

## SOME WEATHER EVENTS FROM THE 14TH CENTURY

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**Összefoglalás** - A dolgozat célja annak bemutatása, hogy milyen típusú, időjárási eseményekre utaló 14. századi források találhatóak Magyarországon. Mivel az egykorú hazai krónikák és évkönyvek szinte teljesen hiányoznak, ezért a korabeli oklevelekben található információk szolgáltatathatnak adatokat.

**Summary** - This paper discusses the different kinds of allusions to weather events which can be found in various 14th century written sources in Hungary: e.g. data referring to the floods of different rivers, water levels, precipitation etc. In lack of narrative sources (annals, chronicles etc.) Hungarian references to other events are restricted to different charters. Until recently in Hungary no comprehensive attempts have been made to collect and analyse such data from the 14th century charters, yet.

**Key words:** climate history, compilations, weather sources, charters, 14th century, floods of rivers, Hungarian Kingdom

### INTRODUCTION

In great part of Europe there are a lot of reliable narrative sources which make it possible to produce continuous climatic data-bases concerning to the Middle Ages (especially for the Late Middle Ages).

In contrast to this, in Hungary there is a very small number of narrative sources which have any reference to meteorological events. Most of the climatic information from the 14th century appear in the contemporaneous charters, which do not contain long-term data (for a month or the whole year) as the documents produced in the western part of Europe.

### LATER COMPILLATIONS

In Europe several historical climatic compilations were published as early as in the 18th century. Some of them are not reliable because of misdating and other mistakes.

The most important Hungarian collection is: *A. Réthly: "Weather events and natural disasters in Hungary"* published in two volumes (1966). The first volume contains data from the Middle Ages.

Based on the comparison and analysis of sources from the entire 14th century it can be concluded that the reliability of the records used by *Réthly* (works of German authors, mainly Hennig, Weikinn, and Hungarians) is rather doubtful (*Lamb, 1982; Rácz, 1989*). Because the works of references are not indicated in most cases (e. g. the information published in *Vasárnapi Újság*) it is difficult to verify the data. A typical example of this problem is the invasion of locusts, which devastated the country and great parts of Europe in 1338. *Réthly* - using the reference books - dated this invasion of locusts not only for 1338, but also for the years of 1336, 1337, 1340-1341, 1340-1342.

The original Hungarian, Bohemian, Bavarian and Austrian sources prove the fact that the data - except for the year of 1338 - are incorrect and in this period there was only one invasion in the Carpathian Basin (*Mályusz, 1966*). For this reason the reference works of *Réthly's* compilation for the 14th century need a comprehensive textual analysis before application.

#### METEOROLOGICAL DATA IN THE CONTEMPORANEOUS CHARTERS FOR THE PERIOD OF 1338-1358

The 1310s and the 1340s were the most unfavourable years of the century. There is a small number of documents from the turbulent years of the 1310s, but from the 1340s and 1350s more documents have survived. (It is possible to point out what sort of information can be found in these charters.)

From about 9000 records of this period I could investigate 4000 which have been published in repertoires. I have also examined the summaries (regesta) of the charters kept in the Hungarian National Archive and the citations of the *Lexicon Latinitatis Medii Aevi Hungariae*. Among the documents of the 21 years' interval 16 charters have been found which contain data for meteorological events (*Table 1*).

The examined documents from approximately 4000 the half of the charters that are accessible, so the chartered data-base is incomplete and needs further elaboration.

The charter-based research is complicated on the one hand by the unlucky situation that until recently in the summaries of charters information that could be useful from the aspect of climate-history has been ignored and therefore omitted, and on the other hand that a considerable number of documents from the Late Middle Ages have not been published. Following from this we must use the original documents or their later transcriptions, which significantly delays research.

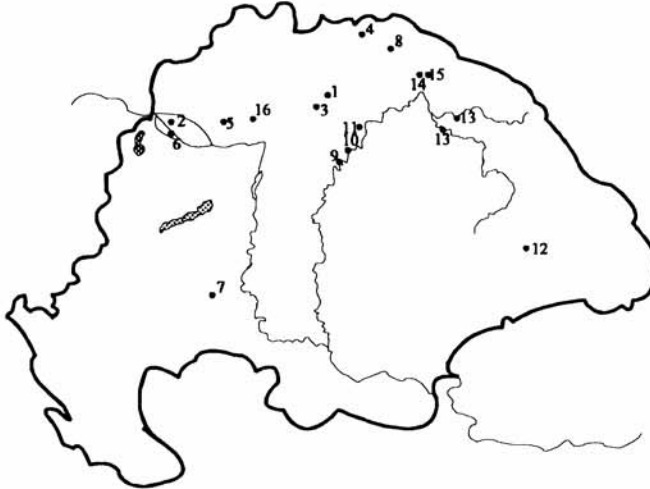
*Some weather events from the 14th century*

number of charters	county	place	year	month, day	event	floods of rivers
1.	Gömör	Csoltó, Leklene	1339	31 August	flood	Halbokapataka (Sajó)
2.	Pozsony	Páka	1340	25 July	very wet field	near the Danube
3.	Gömör	Harmacz	1341	8 November	flood	tributary of Rima
4.	Sáros	Tarkő, Lucska, Haruncsár	1342	between 21 July and 16 August	severe frost, cold weather	-
5.	Bars	Besenyő	1342	25 April	flood	Zsitva
6.	Pozsony	Zámoly	1342	1 July or winter (?)	hard times, deep snow	-
7.	Baranya	Vaiszló, Hirics, Luszok	1342	15 September	flood	Dráva
8.	Zemplén	Maráza	1342	11 November	flood	Toplu and Ondava
9.	Heves	Kömlő	1343	15 May	flood and hard times	Tisza
10.	Heves	Poroszló	1346	20 April	great flood	Tisza (Egervize)
11.	Borsod	Ónod, Hidvég	1347	23 February	extreme flood	Sajó
12.	Küküllő	Dombó	1348	19 October	flood	Kis-Küküllő
13.	Szatmár, Bereg	Badaló, Kér	1349	13 January and the following days	flood	Tisza
14.	Ungvár	Sislóc	1356	7 December	great flood	Ung
15.	Ungvár	Daróc	1357	1 May	great flood	Ung
16.	Hont	Tarcsány	1358	20 January	frozen soil	-

*Table 1* The data of the records from the period of 1338 - 1358

Among the chosen charters - because the aim of the research was to collect information relating to the Hungarian Kingdom in the 1340s and 1350s - data concerning foreign or previous events (before 1338) are not included.

## THE TYPE OF THE ORIGINAL DOCUMENTS



The geographical distribution of the data in the Hungarian Kingdom  
*Fig. 1*

The majority of surviving medieval charters deals with juristical cases. Because of the high cost of the production of the document besides the obligatory formulae - which can often be omitted - they usually restrict themselves to concrete information regarding the given case. Therefore, they refer to meteorological or climatic events only if these events relate to the given case. The geographical distribution of the charters is uneven: most of them refer to the northern, northeastern regions of the

country (*Fig. 1*). Descriptions of events influencing the legal procedures are most frequent in the so-called charters of reambulation (*litterae reambulatoriae*), and a significant part of these is in connection with rivers and unusual meteorological events, playing an important role in the life of the population.

Data concerning of floods (from the whole 21 years' period) can be grouped according to seasons:

- 1, Winter: from the 3 winter-floods (in the charters 11, 13, 14) 2 were extreme floods ( charters 11, 13)
- 2, Spring: 2 great floods (charters 10, 15)
- 3, Summer: only 1 flood was noticed for the last day of summer of 14. charter
- 4, Autumn: it is interesting that all of the four cases (charters 3, 7, 8,12) were mentioned as normal floods.

But it is important to note that the flooding rivers are rather small ones (except the rivers Tisza and Dráva).

The data of floods are important in case of large rivers, because the floods of these show the growing precipitation of greater areas (or melting). In most of these cases river Tisza (charters 9, 10 and 13) or one of the tributaries are mentioned.

The temporal distribution of the charters is remarkable:

From the 1340s - when there was disadvantageous weather in Europe (Lamb, 1982, etc.) - I could find 10 data. Four of these especially refer to the year 1342, which was the most unfavourable and wettest one of the decade (Alexandre, 1987; Brazdil and Kotyza, 1995).

For the fifties - in spite of the growing number of charters - only 3 pieces of information were found.

### METEOROLOGICAL INFORMATION FOR 1342

From the 21 years' period, 1342 was the only year, from which some conclusions can be drawn:

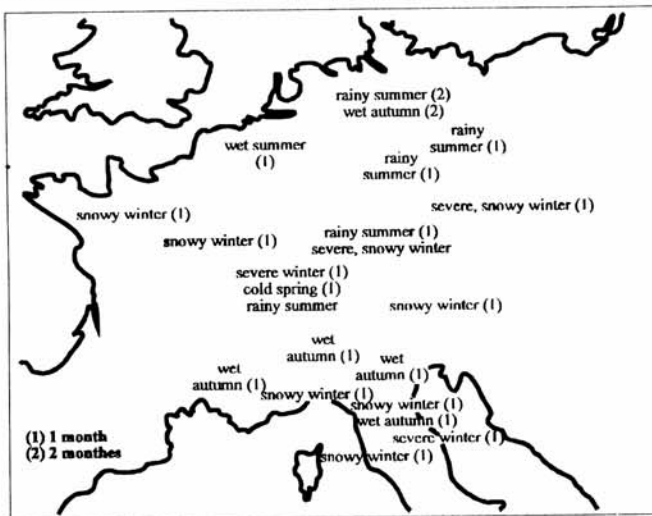


Fig. 2 The weather in parts of Europe - 1342 (data based on Alexandre, 1987)

The second one is more likely because the winter of 1342 was hard and snowy in the central parts of Europe (e.g. Czech Lands, Carinthia and Styria) (Fig. 2).

c) Autumn: 15 September 1342. flood in county Baranya near the river Dráva (charter

7)

In comparison, in the 20th century the probable periods of floods are as follows:

- at the beginning of spring
- at the beginning of summer
- and in autumn.

a) Spring: 25 April, 1342 (charter 5) flood in county Bars, at the upper course of river Zsitva. In consequence of the character of the terrain it was a typical spring flood caused by a bigger rainfall (or a later melting).

b) Summer: 1 July, 1342 (this is the most likely date of the charter 6) hard times, great snow. Two explanations are possible:

1. either an extreme event, which was different from the recent regional climatic conditions,

2. or the misdating of the charter.

The event relating to the settlements nearby river Dráva (and not far from the Danube) in charter 7 might indicate that the flood of this river was the consequence of the higher water level of the Danube.

d) Autumn 11 November 1342 flood between the rivers Toplu and Ondava in county Zemplén. This flood in autumn perhaps shows some influence from the Mediterranean.

These four data are not enough to draw any conclusions nevertheless if we also consider the flood of 1343 (charter 9) on the upper course of river Tisza (this flood can characterize the catchment area of the river at that time), it is not surprising that in 1343 in another source a reference can be read to the high prices in the Szepes area (*Schmauk*, 1889), because - with the exception of the charter 6 - all of these charters are concerned with the high water level of many rivers in the Carpathian Basin.

#### OTHER TYPE OF DATA IN THE CHARTERS FROM THE 14TH CENTURY

Meteorological information - in some exceptional cases - can be obtained from the (narratio) "narrative" part of royal donation charters, where - in contrast to the western European practises - sometimes it rather expects on the merits of the donated person.

A charter from 1322 represents a good example, when László Szécsi took the risk of his life to save Charles I. from the broken ice of the river Bodrog (in Zemplén county):

"... Ceterum cum vice quadam *super glacies fluvii Budrug* consolationis causa cum quibusdam nostris fidelibus graderemur et *ipsa glacies pre gravitate nobiscum* existentum in plures partes *rupta extitisset*, prenomiatus magister Ladislaus, ne in tam formidabili mortis orrende duritie exponere haud pavescens, nos de discrimine fracturarum glaciei viriliter erexit ..."

(... And another case, when with our followers *we went* to find consolation *on the ice of river Bodrog*, the ice was broken because of our followers' weight, the above-mentioned master Ladislas, so that our person was not threatened in the fearful moment of death, was not afraid of exposing himself to the terrible cruelty of death, and he bravely lifted us up from among the broken pieces of ice ...) (*Györffy*, 1964, DL 99892).

#### LONG-TERM RESEARCH ON CLIMATE-SENSITIVE REGIONS

This method demands the complete investigation of smaller regions that were sensitive to environmental (especially hydrological and climatic) changes. This means the research of the whole medieval data-base and the establishment of the exact environmental

conditions (and changes) with the help of the results of other sciences (e.g. archeology, natural sciences etc.)

There have already been some investigations of charters on this subject on different areas (Fügedi, 1992; Györffy, 1994), that supports the theory of growing mean precipitation for the 14th century, but complete research was made only on lake Balaton (Fig. 3).

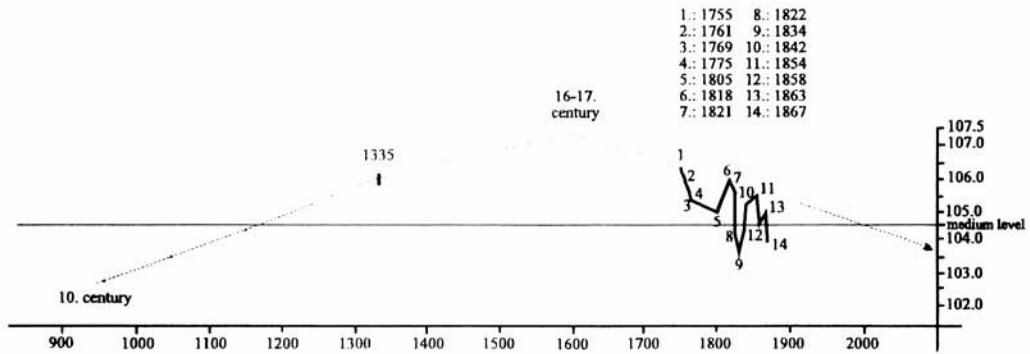


Fig. 3. The water level of lake Balaton in the 2nd millennium A.D. (after Sági, 1973)

## CONCLUSION

While other European regions are rich in contemporaneous sources, Hungarian investigations can lean only on few written Hungarian documents, and have to make use of the results of other sciences and the foreign narrative sources which have some allusions to the Hungarian conditions. The findings show that it is worth continuing this research based on written sources, and that is just the beginning of a long-term examination of climate history in the medieval Hungarian Kingdom.

## THE SOURCES OF THE CHARTERS

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|--|--------------------------------------|
| 1. C. D. And. III., ch. 394., p. 597.        | 7. C. D. And. V., ch. 30., p. 68.    |
| 2. Fejér VIII. IV., ch. 253., p. 488.        | 8. C. D. And. IV., ch. 172., p. 280. |
| 3. Mon. Hung. Hist. II., ch. 107., p. 162.   | 9. C. D. And. IV., ch. 206., p. 342. |
| 4. Mon. Eccl. Strig. III., ch. 625., p. 473. | 10. Károlyi, p. 164-167.             |
| 5. C. D. And. IV., ch. 174., p. 289.         | 11. C. D. And. V., ch. 55., p. 115.  |
| 6. C. D. And. IV., ch. 173., p. 284.         | 12. DL 30383 (Arch. Nat. Hung.)      |

13. Kállay I., ch. 976., p. 224.

14. C. D. And. VI., ch. 331., p. 527.

15. Zichy III., ch. 82., p. 128. (ch. 42., 46.)

16. C. D. And. VII. ch. 10., p. 16-19.

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