
Norwegian historical records of climatological relevance from the latter part of the Maunder Minimum period (1675-1715)

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Pedersen, E.S. 1994. Norwegian historical records of climatological relevance from the latter part of the Maunder Minimum period. *AmS-Varia*, ISSN 0802-4936, vol. 25, pp. 17-20, Stavanger. UDK 551.582:948.1(093.3)

A brief synopsis is given of Norwegian historical records which contain climatic data from the period 1675-1715. Although we still do not know how much climatic data can be found in them, we do know which contain relevant material and which do not. The quality of the data and how the records should be used for research into the climate of the period in question are discussed.

Introduction

Norway was among the countries in Europe which was worst affected by the Black Death (1349-50). Between a half and two thirds of the population of about 350,000 people died as a direct or indirect result of the Black Death (Benedictow 1992). Subsequent plagues led to the population continuing to decrease all over Europe until the mid-15th century. Whereas the countries of southern Europe then started to recover, and comparatively quickly reached the level they had before 1350, Norway and other northern European countries did not reach their pre-1350 population level until around 1700 (Benedictow 1992). The reason for this late recovery has been much discussed by Norwegian historians (e.g. Helle et al. 1991), but the possibility that changes in the climate affected the development has been rejected (e.g. Helle et al. 1991:13, Benedictow 1992:118-119). However, no attempt has been made to scientifically investigate this period from a climatic viewpoint, even though the existence of a climatic deterioration, the Little Ice Age, has been recognized.

It is symptomatic for the general development in this long period of time that the population was the same during the Maunder Minimum period as it had been 300-350 years earlier. Very few changes had occurred in any area of Norwegian society. Around 8% of the population lived in the cities and more than 90% were dependent on income from agriculture, fishery and forestry (Mykland 1972:121). Politically, there had been some changes. Norway had become the subordinate member of a union with

Denmark in 1380, which was not dissolved until 1814. Absolute monarchy was established in 1660. There had been some innovations in mining and trade, but very few in the primary industries. The public administration system, on both the local and the national levels, was poorly developed. Around 1% of the population comprised civilian, military or ecclesiastical officials. Apart from these and other small groups, Norwegians were normally illiterate. Such a society did not produce much written material.

The number and quality of historical records

The number of historical records from the period in question is therefore quite small compared both to later periods and to other European countries. In comparison with the centuries before the Maunder Minimum period, however, the quantity multiplied. This is mainly due to the strong wish of the new absolute monarchy to maintain maximum control over the development of Danish-Norwegian society (Mykland 1972:1), resulting in a substantial growth in the number of normative records, especially legal and regulative material. Few of these contain data on climate. On the whole, even though the period was characterized by a poor climate, this is little reflected in the records.

The records can be divided into several groups, the criterion for the division being to what degree the information on climate is direct or indirect. In this perspective, the most valuable sources are those containing pure cli-

matic data. Records made for other reasons than giving information on climate may also be of some use, but climatic data are normally only found sporadically here and much investigation of literature and primary sources has to be done to locate them. Some records give no direct data on climate whatsoever, but information on changes in climate can still be extracted from them. However, this demands thorough, critical consideration of the sources and extensive scientific research. In other words, one has to do scientific work to obtain the data which one wants to use for other scientific purposes. An example is the question of a possible connection between the fisheries and the climate. Fish, both as food and as objects for barter, have been extremely important for people living along the Norwegian coast. Lamb (1979) mentioned that the climate may have affected the periodical variations in the fisheries. Jónsson (1995) discussed the problem on the basis of the Icelandic annals from the period 1600-1900 and found an apparent connection between the quantity of fish caught and the sea temperature. More research is necessary and this particular problem shows that further progress in this field must stem from inter-disciplinary work, with at least a meteorologist, a fishery biologist and a historian as participants.

The investigations leading to this paper have aimed at obtaining an overview of which historical records contain information that may be useful for reconstructing the climate in Norway in the Maunder Minimum period. Knowledge varies as regards how much climatic data the different records contain. No source category covering the entire country has been fully investigated. As a rule, spot checks have been made, most thoroughly in records concerning southwestern and central Norway. We know which records contain climatic data, and we know the character and quality of the information, but we have only vague notions of the amount. Much work remains, both as regards collecting the data and feeding them into the data base established at the Museum of Archaeology in Stavanger.

Categories of historical records that contain climatic data

Records whose sole or most important purpose is to give information on climate are very scarce. A log book from a Danish naval ship, containing non-instrumental climatic observations, has been discovered by Knud Frydendahl in a Danish archive. These were made in the harbours of Stavanger and Bergen in 1665, somewhat earlier in the Maunder Minimum period than the 40 years focused upon during the Stavanger meeting. They are, nonetheless, very valuable in view of the paucity of sources covering the latter part of the Maunder Minimum period. It is of course much too early for instrumental climatic observations, which, in Norway, first appeared in the 1750s.

Diaries are another important category of sources. In this period, the degree to which they place emphasis on

climatic information varies. A diary from Meldal in central Norway, kept by a parson named Melchior Augustinsson, contains climatic observations and data on the effect of climate on a yearly basis for the period 1670-1705. It is very reliable and is definitely the most important «climatic» diary so far found.

Other diaries have more infrequent references to the weather. Very few contain climatic observations, but they mention various effects of the climate which have attracted attention. Particularly numerous are comments on the weather during the growing and harvesting periods, very often concerning corn and hay. As already mentioned, the fisheries were very important for people on the coast, and there is information on the weather during the fishing seasons and comments on the quantity and quality of the fish.

The same sort of information is found in other kinds of sources. Normally, each record carries few data, and the data are unevenly spread through the text and often difficult to date precisely.

A survey is given below of the most important sources containing climatic data or information that may be used in reconstructing the climate. As mentioned above, the records have only been subjected to spot checks, and how much relevant knowledge is available from these sources is not known.

The sources

Diaries

Diaries mostly belong to a later period, although a few exist from both before and during the Maunder Minimum period. The Augustinsson annals stand out both in quality and quantity. Other diaries normally have only sporadic comments on climatic matters. More may, of course, emerge among unregistered books in libraries, or in antiquarian bookshops. Moreover, hand-written manuscripts still come to light, and these may reveal new information if they are examined with this kind of question in mind.

Topographical descriptions

This literary genre was most common in the period 1750-1900 and was especially popular during the last decades of the 18th and the first decades of the 19th centuries. There are, however, a few early contributions from the latter part of the Maunder Minimum period. However, their descriptions relating to climate are quite general and often difficult to connect with specific places and time intervals. This source will, nonetheless, certainly prove valuable when more thorough investigations are undertaken. A bibliography has recently been published that covers a large part of this category (Fyllingsnes 1994).

Travel books

Schiötz (1970) published what seems to be an almost complete bibliography of books on travel in Norway written

by foreign authors. They frequently contain climate-related information, although this is normally limited in quantity. The bibliography includes 14 books from the latter part of the Maunder Minimum period. Some are not easily accessible and the same quality problems are present as in the above-mentioned source categories.

Court registers (Norw.: tingbøker)

The minutes of court proceedings and the judgments pronounced are of interest here. Separate courts dealt with criminal cases, cases concerning applications for reduction of taxes owing to natural catastrophes, the registering of deeds, the publicising of letters from the King, and civil law cases (e.g. conflicts between neighbours and libel actions). Evidence given in a case sometimes refers to climatic incidents, both indirectly as part of the background of a case that had nothing to do with climate, or more directly as the basis for a demand for a tax reduction due to damage caused by heavy rain, lightning, a landslide, etc. The earliest court registers date back to the beginning of the 17th century, but only from some parts of the country in the first few decades. In the Maunder Minimum period, however, there are registers from the whole country. The original sources are not easy to work on if the goal is to collect large quantities of data, but nowadays increasing numbers of registers are being printed. This source is most important for legal and economic history, but spot checks have disclosed promising possibilities in the area of climate history, too.

Church registers (Norw.: kirkebøker)

The first church register containing information on baptisms, confirmations, marriages and burials dates from 1623, and 127 17th century registers have survived. Time has seen several changes in the way registers are kept, but in respect of climate it is important that the earliest registers also contain most information on secular matters. Hence, this source had its highest quality in the Maunder Minimum period. The clergy noted memorable incidents that had little or nothing to do with ecclesiastical ceremonies, such as the weather when they were travelling between the different churches in the parish.

Letters of complaint/supplications (Norw.: supplikker) *and other correspondence*

In Norway it was customary for people who had a specific demand or something to complain about, to be allowed to send a supplication directly to the King. It was the duty of the County Court Judge (Norw.: sorenskriver) to help illiterate people formulate such letters. These occasionally contain information on the climate, for instance when farmers ask for a tax reduction owing to climatic incidents. Another important source is letters, notes, reports, etc, from lower to higher levels in the bureaucracy. These covered a wide variety of matters and included climatic data when they were appropriate for shedding light on important matters, normally of an economic nature.

Censuses (Norw.: manntall)

Censuses were held in the 1660s and in 1701/1702. The first one covers the whole country, but the second has large gaps in the districts of eastern Norway. The populations in towns were not included, either. These records can only give generalized indications of climate-related matters. An important item of information is that the population grew very slowly in this period and growth was slowest in western and northern parts of the country where a deterioration in the climate would normally do most harm. Together with figures from the church registers, the censuses may indicate crisis years with respect to demography, but they cannot be used directly to provide information on climate. They can, however, be used to support direct climatic data.

Tax rolls and land registers (Norw.: skattelister og matrikler)

A number of sources provide various kinds of information on economic matters, such as how much tax each farm paid, the quantity of corn that was grown, the number of livestock, etc. These sources do not provide direct climatic data, but like the censuses they can be used to give the researcher an indication of where to look for periods with climatic anomalies. In addition, lists and accounts relating to economic matters were sent from lower to higher levels in the local and national bureaucracy, finally ending up on the table of the absolute monarch and his immediate advisors. A total evaluation of this material is, of course, necessary before climatic information may be extracted.

Concluding remarks

As mentioned earlier, climate has never been considered as having any significant importance for the development of Norwegian history. In my opinion, this is more due to a lack of effort on the part of Norwegian historians than to a flaw in the source category itself. My assertion is that the capacity of climatic data as a source has not been fully exploited. It is, of course, a problem that no method has been developed to make climatic data more useful to historians and it is understandable that few historians want to be suppliers of climatic data just to help climatologists in their work of reconstructing the climate of the past. However, an equally important reason for the lack of research in this field is that climatic data are very difficult to work with. A great deal of effort is required to get an idea of where the data are to be found and how they are to be collected and stored.

The work now being done at the Archaeological Museum in Stavanger is the first step in establishing climatic data bases in Norway. In this context, it is very important that the climatic information is fed into the data base in such a way that it can be used both for historical research and to reconstruct past climates.

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