

Historical Climatology

A Source for Historical-Geographical Research

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Motto:

“The past compels just like nobility,
because it is itself
a ground of great spiritual uplift”¹

Introduction

THE THIRD millennium came with some bad news: climate destabilization, milder winters, increasingly rare snow, hotter and drier summers, heavy rain, droughts, increasingly frequent extreme phenomena, which will lead to a climate change that can disrupt living conditions on Earth. Some say the world is coming to an end; others speak about the collapse of the technological civilization of a proud humankind which, believing it can control nature, has come to see nature turning against it.² Historians, geographers, climatologists, physicists, sociologists, politicians, journalists, economists and more recently the whole society discuss, question and argue about climate, its whims and changes, coming to draw up climate-justified theories, scenarios and even engender psychoses that were grouped by the historian Lucian Boia (2005)³ into three categories:

- *human diversity*, namely different types of races, ethnicities and cultures are substantiated based on climate diversity;
- *the course of history* is also determined by climate; the progress and setbacks, development, stagnation or decay of civilizations are explained based on climate conditions;
- *climate disasters* determined by man’s abusive actions on nature can lead to global warming, which could result in the destruction of civilization, the Earth being seen by some people as potentially uninhabitable, unable to support an advanced civilization in the near future.

A turning point in terms of climate disasters occurred in 1972 when the Club of Rome released its report. Entitled *The Limits to Growth* and drafted by a team of researchers from the Massachusetts Institute of Technology, led by Dennis Meadows, this report showed that planet Earth is in danger due to the alarming population growth, the lack of food

and raw material resources, the exaggrate pollution which will very soon lead to the collapse of civilization, by 2100, because, according to their statements, resources will be depleted: iron will be depleted in 93 years, aluminum in 31 years, natural gas in 22 years, and petroleum in 20 years' time!

In this context, the first catastrophic climate scenarios emerged in the 1970s; these scenarios involved the destruction of life on Earth through global warming or global cooling, the academic community being divided in two camps: those who anticipate global warming and those who anticipate global cooling and, following the 1980s, another group appeared, that of skeptics. This divisions among scientists led to new scenarios (tens, even hundreds), the most commonly agreed being the following five: *mankind is responsible for the warming of the planet and its effects threaten to become catastrophic if it does not change the civilizational system; mankind is responsible for the warming, but it will be able to withstand its effects if it adapts, and in some places the warming might even have favorable effects; mankind is not responsible for the warming; there is no warming; there will be a cooling or warming period.*⁴

On the other hand, the media, hungry for breaking news, gives us the impression that all particular phenomena such as notable storms, strong winds, exceptional heavy rain, catastrophic floods, extreme frosts, etc. that are currently observed exceed those which took place 50-80 years ago both in intensity and frequency.

Cleveland Abbe, the famous meteorologist of the Weather Bureau (USA), drew attention even 120 years ago, in an article published in the prestigious *American Journal of Meteorology*, that our views are questionable and result from “our imperfect ability to observe and especially our imperfect memory. There are plenty of people whose habit of thinking is so small that observing a remarkable weather they immediately conclude that climate has changed ... forgetting that he, the man himself, has had such limited personal experience that he could not judge the weather throughout a whole country, let alone the climate of a century... It seems that each person relies on the memories of the elders who, by comparing with the time when they were children, believe that now is better or worse. Moving from the mountains to the plains, in a comfortable house, they will believe that the climate has improved. If the person had moved in his prime from the mild climate of the sea coastline inside the country where the climate is always harsh, he will think that climate got worse and current winters are harsher than before.”⁵

Obviously, the climate is present on the entire surface of the Earth and by the values of its elements it generates more or less favorable conditions for life and development of the society. Starting from this reality, geographer-climatologists (climatology is a branch of geography) also take into consideration the problem concerning weather and climate nowadays, in the past and in the future:

“The weather is whimsical. From time to time, a wave of heat burns down the fields, heating up the city man while he waits for the trolleybus at the station ... From time to time, a cold wave lowers the temperature in the fields, on the streets, but also brings snowfall that causes traffic jams or glazed frost which, again, fills hospitals with people with broken legs or arms ... Each time the comment is the same: There's never been anything like this before! Oh, really?

How brief is the memory of the individual, but also that of society! If we strive a little bit, we remember other summers that were very hot, droughts that worried people; we remember other winters when the frost and snow blocked the traffic.

In recent years, the relevant specialized institutes often warn us with yellow or orange codes that special climate events follow and the media is in a hurry to tell us that we are in for some hard times ahead. Should we add maximum solar activity with consequences in communications and health, the changes in the chemical components of air and especially climate changes, we start to convince ourselves that we experience a special weather, that this is an apocalyptic time. Then, a natural thought begins to concern us: Do we live in such times? Alright, but how was life in the past? How was the climate? And thus we turn to the remembrance of things past (as Proust put it in the previous century), looking into the climate and the climate changes experienced by previous generations.”⁶

What are we actually looking for? We are trying to find out if this increase in Earth’s average temperature currently mentioned by climatologists, by 0.6°C during the last hundred years, of which 0.5°C between 1950 and 2000, namely by 0.5°C in Romania (0.8-1°C between 1961 and 2007)⁷, represents a climate change and if this had also occurred in the past, using information from the field of *historical climatology*.

Of course, *historical climatology* cannot provide us with data as accurate as those measured by thermometers in the last hundred years (as they have some degree of subjectivity), but it can provide us with clear information on the normal or extreme nature of seasonal and annual weather, for hundreds or even thousands of years before the discovery of the thermometer, and *it can tell us whether climate changes took place in the present era and the historical past*.

Data and Methods

THE INFORMATION related to climate in the historical and prehistoric past is held in two archives, the *archive of nature* and *the archive of society*. *The archive of nature* includes glaciers, terrestrial and marine sediments, growth rings of century-old trees, sporopollinic tests, while information regarding *the archive of society* can be extracted from archaeological remains, notes on special climatic phenomena (floods, droughts, cold or heat waves, heavy snow, late snow, early snow), phenophases.

Such information is to be found in the registers of parishes or monasteries, in religious or secular books, annals of the courts, in the “gromovnice” (books of folk astral-divinatory wisdom of Eastern origin), calendars, local archives which record the dates when grape harvesting started, cherry-tree blooming dates, the value and price of grains, but also on the walls of some flooded houses, in paintings featuring frozen or dried out rivers, in the books written by Moldavian, Wallachian, Transylvanian, Turkish chroniclers, in the travel notes of some Hungarian, Austrian, Polish diplomats, Russian pilgrims, Orthodox priests and monks, Catholic or Greek Catholic missionaries etc.,

where we find information on normal, mild or harsh winters, dry, rainy or normal summers, plagues of locusts, epidemics, earthquakes, disasters, deaths etc.⁸

Based on such information, the characteristics of *the climate in the past* can be determined with the help of some *associations and logical deductions* or by means of the *statistical analysis of each year and season* mentioned in those works.

Results and Discussion

ROMANIAN ACADEMICIAN Ștefan C. Hepites stated as early as 1898, at a conference entitled “Has the climate changed?” held in the presence of King Carol I, that from the beginning of the Earth until the beginning of human history the climate of Earth had changed, but “from the beginning of historical times to nowadays (A/N 1898), the climate has not changed at all or at least it has not changed significantly.”⁹ In stating this he did not solely rely on his own observations, because “my personal authority is far too small to fight misconceptions in a matter as important as climate change or the lack of climate change, and that is why I shall seek to rely on first-class scholars who have dealt with this issue.”¹⁰

Thus, making use of *associations and logical deductions*, excerpts from the works of poet Ovid, the French physicist Arago, the French meteorologist Alfred Angot, but also weather data from the works of the American meteorologists Charles Schott and Cleveland Abbe, the works of Professor Brückner and Prince Nicolae Suțu, the Romanian academician showed that during the past 3,000 years the climate in Romania and throughout the entire Earth did not change.

In this regard, Ștefan Hepites contended that the statements of Ovid, “a mellow poet born in northern Italy” (as described by B.P. Hașdeu), in his works *Tristia* and *Epistulae ex Ponto* are exaggerated, because he complained about the terrible climate on the shore of the Black Sea in order to be called back to Rome from his exile; therefore, he relied on ideology, showing only what he wanted to highlight and not the reality:

”.. wine stands unbottled,
retaining the shape of its vessel,
so that what you get to drink isn’t liquor, but lumps.”¹¹

The French physicist *Arago* claimed that the average temperature in Israel had not changed since the days of Prophet Moses, because for the palm trees to bear fruit and for the dates to ripen it takes almost the same temperature as the one required by the vines to produce grapes for winemaking. Therefore, if dates and grapes were ripe on the same date, both currently and in Antiquity, then climate in Israel did not change during this time. We know that in Israel the palm tree and the vine were grown in Antiquity, because the Bible mentions the palm trees of Deborah, in Jericho, in the Jordan valley, the vineyards and wine in Engedi valley, Judas’s wine, the wedding at Cana in Galilee, vine being mentioned in more than 20 locations.

Moreover, Pliny, Tacitus, Strabo, Theophrastus, and Diodorus mentioned forests of palm trees and they praised a lot the wines from Israel, while Jewish coins were engraved with vines as well as palm trees.

Taking into consideration that in order for dates to ripen they need an average temperature of 22°C, but vines does not tolerate an average temperature above 23°C, and in Israel vines was cultivated on large areas, this means that back in the days of Prophet Moses the average temperature was 21-22°C (Arago, 2012).¹²

On the other hand, winters in Israel did not lack in snow, not even in Antiquity, as mentioned in the Bible (Ps 64, 15 “When the Almighty scattered kings in it, it was white as snow in Salmon”; Ps 147, 5 “He spreads the snow like wool and scatters the frost like ashes”; Ps 147, 6 “He hurls down his hail like pebbles. Who can withstand his icy blast?; Ps 148, 8 “Lightning and hail, snow and clouds, stormy winds that do his bidding”). Also, 122 years ago the frost set in at the beginning of November and the snow was still present in early March 1898 (that year it snowed even in Egypt, while in the Balkans and even in Sicily the heavy snow had blocked the railways).¹³ The same phenomena occur nowadays, when the media presents them as extraordinary events determined by climate change!

The French meteorologist Alfred Angot came to the same conclusion regarding the French climate, which did not change from Antiquity to the present day, showing that some researchers believed that in ancient times climate in France was colder than nowadays because vine was not cultivated beyond the Cévennes Mountains, but in fact its cultivation was forbidden by a decree issued by Diocletian for both France and Spain. It was not until this decree was repealed by Emperor Probus that vine was cultivated further north. Moreover, until 1791 the harvesting of grapes was allowed in France only following an official notification. This allowed Angot to identify the date on which grapes were harvested each year for more than 500 years (1366-1879) and he noticed that during the last hundred years the extreme dates did not exceed 11 days and for the whole span these were between 65 and 80 days.

However, such variations do not have only one meaning, which could indicate climate change, but they appear as oscillations. In addition, the cultivated varieties are the same as those from the past and are present in the same places, and if these are moved to other sites their wines are mediocre. For example, the Pinot variety is grown under the same conditions in Bourgogne since 1330, using the same cuttings, and the most favorable locations have remained the same.

Thus, according to Angot, climate in Bourgogne has not changed for at least 1,000 years, and long-term variations that were noted as regards the dates of grape harvesting are not determined by climate change but by modifications in the variety of the cuttings chosen, vine replanting, the increase in the number of stems left, changes in the taste of the inhabitants, and cultivation techniques.¹⁴

Charles Schott analyzed the variations of air temperature for the USA and he concluded that “even now the temperature variations are the same as they were before and these variations have the nature of irregular waves that give no indication which can lead to the idea that a climate change would take place in the same direction.”¹⁵

Answering the question whether 50 or 70 years ago winters were colder and with much more snow, Cleveland Abbe, the famous meteorologist from the Weather Bureau, divided meteorological observations in two periods: prior to 1800 and post 1800, concluding that “all particular phenomena, such as remarkable storms, winds, rain, floods,

frosts, etc., observed in the present century can be matched with the remarkable and corresponding events prior to 1800... Average climate in New England whereas the weather has not changed significantly from what it was when its old trees were only shrubs, i.e. almost 500 years ago."¹⁶

As for the situation in Romania, according to Ștefan Hepites, it is quite possible that during the time of Ovid the Black Sea or the Danube would freeze, but this phenomenon is still present. It is very possible that, back in those days, winters were cold, as it happens nowadays (A/N 1898): -30.5°C in Bucharest in 1888, -35.6°C in Strehareț (near Slatina) in 1893, the average duration of the ice sheet on the Danube is 51 days and every 4 years the river does not freeze.¹⁷ Moreover, it is true that currently there are also relatively warm winters, when the Danube does not freeze and it does not snow, but such situations also happened in the past, according to the works of Arago and Prince Nicolae Suțu; the winter was so warm in 584 that roses blossomed in January; in 1186, in Germany, the winter was so warm that wheat was harvested in May and grapes were harvested in August; the winter was so mild in 1421 that cherries were ripe in April and the grapes in May; in January 1622, in Germany, stoves were not used and chestnuts were in bloom in February; the winter was mild throughout Europe in 1822; the winter was so warm in 1831 that heavy thunderstorms took place in January, etc.

To conclude, according to Ștefan Hepites, we have absolutely no solid evidence to confirm that the climate in Romania has significantly changed from the one back in the days of Ovid; to support this statement, the harvesting of grapes, maize, wheat and other agricultural works are currently performed during the same periods of time just like in the past. A change in climate would have immediately determined a change in the growing period of agricultural crops. Therefore, climate did not change in Romania or in other parts of the Earth over the past 3,000 years.¹⁸

Elena Teodoreanu (2017)¹⁹ has recently reached the same conclusion in the first Romanian paper on historical climatology written by a geographer, based on information retrieved from the works of some historians (Bezviconi, 1947²⁰; Binder, 1998²¹; Caillaud, 1819²²; Cantemir, 1973²³; Cernovodeanu and Binder, 1980²⁴, 1993²⁵; Chițimia, 1942²⁶; Goldenberg, 1974²⁷; Iorga, 1920²⁸, 1972²⁹; Lamb, 1977³⁰, 1982³¹; Le Roy Ladurie 1983³², 2004³³, 2006³⁴, 2008³⁵; Panaitescu, 1930³⁶; Pascu, 1940³⁷; Vârzaru, 1984³⁸, Xenopol, 1888³⁹ etc), Moldavian (1987)⁴⁰ and Wallachian chroniclers (1988)⁴¹, the Brâncoveanu chronicles (1988)⁴², Turkish chronicles (1966-1967)⁴³, Letopisețul Țării Moldovei [The Chronicles of Moldavia] (1990)⁴⁴, the writings of foreign travellers about the Romanian lands (1966-2000⁴⁵; 1977-2001⁴⁶; 2004-2010⁴⁷; 2011⁴⁸), and the works of some climatologists and geographers (Bogdan and Niculescu, 1999⁴⁹; Josan, 2002⁵⁰; Măhăra, 2006⁵¹; Teodoreanu, 2007⁵²; 2011⁵³; Topor, 1964⁵⁴ etc.). Statistically analyzing the winters and summers of the last 3,000 years, Teodoreanu (2017)⁵⁵ tried to piece together the climate both in Romania as well as throughout Europe. Even if the information found in historical documents does not present the annual situation, one can easily conclude that both in Romania and throughout the European continent the climate has not changed at all or it has not changed significantly, because it was noted that rainy or dry, hot or cold years (or seasons) were present in the historical past, and the hot (950-1450) or cold (1450-1850) medieval intervals are also partially found on

the territory of the Romanian lands. For example, Maunder Minimum, the extremely cold period of time ranging between 1645 and 1715 when the solar activity registered one of the longest periods free from sunspots (70 years), manifested itself through cold winters and cool summers.

Below are the characteristics of several years in Europe during this period presented by Elena Teodoreanu (2017)⁵⁶ based on the bibliographical references mentioned:

- 1701, mild and rainy winter in the Netherlands, in Ukraine, mice invasion until spring;

- 1702, warm, rainy and windy winter, the month of January was warmer than April, animals were on pastures until Christmas time in France, Germany, Italy;

- 1703, frost at the beginning of January, otherwise warm winter with epidemics in Ukraine and storms which uprooted 250,000 century-old trees and shattered 400 ships;

- 1704, warm winter, the oaks were green on 24 April in Western Europe;

- 1706, warm winter with rain and lot of snow;

- 1707, mild winter;

- 1708, very warm winter, in Belgium, on Christmas, vegetables were present in gardens, while in Ukraine it was very cold with heavy snow, a frost so dreadful that even birds were freezing; in summertime, the Dnieper river dried up so that one could cross it on horseback and in some places even in a carriage;

- 1709, very cold winter, the Black Sea froze; -20°C and -23°C in Paris between 10 and 21 January, -16°C in Montpellier, -17°C in Marseille; vines and many trees froze; the Ebro, the Garonne, the Rhône, the Meuse froze; the Baltic Sea was frozen until the beginning of April; heavy carriages were crossing the Constance and Zurich lakes; meals consisted of oatmeal bread, wheatgrass and roots even at Versailles, the Finnish population decreased by 30%;

- 1710, warm winter in the West;

- 1711, normal winter with lots of snow;

- 1714, very rainy winter from November to May;

- 1715, normal winter;

- 1716, very cold winter throughout Europe: the Oder, the Meuse, the Thames froze, sentinels were found frozen to death, horses fell in the streets, lots of snow, high prices for wheat, bad harvests, starvation, malnutrition, decreased fertility, increased mortality, outbreaks of smallpox, typhus, fever, population decline on the European continent.

Throughout the Romanian lands:

- 1701, very harsh winter (Radu Greceanu, Wallachian chronicler);

- 1704, "We stayed for three weeks in Iași; we could not go any further – it snowed a lot" (Macarius and Sylvester, Russian pilgrims);

- 1705, rainy winter;

- 1706, cold winter with lot of snow (diplomats Michaly Bay and Gaspar Papay);

- 1707, heavy rains during summertime;

- 1708, "summer and the locusts came this year in the Land of Moldavia and they covered many places and ate the wheat used for bread in several locations... and they multiplied so much that one could not see the sun or ride on horseback or in a carriage

and the smell they caused was unbearable; bread became so expensive that it drove people to starvation” (Moldavian chronicler Nicolae Costin);

– 1709, dry spring: “... after Easter passed, still cold weather and no grass ... they wasted time until ... Saint George’s Day” (Wallachian chronicler Radu Greceanu); “we have stayed here more than fourteen days, as there was lack of water because of the severe drought” (Erasmus Heinrich Schneider von Weismantel, a German officer in the service of Charles XIII); dry summer with invasion of very large locusts;

– 1710, warm winter, dry summer: “during this year of the reign of his Lordship, in January, bright and sunny, in the county of Buzău, on the other side of Buzău river, lightning struck extremely hard. Both people and animals fell to the ground. Hail fell in courtyards and everybody marveled at it, seeing it black as cinder ...” (Wallachian chronicler Radu Greceanu); “and their advice was wrong, they did not allow the Moskals to come down the Dniester river, but on the Prut river, because severe drought and many locusts occurred that summer” (*Letopisețul Țării Moldovei de la domnia lui Istrati Dabija, până la a III-a domnie alui Mihai Racovăț*);

– 1711, dry summer: “And today we have also sent people ahead to dig wells ... There is nothing new except for the lack of water which causes us great trouble” (German general Ludwig Nicholas Allard); “This march from the Dniester onwards was extremely difficult due to the lack of water; excessive heat due to the lack of water; the excessive heat and an excruciating thirst were the reason why several soldiers shed their blood” (the journal of Peter the Great);

– 1713, “... with great sorrow he wrote about a storm just like the one that came unannounced” (*Letopisețul Țării Moldovei de la domnia lui Istrati Dabija, până la a III-a domnie a lui Mihai Racovăț*);

– 1714, from 28 February to 20 June it did not rain or snow, and the grain withered (the Annals of Brașov).

Analyzing these last 15 years of the period with reduced solar activity (1645-1715, Maunder Minimum), we expect to find only cold years, but we found that in Europe there were nine mild winters, two very cold winters and two normal winters, while in the Romanian lands there were three harsh winters, two warm winters and six warm and dry summers. Therefore, during periods of reduced solar activity, milder or even warmer, drier years or seasons may also occur, i.e. as opposed to the general average.

It is obvious that the Sun is the first and most important factor which determines climate on Earth and when its activity decreases, colder periods occur. The differences between the hot and cold periods established by the researchers, using the carbon-14 isotope dating, do not exceed 1°C. Such hot or cold, longer or shorter periods cannot be precisely outlined because the results indicated by the determination methods based on sporopollinic tests used by the Danish biologists Blytt (1876) and Sermander (1908), quoted by Angostini et al. (2005),⁵⁷ are different from those used by Emm. le Roy Ladurie (2008)⁵⁸ which take into consideration the information from historical documents that mention the dates when grapes were harvested, the extension of glaciers, etc.

One can still note, especially in historical documents, that for instance during the 18th century there were 19 cold winters, 47 rainy years with floods and hail, 19 very hot years and 16 dry years, the percentage of normal years being only about 20%!

Conclusions

AS HISTORICAL climatology is a science of an interdisciplinary nature, it offers answers to some important problems in the fields of history and geography.

Thus, the information retrieved from the historical documents indicates unambiguously that for the last 3,000 years the climate of the Earth has not changed at all or it has not changed significantly; rainy, dry, cold, warm years and seasons, droughts, floods, etc. were frequently recorded in history, their presence indicating variability and not climate change, a fact proven by the studies of historians and those of meteorologists, climatologists, geographers, physicists etc., historical climatology thus answering a question that has preoccupied the scientific world for more than 150 years.

Considering that for 2,000 years people have produced many interpretations, they have created theories, scenarios and even psychoses in relation to the role of climate in human life, and although great progress has been made in the field of science and knowledge, currently the climatology scientific community has been divided for almost four decades. The attempts to characterize the climate of past ages and to project it in the future have failed and, instead of having a clear demonstration of the hypotheses and conclusions, we have more assumptions and we are further away from understanding climate than we would have been if we had done nothing!



Notes

1. Simion Mehedinți, "O socoteală pentru tineri," *Milcovia*, 1 (1930), *passim*.
2. Lucian Boia, *Omul și clima. Teorii, scenarii, psihoze* (Bucharest: Humanitas, 2005), 5.
3. *Ibid.*, 5.
4. *Ibid.*, 176.
5. Abbe Cleveland, "Local climatic changes," *Monthly Weather Review*, 146 (1898), 491.
6. Elena Teodoreanu, *In căutarea timpului trecut: schiță de climatologie istorică* (Bucharest: Editura Paideia, 2017), 366.
7. Aristita Busuioc, Mihaela Caian, Sorin Cheval, Roxana Bojariu, Constanța Boroneanț, Mădălina Baci, Alexandru Dumitrescu, *Variabilitatea și schimbarea climei în România* (Bucharest: Pro Universitaria, 2010).
8. Robert Arnăutu, "Life, mind and Soul in the Philosophia Naturalis of Janos Apaczi Csere," *Transylvanian Review*, 3 (2016), 23–38; Sorin Șipoș, "Romeni 'buoni,' romeni 'cattivi': L'immagine dei romeni nesi documenti latino-ungheresi (sec. XIV)," *Transylvanian Review*, suppl. 2 (2016), 19–30; Idem, "The Power of the Word: on the role and place of Moldova during Stephen Great's Reign," *Transylvanian Review*, suppl. 2 (2015), 33–44; Idem, "National History and Ideology: The Union of 1918 As Reflected in the Work A Quarter Century after the Union of Transylvania by Silviu Dragomir," *Transylvanian Review*, 2 (2019), 53–72; Daniela Mârza, "The ravages of war: Romanian schools in Transylvania (1914-1919)," *Transylvanian Review*, 4 (2016), 41–47; Idem, "The impact of the Great War on demographic events in Transylvania," *Transylvanian Review*, 4 (2018), 3–15; Corina Moisa, Gabriel Moisa, *Potere e immagini della violenza nella Romania comunista: Scenario repressivo e clinico*

- delle rivolte contadine di Bihor (1949), *Transylvanian Review*, XXIV, Supplement nr.2., 2015, p. 96-104; Gabriel Moisa, Corina Moisa, "Under the Sign of Malnutrition. Economic and Propaganda Policies in Romania at the End of the 1980s. Case Study: Bihor County," *Transylvanian Review*, XXVII, no. 4, 2018, p. 100-111; Ioan Aurel Pop, "The discrimination of Romanians in Transylvania in the 16th Century: considerations on the concept of nation," *Transylvanian Review*, suppl. 2 (2017), 15-26; Ioan Aurel Pop, Ioan Bolovan, "Historical Autonomies on the Centennial of the Great Union," *Transylvanian Review*, 3 (2018), 3-16.
9. Ștefan Hepites, *Schimbatu-s-a clima?* (Bucharest: Pro Universitaria, 2014), 27.
 10. *Ibid.*, 27.
 11. Bogdan Petriceicu Hașdeu, *Istoria critică a Românilor din ambele Dacii în secolul al XIV-lea* (Bucharest: Tipografia Curții Pasagiul Român, 1873), 226.
 12. Francois Arago, *Oeuvres completes, vol VIII* (New York: Nabu Press, 2012), 395.
 13. "Iarna de acum," *Ziarul Timpul*, 2/10 March 1898.
 14. Alfred Angot, "Études sur les vendanges en France," in *Annales du bureau central meteorologique de France*, 1883, 83.
 15. Julius von Hann, *Lehrbuch der Klimatologie* (Stuttgart: J. Engelhorn, Bibl. geogr. Handbücher, 1883), 391.
 16. Abbe Cleveland, "Local climatic changes," *Monthly Weather Review*, 146 (1898), 491.
 17. Ștefan Hepites, "Epocile înghețului Dunării în cursul său inferior și profilul patului Dunării la Brăila," in *Buletinul Societății Geografice Române*, 1882, 62-79.
 18. *Ibid.*, Ștefan Hepites, *Schimbatu-s-a clima?*, 37.
 19. Elena Teodoreanu, *În căutarea timpului trecut: schiță de climatologie istorică* (Bucharest: Paideia, 2017), passim.
 20. Gheorghe Bezviconi, *Călători ruși în Moldova și Muntenia* (Bucharest: Institutul de Istorie Națională, 1947), passim.
 21. Paul Binder, *Pământul României în literatura geografică săsească, (1701 - 1994)* (Brașov: Aldus, 1998), passim.
 22. Antoine Caillot, *Abrégé de l'histoire du bas empire de Lebeau, depuis Constantin le Grand jusqu'à la mort de Mahomet II, vol. I-II* (Paris: Bruno-Labbe, 1819).
 23. Dimitrie Cantemir, *Descrierea Moldovei* (Bucharest: Minerva, 1973).
 24. Paul Cernovodeanu, Paul Binder, "Repères à une histoire de la climatologie roumaine," *Revue Roumaine d'Histoire*, 2-3 (1980).
 25. Idem, *Cavalerii Apocalipsului. Calamitățile naturale din trecutul României (până la 1800)* (Bucharest: Silex, 1993), passim.
 26. Ion Constantin Chițimia, *Cronica lui Ștefan cel Mare (versiunea germană a lui Schedel)* (Bucharest: Casa Școalelor, col. Texte de literatură veche românească, 1942).
 27. Samuil Goldenberg, "Contributions à une histoire du climat dans les Pays Roumains aux XVIe-XVIIe siècles," *Revue Roumaine d'Histoire*, 2 (1974).
 28. Nicolae Iorga, *Istoria românilor prin călători, vol. I-II* (Bucharest: Tipogr. "Cultura neamului românesc," 1920).
 29. Idem, *Sinteza bizantină* (Bucharest: Minerva, 1972).
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 31. Idem, *Climate, History and the Modern World* (London, New York: Routledge, 1982).
 32. Emmanuel Le Roy Ladurie, *Histoire du climat depuis l'an mil* (Paris: Champs Flammarion, 1983).
 33. Idem, *Histoire humaine et comparée du climat, I, Canicules et glaciers XIII^e-XVIII^e siècles* (Paris: Fayard, 2004).

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Abstract

Historical Climatology—A Source for Historical-Geographical Research

This paper tries to answer the question whether the increase in temperature by 0.6°C recorded over the past hundred years at the level of planet Earth represents a climate change and whether this also occurred in the past, based on information coming from the field of historical climatology. The information retrieved from historical documents indicates the fact that for the past 3,000 years the climate of the Earth has not changed at all or it has not changed significantly; rainy or dry, cold or warm years, months, seasons, droughts, floods, etc. were frequently recorded in history, their presence indicating variability and not climate change, a fact proven by the studies of historians as well as by those of meteorologists, climatologists, geographers, physicists, etc.

Keywords

historical climatology, research, history, geography, climate change, climate variability