad circumstances in this respect, where only the meat of the slaughtered cows provides food for the people.

Barðarstrandarsýsla, 30th June 1784: The dearth of food is incredible, many fishermen had brought no provisions to the fishing stations and had to fast for nearly a week, but they were saved when fishing became possible, so that the district commissioner only knows of 8-10 cases of death by starvation in this district. Last year the usual migration of whales took place, and the whales are still in Breiðafjörður and Arnarfjörður, but the district commissioner has not heard that someone has tested the whaling tools that had been provided [by Denmark].

Ísafjarðarsýsla, 15th September 1784: Due to the arrival of many poor people from other districts, especially Strandarsýsla, it looks as if human mortality will occur in winter until spring, unless the autumn fishing season is good.

Strandarsýsla ,18th September 1784: One cannot be sure to stay alive until next summer; people are starving.

Pingvitni Strandarsýsla, end of April 1784: The poorest people are now eating the horses that have died in the open, and are heard to moan from hunger. In some communes, a few people have now died from hunger; in two places, a coffin awaiting burial has been opened to investigate the dead bodies, which were found very emaciated.

Skagafjarðarsýsla, 23rd May 1784: 10-12 people have died form hunger in this district. The lack of food is so great that part of the inhabitants will soon starve.

Skagafjarðarsýsla, 16th September 1784: It is reported that here in this district 100 people have died during this year, and it seems that many will die next winter.

Eyjafjarðarsýsla, 7th May 1784: Since January, people lived exclusively on dead animals, as there was no other food. - Many have died from hunger and probably more will follow.

Eyjafjarðarsýsla, 26th August 1784: People now live on foodstuff from the trade, Iceland moss, other wild plants; dairy products, meat and fish are lacking; people are dying daily and are too weak to work, which is partly due to a contagious disease. 355 have died from the famine.

Pingvitni Eyjafjarðarsýsla, around 4th December 1783: No one starved to death in the hard winter 1782-83, though some ate horse meat. - In summer 1783, there was not enough milk to feed the people twice a day, therefore many went fishing instead of harvesting hay, but little fish was caught. Icelandic moss was also damaged by the eruption. Still, in one commune people lived mostly “from water and Icelandic moss”, or wild roots and cooked hides. - People are now living on the meat of their dead animals, including horses, and of spoilt barley from the trade post; some of the remaining sheep have to be slaughtered to provide meat. It is to be expected that the people will die, once the meat is used up; in some communes, death is expected “within a short time”, in others “the coming spring”. In one commune it is explicitly stated that despite the dearth, nobody has starved yet.

Pingeyjarsýsla, 16th September 1784: People began to die from hunger shortly after new year 1784, and continued to starve during the whole winter and spring until now, though not as frequently during the last two months. Those still alive, especially in the northern communes, were so weakened that they could not bring the dead to the church. For example in Presthólar parish, about 70 dead bodies lay unburied in the farms til June, when measures were taken to bury them near the their farms. Over 700 people have died so far, and surely more are to die next winter. - Last winter, people tried to survive on grain from the trade post, meat of their dead animals, Icelandic moss which was much reduced by the sulphurous fumes, and some are said to have eaten dogs. This summer, they have also eaten various wild plants.

Pingvitni Pingeyjarsýsla, May-July 1784: All communes report that hunger deaths have occurred since new year, and that households have been dissolved and farms abandoned; partly farms had been abandoned already in 1782/83.

Norður-Múlasýsla, 15th September 1784: Icelandic moss not yet recovered from the eruption, and the little bit that could be harvested last year, was very unhealthy due to the sulphurous fumes. A contagious disease raged this summer and killed several people and still continues. At least 100 persons have died from hunger.

Suður-Múlasýsla, 10 June 1784: In every commune, people have begun to die from hunger, and no commune will escape famine even in summer.

Suður-Múlasýsla, 28 September 1784: This summer, inland farmers have hardly had enough food for their daily needs, let alone to set aside winter stores.

7. Trade

Governor, 28th April 1784: In Isafjarðarsýsla and Barðastrandasýsla, the trade stations were well stocked.

Governor, 4th October 1784: Due to the loss of the ship for Eyrarbakki, people from Árnes- and Rangárvalasýsla tried to buy goods in the trade harbours in Gullbringusýsla.

Dept.Governor, 14th May 1784: No ships reached the Húnaflói harbours in 1783, so that little stores were in the trade centres serving Húnavatnssýsla; and 800 tons of the barley reaching the trade post in Eyjafjarðarsýsla was spoilt. The trade posts in Hofsós [Skagafjarðarsýsla] and Húsavík [Pingeyjarsýsla] were relatively well stocked, but still insufficient to prevent the famine. In Hofsós, 1800 tons² of foodstuff were present, while the population was 3000 persons, and the merchants keep ample provisions for themselves.

The deputy governor banned the export of Icelandic foodstuff during spring 1784.

He requests shipping 8000 tons of grain till the north of Iceland this summer, and that the most destitute households receive some food for free (1300-1500 tons in total), as they have nothing to pay with. Merchants must be told to be more lenient with credits. They refuse many credits, saying that they only take orders from the directors of the trade in Copenhagen, and stretching the definitions of who is eligible for credits. If harbours cannot be reached due to sea ice, the ships may not return to Denmark, but must wait in nearby other harbours until the ice breaks, or bring their cargo to Hafnarfjörður [near Reykjavík], from where it can be transported to the north with the fishing vessels of the trade company.

Dept.Governor, 23th September 1784: By now the merchants have become more lenient with credits, but it will not be possible to provide everyone with necessities by the trade, especially in Hofsós, and an ample

shipping of food as early as possible next spring will be needed.

The shipping of fish from the west, which allegedly had been ordered to take place this summer, has not arrived; the government is requested to order such a shipping next year and it will likely be necessary for several years to come.

Vestur-Skaftafellssýsla (eldrit): The fact that the governor was so slow with his decrees regarding grain rations from the trade posts for the people here did much to increase the famine and the number of deaths here. Those who did not wait for these instructions saved many lives, of which there are many examples in Rangárvallasýsla. The district commissioner there provided fugitives with rye from the trade post. The merchant of the Vestmannaeyjar islands likewise helped the fugitives there, who all survived.

Rangárvallasýsla, 14th September 1784: No foodstuff will be available in Eyrarbakki due to the loss of the ship (August 1784). No food has been transported from the trade post on the Vestmannaeyjar to Bakkahjáleiga this summer³. At Bakkahjáleiga, the merchants refused several hundred sheep last autumn because there was no salt to cure their meat; the sheep then died from lack of fodder. - The district commissioner requests that a double amount of food be sent to Eyrarbakki next spring.

Gullbringusýsla, 29th April 1784: The grain ordered for this year will not suffice, especially if fugitives come from other districts.

Gullbringusýsla, 15th June 1784: Since the grain will not suffice, the district commissioner requested a larger shipping for next year, and suggests that those inhabitants that have neither fish nor money to pay should not be denied credits.

Kjósarsýsla, 29th April 1784: The district commissioner requests that twice the usual amount of grain be sent to Reykjavík next summer, and that credits be given both to farmers and to officials [who were excluded from emergency credits].

Borgarfjarðarsýsla, 1st September 1784: No complaints, but emergency credits are urgently needed.

Mýrarsýsla, 31st August 1784 No complaints about the trade station Búðir (except some conflicts about spoilt barley last winter); but the inhabitants of this district cannot reach the trade post.

Hnappadalssýsla, 30th July 1784: The trade in Búðir gives no reason for complaint.

Snæfellsnessýsla, 30th September 1784: The trade is performed with no public complaints. The farmers obtain those goods which the merchant believes they can pay by the end of the year, and obtain these at the time the merchant sees fit, without regards for the farmers' residence or other circumstances, just as the merchants everywhere in the country believe that they can freely dispose over all merchandise. Credits to all secular and clerical officials and anyone not strictly belonging to the common people are denied, based on a Rent Chamber decree from June 10th, 1783⁴ Merchants apply these regulations also to farmers, invoking [non-existing?] orders from the directors of the trade, which the merchants refuse to show to the royal officials, and even less do they communicate which of the Rent Chamber's orders have been modified in this extraordinary dearth.

Dalasýsla, 13th August 1784: Grain from the Stykkishólmur trading station could support those farmers close to the sea [who are able to fetch the grain?], if the farmers were able to buy it. - Last year, the trade in Stykkishólmur was performed quietly and without complaints about the merchant.

Barðarstrandarsýsla, 29th March 1784: The trade posts are fairly well stocked, but not enough to feed humans and animals. The merchants are very hesitant to give credits to the poor, and this will become dangerous in the imminent dearth.

Ísafjarðarsýsla, 15th September 1784: The trade posts are reasonable well stocked with grain and the trade is performed without complaints or grounded criticism.

Strandarsýsla, 18th September 1784: The district commissioner expresses his thankfulness for a Rent Chamber letter from last March, stating that Reykjavíkjörður harbour should timely be provided with food to help the needy inhabitants, but states that the food delivered was still insufficient. - There had been difficulties with an assistant merchant in Reykjavíkjörður (see also the *þingvitni* from Strandarsýsla district), but the district commissioner finds it difficult to supervise the trade as he lives 12 Danish miles (almost 100km) from the harbour, and the assistant merchant even lives in another district during winter. It cannot be beneficial to the

trade if it is led, in Iceland and Copenhagen, by people who cannot be trusted not to insult simple Icelandic farmers. - It is a problem that people in this district are only paid with skillings [coins] and banknotes, rather than more commonly accepted kinds of coins, which other farmers would accept in exchange for their foodstuff.

Pingvitni Strandarsýsla, end of April 1784: Request that prices for foodstuff should be reduced. - In summer 1782 (already a hard year), the ship failed to sail to Reykjavíkjörður harbour even though it would have been possible. - There are complaints that the assistant merchant does not give farmers their accounting books; adds false items to people's debt accounts; does not hand out the lawful contribution to the poor; commits irregularities with weights and quality control of Icelandic merchandise; last summer sold tobacco soaked in water [to cheat with the weight?]. Foodstuff in the trade post is too little and of bad quality, and as opposed to what the people need and even if they can pay.

Húnavatnssýsla, 16th September 1784: No complaints. Due to lack of animals and wool, many people will not be able to trade, if they are not supported with credits.

Skagafjarðarsýsla, 23rd May 1784: The merchant in Hofsós helped people by providing them both grain and Icelandic foodstuff, but this is not sufficient to stave of hunger. The food which the merchant ordered last autumn [for this summer] was insufficient, and the district commissioner requests an ample provision for the current year, which must be provided on credit to those in need.

Skagafjarðarsýsla, 16th September 1784: The merchant behaves in a friendly and reasonable manner.

Eyjafjarðarsýsla, 7th May 1784: One of the reasons for the economic difficulties of the district are the high prices of necessities [after the price reform of 1776]. - In January, all merchandise at the trade post was gone. The district commissioner requests an ample provision of decent foodstuff, and lenient behaviour towards the poor, in particular, support through credits.

Eyjafjarðarsýsla, 26th August 1784: The merchant has bought eight hundred fishes, even though the district commissioner has, on May 1st, forbidden the coastal farmers to sell fish to the merchants during this dearth, but they gave as excuse that they could not get from the trade other food and necessities except for fish, as they have nothing else to pay with. - (Inland) farmers get some foodstuff paying with woolen goods produced from the wool of the dead sheep. - Many more people would have died if there had not come a trade ship with food on June 14th. Still, the district commissioner again requests to send ample foodstuff to the harbour, and requests leniency concerning the debts, 1080 ríkisdalir in total in this trade post, which cannot be such a severe loss to the trade company (1 ríkisdalur = the value of 1 sheep).

Pingvitni Eyjafjarðarsýsla, around 4th December 1783: In 1782, people bought as much food as they could from the trade post, thereby incurring large debts. - November 1783: lack of foodstuff in the trade post. People get no grain unless they have paid their debts. Farmers near the coast, who went fishing, had sold their fish to the merchant, so that inland farmers could hardly get any.

Pingeyjarsýsla, 16th September 1784: During winter, people from the northern commune could not reach the trade post due to the ice and to lack of horses and hay. Currently, there is a fairly good store of foodstuff at the trade post, but it is unclear whether it will suffice till the next summer, hence the district commissioner requests that next spring, grain should be delivered as early as possible.

Pingvitni Þingeyjarsýsla, May 1784: Insufficient store at the trade post.

Norður-Múlasýsla, 15th September 1784: There had been several complaints by farmers about merchants unjustly refusing the farmer's goods or not paying the full price, even though the goods met the quality criteria, disagreements about weights and measures, and accounting irregularities. During the last autumn and winter a merchant refused credits, and when poor people brought their goods to trade, he didn't give them necessities but only allowed them to cancel their debts. This forced the people to slaughter more animals for meat, or travel again to the trade harbour in winter despite lack of horses, either to get necessities or to pay outstanding debts before new year to avoid a fine; a dangerous journey which may have contributed to deaths of men and remaining horses. Late in spring, the merchant sold back Icelandic tallow, but only to some people who could pay with coins, and against unlawful prices.

Now, only the trade can feed the people, but although a good store of foodstuff had been sent, the district is now devoid of foodstuff except train oil, which however mostly has been sold to the merchant. The district

commissioner has encouraged the merchant not to export train oil and tallow, and assumes that his colleague in Suður-Múlasýsla⁵ has done the same, but this will not help if, like last year, the merchants are unwilling to give credits. After some confusion arising from one merchant being unwilling to tell the district commissioner what the Rent Chamber had decreed regarding credits, another merchant revealed that the objective was to save the people's lives. The district commissioner then had to argue that this should extend for the period until the arrival of the next ship, not just till new year. Since the district commissioner found it impossible to assess the needs of each household, he suggested that each household should first get the usual amount of foodstuff, until the district commissioner would have had time to gather additional information to allocate the remaining food. The second merchant agreed to the plan, the first not (yet). The district commissioner requests that the ship next spring should be sent as quickly as possible.

The district commissioner considers it problematic, that the merchants are exempted from having to attend the yearly district assemblies, where complaints could be publicly discussed, whereas now poor farmers without legal knowledge will rather let themselves be cheated than start a law suit.

Suður-Múlasýsla, 10 June 1784: The merchants proclaimed that according to their orders, they could not provide loans to those that are not credit-worthy, while currently even landowners cannot be considered credit worthy. - The district commissioner requests that the merchants should be ordered to provide credits to all farmers without exception, but in proportion to their needs, and that the poor of this district should be given food for free to save their lives, since they are not able to pay back any debts.

Suður-Múlasýsla, 28 September 1784: In July, the district commissioner banned the export of meat and tallow, and hopes that in case the merchants disobey, they will be held responsible.

8. Other aspects

Vestur-Skaftafellssýsla (eldrit): One source of succour was the donations from abroad (Denmark). Each man who stayed on his farm received 8 ríkisdalir more or less, but never more than 16, to buy cows and horses, a need which this money could hardly begin to meet, because of the rising prices of animals⁶, but the money was better than nothing to subsist upon. - The governor (Thodal) had decided to use the donated funds to purchase food, but the people in Vestur-Skaftafellssýsla received only meagre rations, due to transporting problems. There was no way to obtain from this money material for fishing tools.

Gullbringusýsla, 29th April 1784: The district commissioner expects that a large number of people will flock from the farming regions to the shore and the trade posts, and remain there, as they have no horses to transport home any foodstuff they might obtain.

Kjósarsýsla, 29th April 1784: The district commissioner requests that the central government may think of solutions on what to do with the many fugitives, beggars and unemployed farmhands, coming from the farming regions to the coast, and form a burden to the remaining households who themselves have nothing to spare.

Hnappadalssýsla, 30th July 1784: Farmers who have lost all their animals moved to the coast with their whole family, and remain there while the fishing lasts, until autumn, and thereafter will have no other option than joining the other poor people who wander from district to district.

Snæfellsnessýsla, 30th September 1784: 45 farms were given up by last spring, and the inhabitants went to the shore to save their lives. - This district is burdened with several hundred poor fugitives from the north of Iceland of both sexes and all age groups.

All domestic trade has stopped, partly due to lack of horses, partly because the inland farmers have nothing to trade but animal hides. The sea farmers [who are nominally farmers but mostly rely on fishing] cannot obtain wool, hides and sheep.

Dalasýsla, 13th August 1784: There have now so many beggars fled from their former homes, that the farmers cannot possibly sustain them.

²1 Danish to of grain = 83.4 kg

³Bakkahjáleiga was a subsidiary trade post served with boats from the Vestmannaeyjar, with the aim to shorten the long travel for the inhabitants further east

⁴probably the order for merchants to give less credits, make farmers repay debts, and not to give credits to those not belonging to the common people, i.e. officials

⁵The harbour of Reyðarfjörður lies in Suður-Múlasýsla, but was also frequented by some inhabitants of Norður-Múlasýsla.

Dalasýsla, 16th September 1784: In one commune, there are 34 farmers, of which only 10 can support one pauper each, but there are 30 persons eligible for poor relief in that commune, plus 11 healthy men and women who cannot find employment as farmhand. Similar situations are also found in other communes.

Skagafjarðarsýsla, 16th September 1784: Farmers reduce the number of servants, who become beggars or paupers.

Þingeyjarsýsla, 16th September 1784: The district commissioner has made a humble request that the district should be exempted from paying taxes during this dearth, but has not been able to obtain the signature of the deputy governor, because the district commissioner had not succeeded to collect all necessary information in time.

Norður-Múlasýsla, 15th September 1784: Those who have nothing to live on, have no other option than to form swarms of beggars, or turn to thieving and robbery.

Suður-Múlasýsla, 10 June 1784: Thieveries occur; two delinquents whom the district commissioner has in arrest will have to be condemned to compulsory labour (in Denmark) because there are no horses left to send them to the Icelandic prison in Reykjavík. The district commissioner requests that the able-bodied beggars should be transferred to Denmark or other parts of Iceland where the situation is less grave, such as to relieve the burden on those farmers still tending their farms.

Suður-Múlasýsla, 28 September 1784: The district commissioner is afraid that if robbing gangs form, these might ruin whole farms while the officials have no means to stop them, since there is no possibility to transport condemned criminals to prison.

References

- [Gunnlaugsson and Rafnsson, 1984] Gunnlaugsson, Gísli A., and Sveinbjörn Rafnsson, ‘Heimildir til sögu Skaftáreldanna og Móðuharðdinda’ (Sources for the history of the Laki eruption and the Haze Hardships’, in: ‘Skaftáreldar 1783-84: ritgerðir og heimildir’ (The Laki eruption 1783-84: articles and sources), Mál og Menning, Reykjavík, 1984, p. 265-435.
- [Rafnsson, 1984a] Rafnsson, Sveinbjörn: ‘Búfé og byggð við lok Skaftárelda og Móðuharðdinda’ (Livestock and settlement at the end of the Laki eruption and Haze Hardships), in: ‘Skaftáreldar 1783-84: ritgerðir og heimildir’ (The Laki eruption 1783-84: articles and sources), Mál og Menning, Reykjavík, 1984, p. 163-178.
- [Steingrímsson, 1788] Steingrímsson, Jón, “Fullkomið skrif um Síðueld” (Complete description of the Síða fires), 1788; transl. by Keneva Kunz as “Fires of the Earth. The Laki eruption 1783-84”, University of Iceland Press, Reykjavík, 1998.
- [Thordarson, 1995] Thordarson, T., 1995: Volatile release and atmospheric effects of basaltic fissure eruptions, Ph.D. thesis, University of Hawaii, Honolulu.

⁶Prices were considered fixed for animals of standard quality; the price for an ewe with lamb was 1 ríkisdalur, for a good milking cow 6-7 ríkisdalir, and for a riding horse 8.