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Marko Halonen

Hic aues incipiunt cantare: Shifts in the Beginning of Seasons in Medieval Calendars of Rome and the Nordic Countries

Abstract: Medieval calendars contain a great deal of information concerning not only liturgical feasts but also the movements of celestial objects, the beginning of seasons, and other natural phenomena. This case study analyzes approximately 500 Roman and Fenno-Scandinavian calendars with especial attention to their mention of seasonal conditions. This material reveals some general trends in the seasons' gradual shifts earlier or later in these calendars, depending on the century and location. The general pattern of these shifts gives some indication of how climatic and social changes of the fourteenth century became recorded in a practical tool for organizing time such as a calendar. Comparing these shifts at the opposite ends of Christendom also reveals how differently the same phenomena were perceived in different parts of the continent.

Keywords: calendars, seasons, Middle Ages, Rome, Nordic, Scandinavia, time

1 Introduction

During the Middle Ages,¹ Latin Christendom mostly relied on a Christian variant of the Julian calendar,² which had replaced the old Roman calendar by the order of

1 Although the Middle Ages can be defined in a multitude of ways, with starting points varying from the fourth to seventh centuries and ending points from the fourteenth to the seventeenth, in terms of calendars, the absolutely ground-breaking change occurred with the Gregorian calendar reform in 1582. However, the Nordic countries, which had become Lutheran in the course of the Reformation, did not initially adopt the Gregorian calendar. Therefore, this study considers sources for the entire sixteenth century. While this break might be seen as somewhat arbitrary or artificial, the turn of a new century probably did have some significance for the contemporaries, as well. The earliest surviving calendars are from the eleventh century, hence the early time limit.

2 The term “calendar” is used here in a broad sense to include all texts which are organized in calendar form, regardless of whether they are cataloged as *kalendarium*, *martyrologium*, *horarium*, *necrologium*, etc. What matters is the format: a medieval calendar derives from its ancient Roman origin in which the first day of the month is called *Kalendae*, which etymologically “calls” the other days of the month: that was the day when the priest declared the other important days of the month. Thus,

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Gaius Julius Caesar, then the high priest (*pontifex maximus*) of the Roman Empire, in 46 BC. The Julian calendar was based on calculations by the scholar Sosigenes, who assumed that a year was 365 days and six hours long – an overestimation of about eleven minutes.³ As a result of this error, the Julian calendar lagged behind, and, with each progressing century, the spring equinox occurred approximately one day earlier. This ultimately led Pope Gregory XIII to introduce a calendar reform in 1582, and this Gregorian reform can be seen as the ending point of the medieval period as far as the calendar is concerned.⁴

Medieval calendars inherited the structure of the Julian calendar both in terms of the year's length and the use of Latin language and Roman numerals. In addition, they incorporated many aspects which had probably already been obscure to the ancient Romans, including, for example, the Roman names of the months, a combination of deities such as *Ianus*→*Ianuaris* “January” and an illogical use of *September* (“seventh month”) to *December* (“tenth month”) for the last four months of a twelve-month year. Medieval calendars did not typically count days of the month according to the modern ascending order (e.g., January 1, January 2, etc.) but according to the Roman dating system based on a system of counting backwards from the marked days of *Kalendae*, *Nonae*, and *Idus* (e.g., January 2 would be *IV Nonas Ianuarias*). Yet a third peculiarity was the number of days in each month: February had twenty-eight days, but every four years, February 24 occurred twice. July and August had thirty-one days each, whereas otherwise a month of thirty-one days was always followed by a month with thirty days.

For some reason, medieval calendars have often been seen as synonymous with lists of saints, and many terms have developed accordingly, e.g., in German, *Heiligenkalender*, or in Finnish, *pyhimyskalenteri*. While saints are certainly a frequent element, medieval calendars also include a multitude of other information, such as other liturgical feasts, aspects dealing with *computus* (the calculation of the correct date for Easter), equinoxes and solstices, astronomical information, bad days (also known as “Egyptian days”, bad for blood-letting and some other activities) and other references to apparently supernatural phenomena, and comments on local events, as well as information concerning the beginning of seasons,⁵ which is the focus of

a calendar is a tool for organizing the days of the month and their tasks, which can in turn be related to saints, martyrs, prayers, the dead, or whatever, depending on the context for which the calendar was intended.

3 Robert HANNAH, *Time in Antiquity*, London, New York 2009, p. 12.

4 Classic works on medieval calendars and time include e.g. Herman GROTEFEND, *Zeitrechnung des deutschen Mittelalters und der Neuzeit*, vols. 1–2, Hannover 1891–1892; Arno BORST, *Zeit und Zahl in der Geschichte Europas*, Berlin 1990; Arno BORST, *Die karolingische Kalenderreform*, Hannover 1998.

5 See on the aspect of seasons GROTEFEND (note 4), vol. 1, pp. 89–90, s.v. Jahreszeiten; Borst, *Kalenderreform* (note 4), 646–653; Arno BORST, *Zeit und Zahl in der Geschichte Europas*, Berlin 1990; Arno BORST, *Nachträge*, in: Id., *Der Streit um den karolingischen Kalender*, Hannover 2004, p. 193 s.v. Jahreszeiten.

this article. The existing scholarship on medieval calendars largely overlooks these aspects or mentions them only briefly. Yet these aspects are usually written in the calendars with the red, blue, or green ink that was used to mark only the most important saints and feasts.

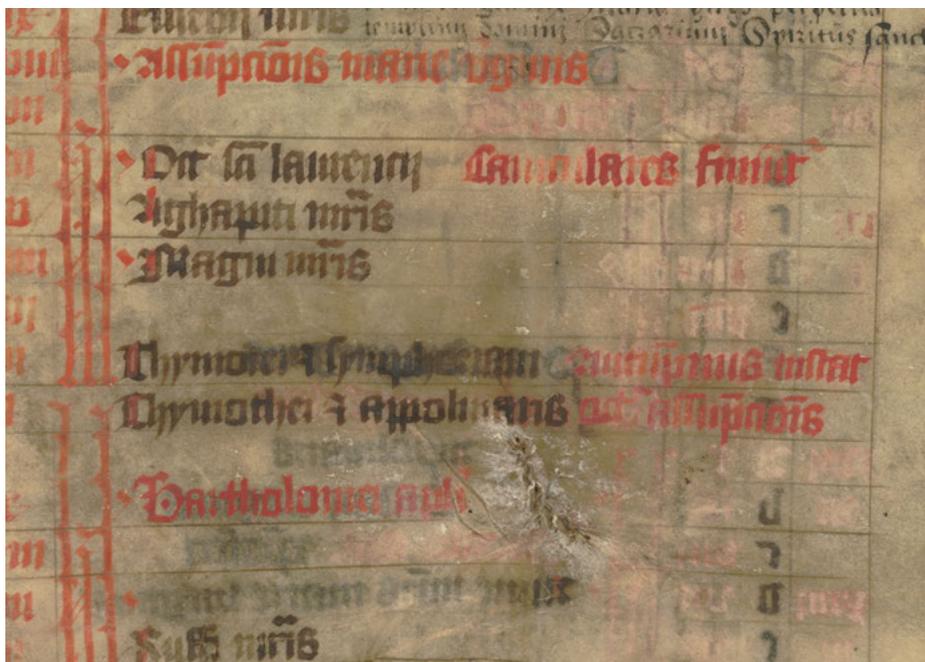


Figure 1: Notation for the month of August, where the beginning of autumn [*autumpnus instat*] is marked with red ink, as is the very important feast of the apostle St. Bartholomew (Finnish National Library F.m.VII.9. fol. 2v).

This is clearly visible in the image above (Figure 1), while other saints' days are marked with black ink. The beginning of seasons should thus be seen as essential information on par with the other aspects outlined above; the author of this calendar apparently thought of them as such.

2 Calendar Data and Methods

The first step in this study was the compilation of sources from the opposite ends of medieval Latin Christendom; these make up two distinct collections. The first

set is made of calendars determined⁶ to be from Rome or its surroundings in Lazio.⁷ A total of 111 versions⁸ of medieval calendars were studied of which forty-six calendars – or nearly half of the Roman calendars studied⁹ – mention at least

6 Localizing medieval calendars is an extremely difficult task. All of the commonly used methods are potentially problematic. The most common method is to identify local saints, who are known from other sources to have been venerated particularly strongly in a specific region. This approach is complicated by the fact that there is no comprehensive historical overview of medieval calendars. Calendars might not paint the same picture as other source groups, however, which means that localizing a calendar based on mention of a particular saint might end up being circular reasoning. Secondly, calendars can be localized using paleography, but this risks localizing the calendars according to the scribe, who may have moved from one region to another while keeping his native paleographical style. Thirdly, internal references inside the calendars – e.g., the dedications of particular churches or other local events – provide some indication of their origin. This method, however, includes the risk that calendars might have been copied from a foreign example, in which case also foreign “local” events are copied into calendars actually used in a totally different region. The fourth option is codicology, meaning the physical aspects of the manuscript such as ink, parchment, binding etc., but often manuscripts were produced and used in very different places.

7 For the latest list of Italian medieval calendars, see Giacomo BAROFFIO, *Kalendaria Italica*. Inventario, in: *Aevum. Rassegna di scienze storiche linguistiche e filologiche*, 77/2 (2003), pp. 449–472. The catalogs of the *Biblioteca Apostolica Vaticana* as well as *Biblioteca Angelica* have also been used in localizing the calendars. I am grateful to my colleagues for their assistance in pointing out Roman calendars as part of the ongoing research project concerning time in medieval Rome, *Institutum Romanum Finlandiae*.

8 Calendars, like many other medieval texts, often contain later additions and alterations. These alterations can sometimes very dramatically change the inner meaning of the calendar, if, for example, a whole new cycle of time is added, such as the seasons or zodiac signs. If a calendar includes later additions, it means that the calendar was certainly used by someone who, on the other hand, considered the changes necessary, but also, on the other hand, considered the original calendar sufficiently reliable to be used as a basis for the new changes. These changes were sometimes made decades, or even centuries later; in such cases, they can reveal a great deal about the author’s preferences as well as the use of tools like calendars developed over time. This is why each altered version of a calendar is analyzed separately, even if this might be considered as “doubling” the material.

9 The Roman calendars which refer to seasons (calendars which contain later additions and have thus been included in two calendar versions are marked with an underscore and number (e.g. 2):

London, British Library, Add MS 30034; London, British Library, Add MS 30034_2; Munich, Bayerische Staatsbibliothek, BSB-Ink M-459; Paris, Bibliothèque nationale de France, Latin 826; Paris, Bibliothèque nationale de France, Latin 826_2; Rome, Biblioteca Angelica, Z.14.10/1; Rome, Biblioteca Angelica, MSS. 1098; Rome, Biblioteca Angelica, MSS. 24; Rome, Biblioteca Angelica, MSS. 24_2; Vatican City, Biblioteca Apostolica Vaticana, ArchCapSPietroA9; Vatican City, Biblioteca Apostolica Vaticana, ArchCapSPietroA9_2; Vatican City, Biblioteca Apostolica Vaticana, ArchCapSPietroB67; Vatican City, Biblioteca Apostolica Vaticana, ArchCapSPietroB67_2; Vatican City, Biblioteca Apostolica Vaticana, ArchCapSPietroB69; Vatican City, Biblioteca Apostolica Vaticana, ArchCapSPietroB72_2; Vatican City, Biblioteca Apostolica Vaticana, ArchCapSPietroB72; Vatican City, Biblioteca Apostolica Vaticana, ArchCapSPietroB79; Vatican City, Biblioteca Apostolica Vaticana, ArchCapSPietroB79_2; Vatican City, Biblioteca Apostolica Vaticana, ArchCapSPietroB84; Vatican City, Biblioteca Apostolica Vaticana, ArchCapSPietroB84_2; Vatican City, Biblioteca Apostolica Vaticana,

one of the seasons. The average date¹⁰ of this set is 1366, with the oldest calendar dated to around 1071 and the most recent to 1551.

The other data set is based on Nordic¹¹ sources: 428 calendar versions were studied, but references to seasons were much rarer than in the Roman sources. Only forty-six of the Nordic calendars referred to a season – just over ten percent.¹² This could well be the result of the fact – discussed at great length later in this essay –

ArchCapSPietroB87; Vatican City, Biblioteca Apostolica Vaticana, ArchCapSPietroB87_2; Vatican City, Biblioteca Apostolica Vaticana, ArchCapSPietroB88;

VaticanCity,BibliotecaApostolicaVaticana,ArchCapSPietroB88_2;VaticanCity,BibliotecaApostolica Vaticana, ArchCapSPietroD156; Vatican City, Biblioteca Apostolica Vaticana, ArchCapSPietroD156_2; Vatican City, Biblioteca Apostolica Vaticana, ArchCapSPietroE14; Vatican City, Biblioteca Apostolica Vaticana, ArchCapSPietroE14_2; Vatican City, Biblioteca Apostolica Vaticana, ArchCapSPietroE4; Vatican City, Biblioteca Apostolica Vaticana, ArchCapSPietroH28; Vatican City, Biblioteca Apostolica Vaticana, Barb.lat.609; Vatican City, Biblioteca Apostolica Vaticana, Chig.C.VI.174; Vatican City, Biblioteca Apostolica Vaticana, S Maria Maggiore 97; Vatican City, Biblioteca Apostolica Vaticana, S Maria Maggiore 97_2; Vatican City, Biblioteca Apostolica Vaticana, S.Maria.Magg.105 (INC); Vatican City, Biblioteca Apostolica Vaticana, S.Maria.Magg.105 (INC)_2; Vatican City, Biblioteca Apostolica Vaticana, S.Maria.Magg.106; Vatican City, Biblioteca Apostolica Vaticana, SMariaMaggiore119; Vatican City, Biblioteca Apostolica Vaticana, SMariaMaggiore120; Vatican City, Biblioteca Apostolica Vaticana, Vat.lat. 4406; Vatican City, Biblioteca Apostolica Vaticana, Vat.lat. 4406_2; Vatican City, Biblioteca Apostolica Vaticana, Vat.lat.12986; Vatican City, Biblioteca Apostolica Vaticana, Vat.lat.12986_2; Vatican City, Biblioteca Apostolica Vaticana, Vat.lat.12986_3; Vatican City, Biblioteca Apostolica Vaticana, Vat.lat.12988; Vatican City, Biblioteca Apostolica Vaticana, Vat.lat.14701.

10 As with localization, dating medieval manuscripts is difficult, although in the case of calendars perhaps a bit less problematic. Usually four methods are used: paleographic, codicological, hagiographic (saints whose lifetime or date of canonization is known), and internal comments found in the calendars. The dating used in this article is based on the information given in the catalogs of the libraries and archives holding the manuscripts. In the case of multiple dates, an average is used.

11 The term Nordic refers nowadays to the Nordic countries (Denmark, Finland, Iceland, Norway, Sweden), but the term is also surprisingly suitable for the Middle Ages for two reasons. At the political level, three kingdoms merged in the late Middle Ages to form a kingdom called the Kalmar Union, which included the territories of all of the abovementioned modern Nordic countries and lasted from the late fourteenth century into the early sixteenth century. Secondly, at the ecclesiastical level, the same three kingdoms which formed the Kalmar Union in 1389 formed a single church province between 1104 and 1152 under the archbishopric of Lund (then in Denmark, now in Sweden). Even when the archbishopric was divided into three church provinces of Denmark (under Lund), Norway (including Iceland) (Nidaros) and Sweden (including Finland) (Uppsala) between 1152 and 1164, these provinces remained largely unchanged throughout the period.

12 The Nordic calendars that refer to seasons are:

Colbatzkalendariet, in: Erik KROMAN (ed.), *Corpus codicum danicorum medii aevi Vol. V Scriptorum rerum danicarum, altera pars. Annales*, Copenhagen 1965; Colbatzkalendariet_2, in: Erik KROMAN (ed.), *Corpus codicum danicorum medii aevi Vol. V Scriptorum rerum danicarum, altera pars. Annales*, Copenhagen 1965; Copenhagen, Det Kongelige Bibliotek, E don var 23 40; Copenhagen, Det Kongelige Bibliotek, NKS 203 8:o;

Copenhagen, Det Kongelige Bibliotek, GKS 3260 4to; Copenhagen, Det Kongelige Bibliotek, GKS 3260 4to_2; Copenhagen, Det Kongelige Bibliotek, LN 179 Storfol. (fot)/LN 179 2°, 4 eks; Helsinki,

that many authors considered the beginning of the seasons to be firmly established. Perhaps Scandinavian authors viewed it as problematic to assign any of the common starting dates to the seasons in the Nordic calendars; the seasons were obviously very different in Rome than in Scandinavia. However, as will be discussed below, the Scandinavians apparently did adapt the common Christian calendar for their purposes, imparting local meaning to the different events. The average date of this set is 1370; the oldest calendar version dates to around 1100 and the most recent to 1591.

The two data sets are thus fairly similar in terms of the average age of the calendars. However, as Table 1 below demonstrates, the Roman set is heavily focused on the fourteenth and fifteenth centuries whereas in the Nordic set the thirteenth and sixteenth centuries are the most frequently represented:

Table 1: Number of calendars by century.

Century	Calendars in the Nordic set	Calendars in the Roman set
11th	0	1
12th	4	3
13th	13	5
14th	9	17
15th	7	18
16th	13	2
TOTAL	46	46

Helsingin yliopiston almanakkatoimisto, Möllman, Een Bönebook ock Calendarium 1590; Helsinki, Kansalliskirjasto, MD 706 I 14;

Helsinki, Kansalliskirjasto, Rucouskiria Bibliasta, Rv Hartauskirjallisuus Agricola; Helsinki, Kansalliskirjasto, Aö II 12_3; Helsinki, Kansalliskirjasto, C IV 21; Helsinki, Kansalliskirjasto, C IV 21_2; Helsinki, Kansalliskirjasto, F.m.VII.10; Helsinki, Kansalliskirjasto, F.m.VII.10_2; Helsinki, Kansalliskirjasto, F.m.VII.9; Oslo, Norsk Riksarkiv, Lf 145; Oslo, Norsk Riksarkiv, Lf 145_2; Reykjavik, Stofnun Árna Magnússonar í íslenskum fræðum, Am 249 o fol; Reykjavik, Stofnun Árna Magnússonar í íslenskum fræðum, GKS 1812 III 4to; Reykjavik, Stofnun Árna Magnússonar í íslenskum fræðum, GKS 1812 III 4to_2; Stockholm, Kungliga biblioteket, B 172_3; Stockholm, Kungliga biblioteket, F1700 510; Stockholm, Kungliga biblioteket, Inkunabel 267; Stockholm, Kungliga biblioteket, Inkunabel 722_2; Stockholm, Kungliga biblioteket, Isl perg 4o 28; Stockholm, Kungliga biblioteket, Isl perg 4o 28_2; Stockholm, Kungliga biblioteket, X 767; Stockholm, Kungliga biblioteket, X 767_2; Stockholm, Riksarkivet, Fr 2547; Stockholm, Riksarkivet, Fr 2547_2; Stockholm, Riksarkivet, Fr 25548; Stockholm, Riksarkivet, Fr 25548_2; Stockholm, Riksarkivet, Fr 25627; Stockholm, Riksarkivet, Fr 25628; Stockholm, Riksarkivet, Fr 25628_2; Stockholm, Riksarkivet, Fr 25637; Stockholm, Riksarkivet, Fr 25637_2; Stockholm, Riksarkivet, Fr 25638; Stockholm, Riksarkivet, Fr 25981/Fr 25983_2; Stockholm, Riksarkivet, Fr 6647; Stockholm, Riksarkivet, Fr 6647_2; Stockholm, Riksarkivet, Fr 6647_3; Uppsala, Uppsala Universitetsbibliotek, C447; Uppsala, Uppsala Universitetsbibliotek, E44.

The calendars analyzed in this article contain four types of references to seasons. The first of these is the simplest: mentioning that a certain season begins on a particular day.¹³ A second type of reference is a verse somewhere within the calendar which links the beginning of a season to a particular feast, like the feast of St. Urban in the case of summer: ‘Urban drives spring away.’¹⁴ These two types of reference are grouped together in this study because both suggest a certain date for the beginning of a season, albeit in slightly different ways.

In the diagram below, each season in the two data sets is analyzed using a scattered x-y diagram to visualize the development of seasonal starting dates from the eleventh to the sixteenth century. In all of the diagrams, the x-axis represents a timeline of the centuries in question and the y-axis the month and the day (e.g., 2,08=February 8; 2,22=February 22, etc.) when the season in question starts.

A third form of reference to the seasons relies on mention of natural phenomena that can be linked to the beginning of a particular season, such as birds starting to sing.¹⁵ These references only implicitly refer to season change, but, on the other hand, they are more informative about actual natural phenomena. These are used as supplementary evidence.

A caveat concerning the sources, and their references to the seasons in particular, must be added here: the vast majority of medieval calendars have been lost. One can reasonably assume that there was at least one calendar in use in each church or other religious institution (such as a monastery or convent), because calendars are such useful tools for organizing time. For the Nordic countries included in this study, for example, there were an estimated 6,000+ churches in the area, in addition to some 250 monasteries and convents, and many individuals possessed calendars as well.¹⁶ Yet only slightly over 400 calendars are extant, meaning that less than ten percent of the entire material has survived to the twenty-first century. Given the considerable variation, however, between the starting dates of the seasons and the broad geographical and chronological distribution of the surviving sample, the surviving sources do provide a good representative sample.

13 Three structures are used in this: 1) *Veris initium* 2) *Ver oritur* 3) *Ver nova/adultum/praeceps*.

14 *Ver fugat Urbani*. Stockholm, Riksarkivet. Fr 25628.fol.1r.

15 *Hic aues incipiunt cantare*. Vatican City, Biblioteca Apostolica Vaticana. Arch. Cap. S. Pietro. H.28. fol. 2r.

16 Estimates on churches are based on Markus Hiekkänen’s excellent analysis of the medieval churches in Finland in which he also gives estimates of the situation in the other Nordic countries (Markus HIEKKANEN, *Suomen keskiajan kivikirkot*, Helsinki 2007). The estimates of religious organizations are based on the calculations of the author which are derived from a multitude of sources that deal with the different parts of the Nordic; no overall work concerning Nordic religious orders exists.

3 Analysis

As Table 2 below shows, seasonal starting dates vary across both data sets¹⁷:

Table 2: Starting dates of seasons.

Season	Starting dates in the Roman data	Starting dates in the Nordic data
Spring	Feb 7, Feb 22, Feb 24, Feb 25	Feb 4, Feb 7, Feb 20, Feb 21, Feb 22, Feb 23
Summer	May 9, May 24, May 25, May 26	Apr 14, May 7, May 8, May 18, May 23, May 24, May 25
Fall	Aug 7, Aug 22, Aug 23	Aug 21, Aug 22, Aug 23, Aug 24
Winter	Nov 7, Nov 22, Nov 23, Nov 24	Oct 13, Oct 14, Nov 8, Nov 23, Nov 24

Overall, the Nordic material has more variety in each of the seasons than the Roman. This might seem surprising because the beginning dates are relatively rare in the Nordic calendars compared to the Romans, but, on the other hand, the variety might be the result of the very different climate that Scandinavia had and has compared to Central Italy.

The biggest differences between the sets are in the beginning of summer, which in the Roman data is never earlier than May 9, whereas in the Nordic data the earliest starting date is April 14.¹⁸ This seems, at first hand, quite counterintuitive: one might well expect to see an earlier date for summer in the case of Rome, which certainly had a warmer climate than Scandinavia in medieval times. However, meaningful analysis must consider certain important aspects concerning the historical context of the starting dates of the seasons, as well. The beginning dates of seasons were an interesting topic for many of the authors who were popular in the Middle Ages, including Bede (*Beda Venerabilis*), who in the eighth century wrote the ground-breaking work on time ‘*De Temporum Ratione*’. He mentions, in a somewhat enigmatic style, that Isidore of Seville’s starting dates for the seasons are very late (February 22, May 24, August 23, November 22), whereas the more reliable Greeks and Romans preferred earlier dates (February 7, May 9, August 7, November 7).¹⁹ Clearly by the eighth century, there were already two different traditions within Christendom, and there is always a

¹⁷ Because the Julian calendar that was used in Imperial Rome as well as the Christian Church was about 11 minutes too long, in about 130 years a whole ‘extra’ day appears compared to the calendar which gradually lacks behind. Because of this the calendar was about 11 days behind by the beginning of the 16th century. This should be taken into account when analyzing the starting dates of the seasons as well, but on the other hand it is very difficult to say whether or not the error was noticed by the maker of the calendar.

¹⁸ Uppsala, Uppsala Universitetsbibliotek, E 44; Stockholm, Kungliga biblioteket, Isl. perg. 4o 28; Copenhagen, Det Kongelige Bibliotek, NKS 203 8o.

¹⁹ *Beda Venerabilis, De Temporum ratione*, ed. Faith WALLACE. Liverpool 1988, Repr. Liverpool 2004, pp. 100–103. Bede explicitly mentions Pliny the Elder’s *Naturalis Historia*, but ironically Pliny’s dates

danger that a calendar's creator might have defined the beginning of seasons according to two rival "authoritative" main options, resulting in a later or earlier start of the seasons.

But this does not render a study of the starting dates of the calendars pointless. Even though a certain firmly established custom existed concerning the starting dates (or actually two), these are not the only options found in medieval calendars – neither in those from Rome nor from the Nordic regions (see Table 2). Even if the maker of a calendar was merely following a date which came from previous important authors such as Bede, he had to choose between the two main themes (or possibly a third option), and this decision could have been affected by how relevant it seemed to mention that spring begins at the beginning or end of February, for example. Particularly revealing are those cases in which the original calendar did not contain information concerning the seasons, but a later user added such information.²⁰

Furthermore, it is difficult to say which way the cause and effect relationship worked in the case of the "authoritative" starting dates of the seasons. The early date of summer in the Nordic context could in fact be related to a pre-Christian Scandinavian tradition which divided the year in mid-April and mid-October into two halves: summer and winter. This tradition was particularly significant in medieval Iceland,²¹ but a similar pattern is found on the other side of the Nordic region in Finland: the feast of St. Calixtus (October 14) was the traditional day for ending work on the fields.²² The feast of St. Martin (November 11) was traditionally seen as the ending point of the agrarian year in general, whereas the feast of St. Catherine (November 25) was the day when sheep were slaughtered, and a sheep's head was eaten, also ending a cycle, this time with livestock.²³ Therefore all three options for the starting date of winter (mid-October, early November, late November) can actually be linked to both events of the agrarian year and to the Christian liturgical year. Bede and other authors were probably just as much affected by the agrarian as the Christian year, which brings us back to the relevance of the starting dates of the seasons: they reveal much about the local agrarian year, which in turn depends on local climatic conditions.

The Roman data set gives interesting results in terms of the beginning of spring (Figure 2). The early option (February 7) occurs several times before 1257. During this period, there is only one case where a later date, February 22, is given (in 1163). After 1257, however, all the dates for the beginning of spring are February 22 or later, which

are different, and less logical: Feb 8; May 10; autumn equinox [i. e. around Sep 24 in those days]; and Nov 11.

²⁰ E.g. Stockholm, Kungliga biblioteket, B172.

²¹ Kirsten HASTRUP, *Culture and History in Medieval Iceland. An anthropological analysis of structure and change*, Oxford 1985, pp. 25–26.

²² Kustaa VILKUNA, *Vuotuinen ajantieto [Annual Knowledge Concerning Time]*, Helsinki 1995.

²³ Risto PULKKINEN, *Suomalainen kansanusko. Samaaneista saunatonnttuihin [The Finnish folk religion. From shamans to sauna elves.]*, Helsinki 2014.

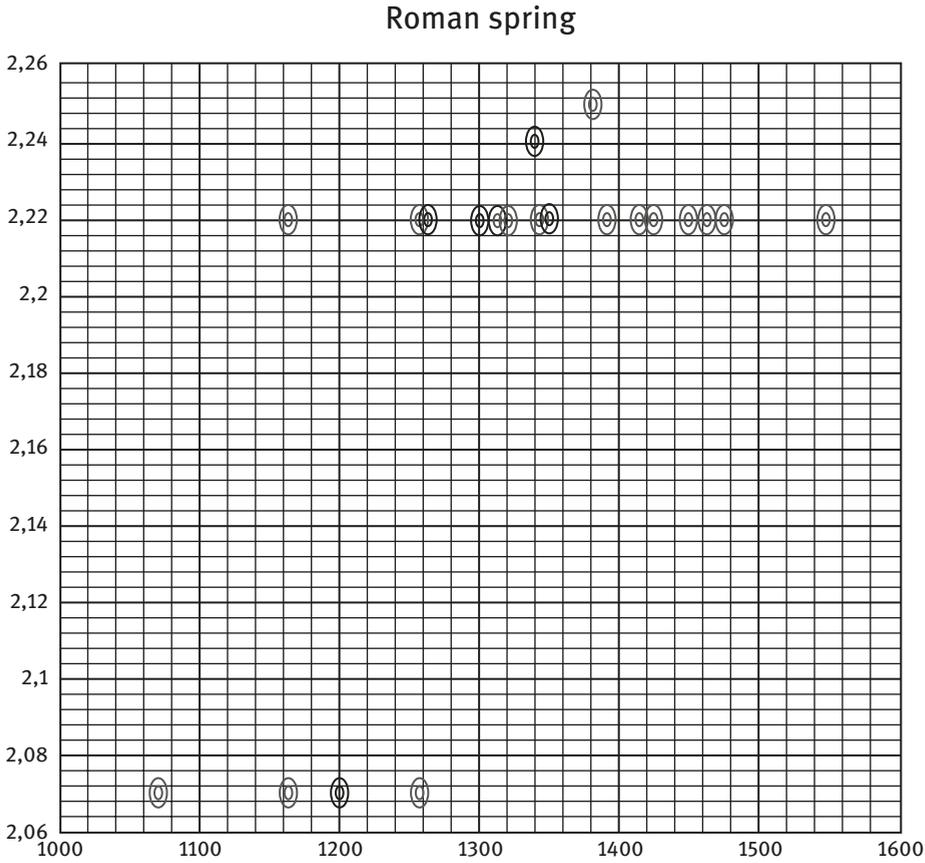


Figure 2: Roman Spring. Diagram by the author.

seems to indicate that spring was perceived to arrive later during the fourteenth and fifteenth centuries than during the earlier centuries.

This is perhaps supported further by a notation in one eleventh-century Roman calendar on February 13, ‘Here birds start to sing,’²⁴ which seems to indicate that whoever made the calendar, or perhaps copied it from an earlier version, probably also felt that certain signs of spring were also apparent in nature. In this particular calendar, the start of spring is mentioned explicitly a few days earlier (February 7). This might indicate that the ‘true’ spring had already moved a few days later at this point, and thus the entry on February 7 was based on an earlier example.

²⁴ “Hic aues incipiunt cantare”. Vatican City, Biblioteca Apostolica Vaticana, Arch. Cap. S. Pietro. H.28, fol. 2r. This comment, as well as the starting dates of the seasons might of course also be copied from an earlier author, but even in that case the copyist made the choice of including the comment, and all the users decided not to comment on the comment or erase it.

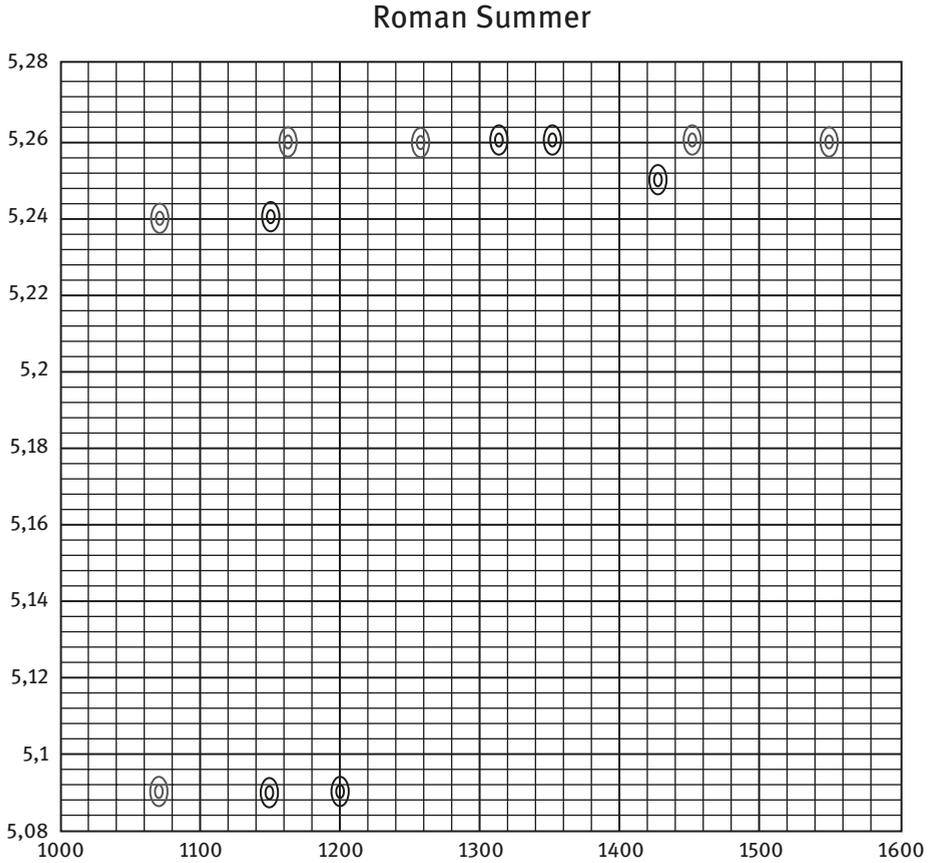


Figure 3: Roman Summer. Diagram by the author.

The beginning of summer (Figure 3) shows a very similar pattern in the Roman data: the early dates for the beginning of summer (May 8, May 9) disappear completely after 1200. Since the later dates of May 24 and May 26 are also found in the twelfth century, the results seem to imply that the twelfth-century calendars which include the early beginning of summer (May 8 or May 9) might have been copied from earlier calendars, in which that date was still more prevalent, whereas the later summer starting dates were added in the twelfth century. Indeed, in the temperature proxy records from Southern Europe compiled by Fredrik CHARPENTIER LJUNGQVIST, the warmest period seems to have been around the year 1000.²⁵

²⁵ Fredrik CHARPENTIER LJUNGQVIST, Temperature Proxy Records Covering the Last Two Millennia. A Tabular and Visual Overview, in: *Geografiska Annaler, Series A, Physical Geography*, vol. 91, no. 1 (2009), p. 19.

Since both spring and summer clearly shifted, it seems possible to assume that these two seasons that are so fundamental for the agrarian cycle indeed did begin later starting from the middle of the thirteenth century, and this change is clearly reflected in the calendars. It seems rather unlikely that this could be a coincidence.

The pattern for Roman dating of fall (Figure 4) is not as clear as for spring and summer. Both an early date of August 8 and later ones (August 22, August 23) can be found in the calendars from the eleventh to the fifteenth centuries. Still, the late date for fall does disappear after 1450, and there is a heavy concentration of calendars which have the early date of August 7 between the years 1475 to 1482, during which the climate probably was colder than in the earlier centuries. It would be tempting to assume that the late date for autumn “lingered” until authors recognized it as clearly too late and adopted an earlier date in all the new calendars produced in the latter half of the fifteenth century.

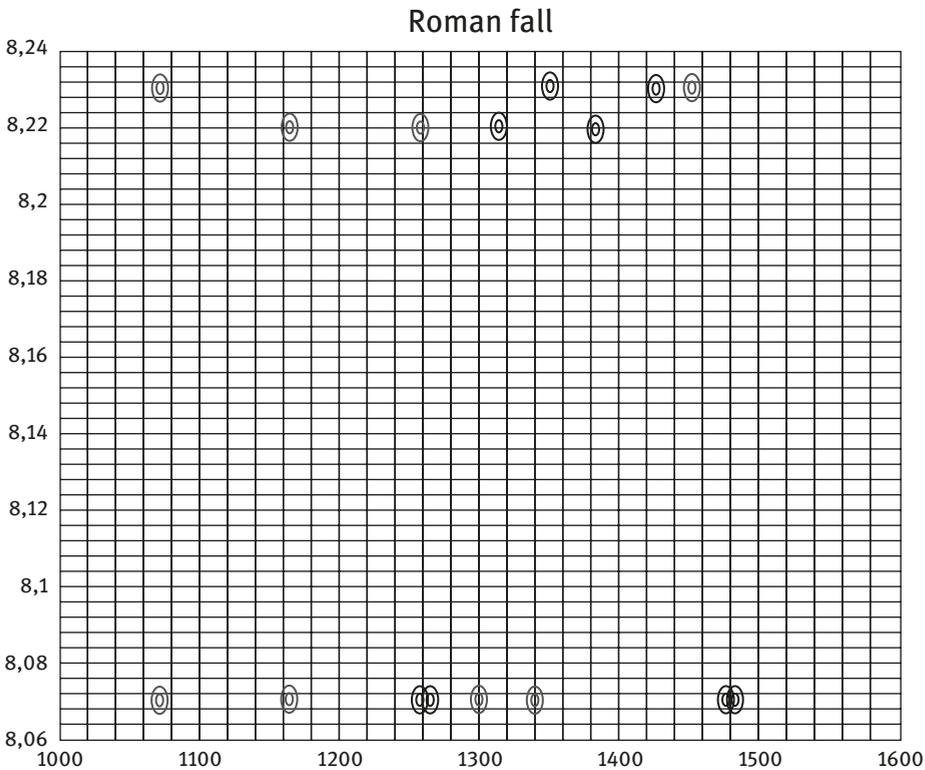


Figure 4: Roman Autumn. Diagram by the author.

A possibility also worth considering is that changes in temperature and precipitation are more easily observable in spring and fall. In the context of Rome, the arrival of spring was probably linked to at least diminishing rainfall, increasing

sunshine, rising temperatures, new leaves on deciduous plants, and various agrarian tasks. In the case of fall, the question is more about the harvest, which naturally depends on the summer, as well, not simply about when the weather changes. Fall in central Italy is often quite warm today compared to spring. If this was the case in the Middle Ages, as well, it would have made the “start” of fall more difficult to pinpoint.

It is most difficult to discern a pattern in the Roman dating of winter (Figure 5): the early starting dates only occur in the eleventh and thirteenth centuries and after that there is no major change in the date. Nevertheless, the calendars that contain the eleventh and thirteenth century early dates for winter are somewhat problematic. The eleventh-century calendar actually contains two dates for both summer and fall: May 9/May 24; August 7/August 23. Therefore it is possible that the author of the calendar did consider two options (perhaps one of which seemed more relevant than the other) but ended up putting them both.

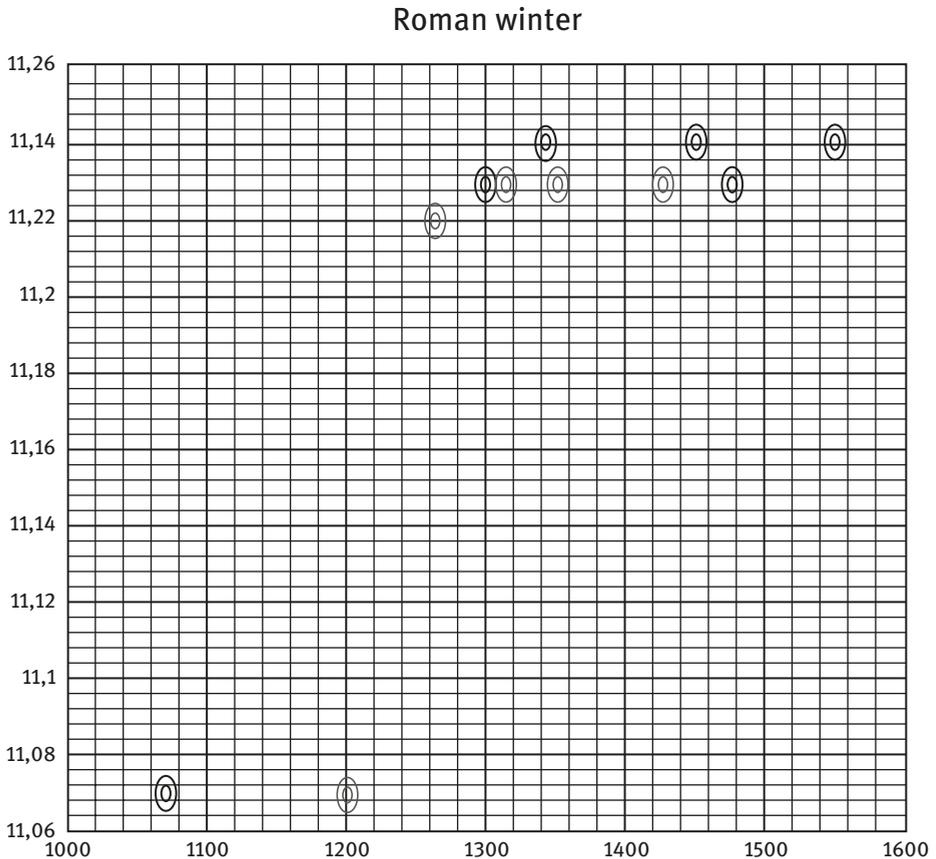


Figure 5: Roman Winter. Diagram by the author.

The two calendars dated to ca. 1200 contain very early dates for all of the seasons (spring, February 7; summer, May 5; fall, August 8; winter, November 7). This casts doubt on the results' being an actual reflection of experienced climatic conditions; it seems instead that, in this case, the seasons represented a simple division of the year into four more or less equal parts, as was discussed above. Also, the same difficulty of determining winter compared to fall in the Roman context (where snow or frost can hardly be used as an indicator) might have something to do with this.

In the case of spring in the Nordic data set (Figure 6), there are six options for the beginning of spring (see Table 2 above) that form a clear pattern of change over time. The earliest option for spring, February 7, appears twice in 1150 and once in 1225 and then disappears completely until 1438. Meanwhile the later options, February 22 and 23, dominate the entire fourteenth century. This points towards the hypothesis that spring was at least considered to be arriving later in the fourteenth century than in the twelfth or thirteenth.

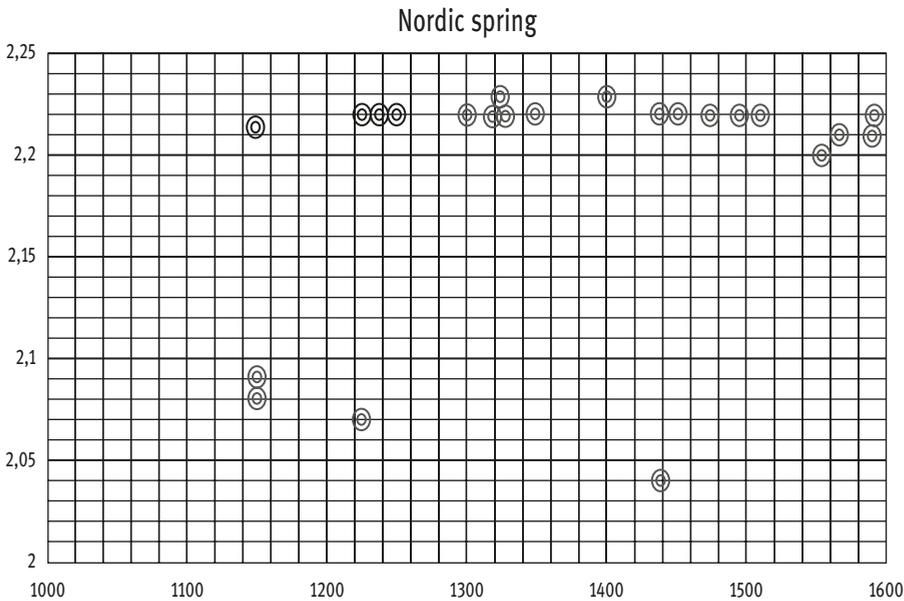


Figure 6: Nordic Spring. Diagram by the author.

The change seems to come a bit earlier than in Rome: whereas this transition could be found in Roman sources in the early fourteenth century, Nordic calendars had already implemented the later dates in the early thirteenth century. Indeed, out of the seventeen temperature proxy records from the Nordic countries compiled by Fredrik CHARPENTIER LJUNGQVIST, fourteen place the greatest drop in

temperatures in the twelfth century or earlier and only three in the thirteenth or fourteenth century.²⁶

There is a similar, although not identical pattern in the case of summer (Figure 7). In the twelfth and thirteenth centuries, May 7 is still relatively common, but it then disappears completely (except for one individual case in 1328) until the late sixteenth century. During most of the fourteenth and the entire fifteenth century, the only dates suggested for the start of summer are May 23, 24, or 25.

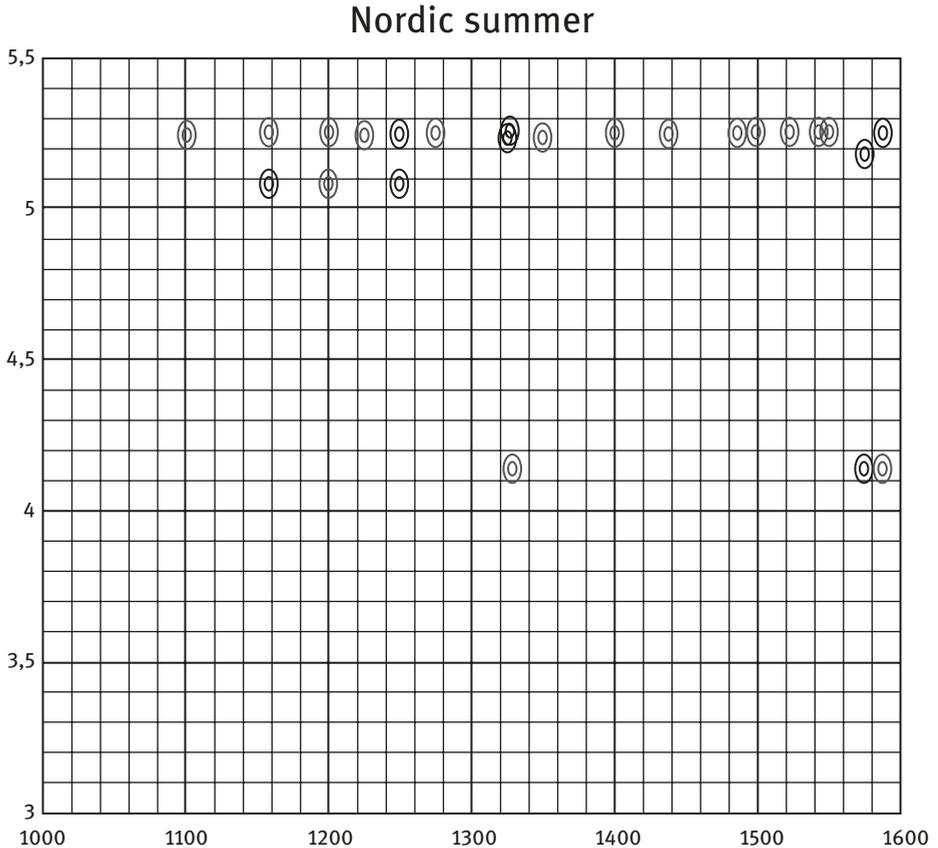


Figure 7: Nordic Summer. Diagram by the author.

Likewise, in the case of summer, the great shift in the pattern seems to occur already in mid-thirteenth century, although this depends in part on whether one interprets the individual entry of April 14 from 1328 as an exception. The latter case would be

²⁶ CHARPENTIER LJUNGQVIST (note 25), pp. 18–19.

closer to the situation in Rome, but since it is a rather isolated example, both in terms of its date and year, it should perhaps indeed be considered an exception.

The earliest date for fall (Figure 8), August 21, does not occur in the twelfth or thirteenth centuries, but only in 1328 and 1450, which mirrors the pattern for spring and summer. In terms of years, the change is closer to what was seen in the case of spring and summer in the Roman data, although there (as we have seen above), the pattern for fall was a bit different.

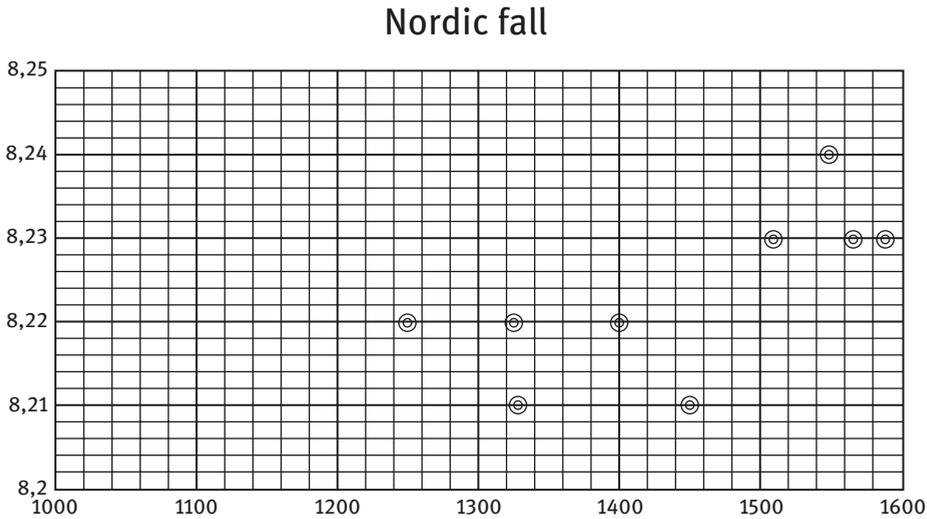


Figure 8: Nordic Autumn. Diagram by the author.

However, in the Nordic data, the latest dates for fall are actually found in the sixteenth century. This is slightly surprising, but it might also reflect the pattern Håkan GRUDD worked out in an analysis of Lake Torneträsk in Sweden, which points towards a slightly warmer period from approximately 1400–1600.²⁷ There is also a very early starting date (August 21) for fall in a calendar dating to 1450. This confirms Jan ESPER's observations based on maximum latewood density (MXD) chronology: there was a drop of about three degrees Celsius in 1453 in the Nordic region.²⁸

The only date given for the beginning of winter (Figure 9) during the twelfth and thirteenth centuries is November 23. The first instance of an earlier date (November 8)

²⁷ Håkan GRUDD, Torneträsk tree-ring width and density AD 500–2004. A test of climatic sensitivity and a new 1500-year reconstruction of north Fennoscandian summers, in: *Climate Dynamics* 31 (2008), pp. 843–857.

²⁸ Jan ESPER, Northern Hemisphere temperature anomalies during the 1450s period of ambiguous volcanic forcing, in: *Bulletin of Volcanology* 79/6 (2017), pp. 1–9.

is in 1300, and a very early instance (October 14) occurs for the first time in 1328. In the Nordic region, however, some sixteenth century calendars indicate very early dates for winter in the sixteenth century, which somewhat contradicts the data concerning fall above.



Figure 9: Nordic Winter. Diagram by the author.

In general, the dates of the seasons in the Nordic context correlate rather well to the pattern known from other sources, namely, that in Scandinavia the warmest period in the Middle Ages was between 900 and 1100, during which average temperatures were close to what they were in the 1990s, but summers were somewhat warmer in the northern parts of the region, and winters in the eastern parts (Finland) somewhat

milder.²⁹ This was followed by a slightly colder period until the end of the twelfth century, when the climate warmed once again; climatic conditions became more unstable in the thirteenth century, and a clearly colder period finally started around 1300.³⁰ As Fredrik CHARPENTIER LJUNGQVIST's analysis of temperature proxy records suggests, however, there is evidence of considerable variation within Scandinavia.³¹

4 Conclusions

Both the Roman and the Nordic data sets show clear patterns of change over time concerning the seasons. In the Roman set, the beginning of both spring and summer clearly shifted later starting in the fourteenth century. A very similar but earlier shift occurs in the Nordic data by the mid-thirteenth century.

A pattern similar to that found in the Roman data for spring and summer can be seen in the Nordic data for fall and winter: starting dates seem to move earlier starting from the fourteenth century. In the Roman data, fall and winter do not give as clear a pattern as this, but this might be partly due to the problematic nature of the calendars in question.

Overall, the change in the beginning of seasons that has been demonstrated by scientific research can be confirmed in medieval calendars, as well. This is particularly the case with spring and summer, both of which demonstrate a very clear pattern of change in both of the data sets. Although the beginning dates of the seasons were to a certain extent predetermined by ancient and early medieval authors, every compiler of a calendar had to choose which of the many possible dates should be followed. It seems very plausible that this decision was affected by the contemporary climatic circumstances. Also, as we have seen, the patterns of change in the dating of the seasons seem to correlate with the changes scientists have observed with other methods, as well. Further comparative research on the situation in Central and Eastern Europe, the British Isles, and southern Europe would help scholars to see the broader picture and collect additional evidence to back up these conclusions.

²⁹ Fredrik CHARPENTIER LJUNGQVIST, Den medeltida värmeperioden i Skandinavien, in: Dick HARRISON (ed.), *Sveriges historia 600–1350*, Norstedts, Stockholm 2009, p. 147.

³⁰ CHARPENTIER LJUNGQVIST (note 27), p. 148.

³¹ CHARPENTIER LJUNGQVIST (note 23), pp. 18–19.