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*Supplement of*

## **The climate in Poland (central Europe) in the first half of the last millennium, revisited**

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## Supplement

Table S1. Number of weather notes/excerpts for Poland available in historical sources for the period 1001–1500

Decade	DJF	MAM	JJA	SON	Season unknown	Number of excerpts
1001-1010	2				1	3
1011-1020					2	2
1021-1030					1	1
1031-1040						
1041-1050						
1051-1060						
1061-1070	2					2
1071-1080	1					1
1081-1090			1			1
1091-1100			2	1		3
1101-1110					1	1
1111-1020	3	1	1		1	6
1121-1130	1	1			3	5
1131-1140						
1141-1150					1	1
1151-1160		1			2	3
1161-1170					1	1
1171-1180						
1181-1190						
1191-1200						
1201-1210	1		1			2
1211-1220			1		1	2
1221-1230	2			1	6	9
1231-1240	1					1
1241-1250	1					1
1251-1260	1	1	2		1	5
1261-1270	1	3	5			9
1271-1280	8				1	9
1281-1290	1					1
1291-1300					1	1
1301-1310	5		2	5	3	15
1311-1320	2		1	6	5	14

1321-1330	22			1		23
1331-1340	1	3	2	2	2	10
1341-1350	2			5	1	8
1351-1360		3			2	5
<b>Total 1001-1360</b>	<b>57</b>	<b>13</b>	<b>18</b>	<b>21</b>	<b>36</b>	<b>145</b>
1361-1370	10	5	2	3	2	22
1371-1380	8	2	3	1	2	15
1381-1390	7	2	4	3	1	17
1391-1400	11	2			1	14
1401-1410	12	5	5	3	3	28
1411-1420	9	11	6		3	29
1421-1430	16	9	3		2	30
1431-1440	9	3	15		1	28
1441-1450	9	7	6	2		24
1451-1460	35	32	17	13	1	98
1461-1470	31	17	34	20	3	105
1471-1480	28	16	36	14	15	109
1481-1490	7	7	13	9	2	38
1491-1500	32	12	41	19	6	110
<b>Total 1361-1500</b>	<b>224</b>	<b>130</b>	<b>185</b>	<b>87</b>	<b>42</b>	<b>668</b>

Table S2. Archival sources used

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Table S3. An inventory of weather notes available for the area of Poland (1001–1360)

Year	Original weather note	Source	English
1069	Fluminibus glaciali rigore constrictis, imperator Heinricus terram Luttianorum ingressus	Chronica Sigeberti Gemblacensis, in: Monumenta Germaniae Historica, t. 6, p. 362; Chronicon sancti Bavonis scriptum sub finem seculi XV, ed. J.J. de Smet, in: Collection de chroniques Belges inedits, v. 3, 1837, p. 560	On rivers frozen by the cold, Emperor Henryk entered the land of the Lusatians
1076/77	Anno Dominice Incarnationis 1076, gravissima hyems incubuit, adeo ut in Galliis Ararim,	La chronique de Saint-Hubert dite cantatorium, ed. K. Hanquet, 1906, p.	The year of our Lord 1076 was the hardest of winters, so much so that in Gaul the Saône, the Rhône, the

	Rodanum, Renum, Ligerim, in Germania Albam, Viselam et Danubium, in Italia Eridanum, permaximos fluvios, ut taceatur de minoribus, tanto gelu constringeret, quod mirantibus circumiacentibus incolis, quasi per solidam terram pervii fierent.	98	Rhine, the Loire, in Germania the Elbe, the Vistula and the Danube, in Italy the Po, the largest rivers stopped [i.e., were blocked by ice] after smaller rivers, and the amazed local inhabitants walked on them as if on solid ground.
1097	Nimia aquarum inundatione autumnalis sacio impeditur, quae sterilitatem frugum induxit	Ioannis Dlugossii Annales seu Cronicae incliti Regni Poloniae, Lib 3-4, 1970, p. 195; Jan Długosz, Roczniki czyli kroniki sławnego Królestwa Polskiego, ks. 3-4, 2009, p. 236	Great floods in autumn disrupted the sowing, which resulted in crop failure.
1108*	[...] et cum ista brumali tempore peregrisse, multis sufficeret ad laborem	Galli Anonymi Cronica et gesta ducum sive principum Polonorum, ed. K. Maleczyński, in: Monumenta Poloniae Histoica, s.n. 1952, p. 111	[...] and doing such in the winter season would be hard work sufficient for many people
1109/10	Non enim statim exercitum tanto itinere fatigatum ire domum permisit, nec ipsemet in deliciis vel in conviviis asperitate yemis irruente requievit, sed terram Pomoranorum cum electis de exercitu militibus requisivit.	Galli Anonymi Cronica et gesta ducum sive principum Polonorum, ed. K. Maleczyński, in: Monumenta Poloniae Histoica, s.n. 1952, p. 144	For he did not immediately send to their homes the army weary from such a long march, nor did he himself seek respite in pleasures and feasts in the face of the approaching winter frosts, but with knights selected from the [entire] army he went on to the land of the Pomeranians
1110/11	Item impiger Boleslavus hiemali tempore non quasi desidiosus in otio requevit, sed Prussiam terram aquiloni contiguam, gelu constrictam introivit. [...] Illuc enim introiens, glacie lacuum et paludum pro ponte utebatur, quia nullus aditus alius in illam patriam nisi lacubus et paludibus invenitur.	Galli Anonymi Cronica et gesta ducum sive principum Polonorum, ed. K. Maleczyński, in: Monumenta Poloniae Histoica, s.n. 1952, p. 478	Nor too in winter did the tireless Boleslaw rest idly in peace, but he entered Prussia, the northern land, bound by ice. For there he took advantage of the ice on lakes and swamps, which he used as a bridge, for there was no other access to that land except over lakes and swamps.
1111	mare, quod stratum erat glacie firmissima ob algorem hyemis	M. Hermanni Corneri, ordinis Praedicatorum chronica novella usque ad a. 1435 deducta, in: J.G. Eccardus, Corpus	the sea, which was covered with strong ice due to a cold winter

		historiae medii aevi, v. 2, 1723, p. 654	
1118	Parantem in Pomeranos Boleslaum Polonorum ducem expeditionem (iam siquidem intellexerat Swantopelkonem ducem, in cuius fidem Nakel castrum cum sex aliis opidis et municionibus commiserat, ad vacillationem temerato, quod sibi prestiterat iuramento, reversurum fore), imbres et pluvie tenuere. Dum enim veris tempore coepissent, etiam nec in aestate remittebant continuaque plucione et descensu non solum Polonaie Regnum, sed et vicina regna atque provincias quampluris vexarunt incommodis, et inundatio sine exemplo in universa terra ex assiduis tempestatibus secuta et agros seri et sata meti in plerisque locis prohibuit. Ea tamen loca huiusmodi inundacione, quae fluvii maiores circumfluunt, aquis ultra solitum inflatis et ripas egredientibus fuere oppressa et afflicta. Eodem insuper anno post solis occasum caelum totum in tantam rubedinem versum est, ut velut ignis vel flamma tribus horis colluceret. Quae res in prodigium et admiracionem apud multos versa, magnum aliquem effectum productura tunc insinuavisse credita est. Nec multo post tanti imbres descenderunt in terram, tot coortae sunt pluvie et tempestates, tantaque denique crevit fluviorum inundacio, ut alterum cathaclysmum nonnulli pertimescerent proventurum.	Ioannis Dlugossii Annales seu Cronicae incliti Regni Poloniae, Lib 3-4, 1970, p., p. 284-5; Jan Długosz, Roczniki czyli kroniki sławnego Królestwa Polskiego, ks. 3-4, 2009, p. 347	Duke Bolesław, who was preparing an expedition against the Pomeranians (he had already noted that Prince Świętopelk, to whom he had entrusted the city of Nakło with six other towns and strongholds, was wavering in obligations he had taken under oath), was held back by torrential rains. Although they began in the spring, they also did not stop in the summer. The constant rains and foul weather caused great damage not only in Poland, but also in neighbouring kingdoms and many provinces. The unceasing rains and storms caused a flood throughout the country such that could not be remembered and did not allow fields to be sown and crops to be harvested in many places. This flood, however, particularly affected towns near larger rivers, in which the waters rose beyond ordinary measure, such that their banks overflowed. Moreover, that same year, after sunset, the whole sky became so red that for three hours it burned like fire or flames. This phenomenon was considered an ominous and strange sign. It was believed to be a portent of some important event. Soon after, such heavy rains fell upon the earth, such downpours and storms followed, and finally such flooding of rivers, that some feared a second deluge.
1118	Maxima inundatio aquarum in omni Europa fuit.	Annalista Saxo, in: Monumenta Germaniae Historica, v. 6, p. 755	There was the greatest inundation of water across all of Europe.
1118	Eodem anno inundacio aquarum in omni terra	Rocznik Traski, in: Monumenta Poloniae Historica, v. 2, p. 832	This year an inundation of waters across the whole earth.



1121	Mensibus tribus et continuis, Marcio videlicet, Aprili et Mayo, validissima siccitas et estus terram pressit. Propter quam non estivales solum, sed et hiemales segetes extenuate et arefacte annum illum effecerunt apud Polonos annonae caritate turbidum et sterilem. Vicinae quoque regiones et provinciae eandem siccitatem et sterilitatem experte fame et inedia aliquanto tempore premebantur.	Ioannis Dlugossii Annales seu Cronicae incliti Regni Poloniae, Lib 3-4, 1970, p., p. 294; Jan Długosz, Roczniki czyli kroniki sławnego Królestwa Polskiego, ks. 3-4, 2009, p. 357-358	For the three consecutive months of March, April and May there were very severe droughts and heat. For this reason, not only spring crops, but also winter crops were destroyed and dried up. Therefore, this year was hard in Poland due to high prices and lack of food. So too, neighbouring countries and provinces affected by the same drought and crop failure suffered severe famine for some time.
1125	Hiems seva et horrida, in qua multa pecora hominesque frigore magno periere, et quassatis frigore frugibus fames subsecuta est in regionibus Polonorum.	Ioannis Dlugossii Annales seu Cronicae incliti Regni Poloniae, Lib 3-4, 1970, p., p. 303; Jan Długosz, Roczniki czyli kroniki sławnego Królestwa Polskiego, ks. 3-4, 2009, p. 369	It was a severe, horrid winter that year, during which many cattle and people died from the severe cold. Because the frost destroyed crops, famine followed in Poland.
1125	eodem anno inundacio aquarum maxima fuit	Annales Ecclesiae Cracoviensis, in: Monumenta Poloniae Historica, s.n. v. 2, p. 797	This year the flood of water was greatest
1151–52	[...] medium Junium [...] et abhinc usque ad sequentem annum frequentes inundaciones pluviarum fuerunt	H. Korner, Die Chronica des Korners, in: J. Schwalm, Die chronica novella der Hermann Korner, 1895, p. 588	from mid-June [...] until the next year there were frequent floods due to rains
1158	Aquarum quoque inundatia infinitam hominum multitudinem cum pecoribus suis extinxit	Historiographia Alberti abbatis Stadensis, a condito orbe usque ad auctoris aetatem, 1608, p. 191	The flood of waters also destroyed an endless number of people and their livestock
1167	[...] item et reliqua agmina, quibus Myeczslaus dux ceterique prefecti preerant, postremum deinde, quod Boleslaus monarcha cum exercitatissimis militibus servabat, in saltus primum et silvestres densaque solitudine rigentes recessus, deinde paludinibus limosique bituminis lubricitate perpetua obsitis, loca palustria,	Ioannis Dlugossii Annales seu Cronicae incliti Regni Poloniae, Lib 5-6 1973, p. 84; Jan Długosz, Roczniki czyli kroniki sławnego Królestwa Polskiego, ks. 5-6: 1140-1240, 2009, p. 105	[...] So too, the remaining units, headed by Duke Mieczysław and other commanders, and finally the last one, supervised by the monarch Bolesław with his choice knights, lead first through gullies, remote, wild forest and secluded places, and finally through swamps covered with miry, slippery mud, through areas made sodden and

	descensu insuper et congerie imbrium limosa et quae naturales voraginum abissos vernancia graminis superficietenus nati tegebant, inducunt.		slimy by constant rainfall, where grass covered only the surface of natural bottomless abysses.
1204	Non valentes autem propter gelu, quod immensum erat, navim littori applicare, eam in glacie relinquunt, et per Daciam in Theuthoniam vadunt rebus suis secum assumptis.	Heinrici chronicon Lyvoniae, in: Monumenta Germaniae Historica, v. 23, p. 249	Not feeling well because of the freezing cold, which was powerful, they fastened the ships to the shore, left them on the ice, and travelled through Denmark to Germany with their belongings fastened.
1212	In mense siquidem Iulio fulminis ictu errarium Cracouiensis ecclesiae de celo tactum est	Ioannis Dlugossii Annales seu Cronicae incliti Regni Poloniae, Lib 5-6 1973, p. 214; Jan Długosz, Roczniki czyli kroniki sławnego Królestwa Polskiego, ks. 5-6: 1140-1240, 2009, p. 267	In July, a thunderbolt from the sky struck the treasury of Kraków cathedral
1219	W Polsce przez całe lato padał deszcz, który rzadko ustawał. Z powodu powodzi był głód; zima była bardzo ciężka.	Buczinskij I.E., O klimacie prośłowo russoj rawniny, 1957, p. 66	In Poland, all summer there was rain that rarely ceased. Because of the flood, there was famine; winter was very hard.
1221	Facta est erupcio ymbrium et inundacio aquarum per trennium in Polonia	Rocznik Traski, in: Monumenta Poloniae Historica, v. 2, p. 836	There were torrential rains and floods for three years in Poland
1221	A festo siquidem Paschae usque ad tempora autumpnalia pluviarum et imbrium continuus descensus tantam fluviorum inundacionem causavit, ut aquis supra modum crescentibus et inflatis quidam particularis cathaclismus terris timebatur accidisse. Undarum autem tam horrenda et insolita erupcio et plerasque villas in bassitas demolicione perpetua absorbuit, vernalia frumenta seri prohibuit, et que terre per autumpnum inserta erant, voravit, preter loca pauca, quorum agros collium aut moncium altitudo a peste huiusmodi defenderat. Germania itaque frugum huiusmodi alluvione depasta, multis	Ioannis Dlugossii Annales seu Cronicae incliti Regni Poloniae, Lib 5-6 1973, p. 233; Jan Długosz, Roczniki czyli kroniki sławnego Królestwa Polskiego, ks. 5-6: 1140-1240, 2009, p. 290-291	Indeed, from Easter until autumn, the foul weather and constant rain caused such a great flooding of rivers that it was feared that the excessive swelling of waters would cause a deluge throughout the country. For such a terrible and unusual flood of water completely destroyed many low-lying villages and prevented the sowing of spring crops, and those sown in the autumn were swallowed up, except in a few localities, whose fields were shielded from this destruction by high hills or mountains. Therefore, the destruction of budding crops by this flood brought many misfortunes not only to Poland, but also to all

	<p>incommoditatibus non solum Poloniam, sed et omnes finitimas regiones, in quibus eque provenerant, vexavere; nam et domesticorum animalium, pabulis deficientibus, mors primum obvenit, deinde fames valida et spatio triennali continuata, eciam plurimos mortales aggrestes praecipue, victualium inedia tabescentes, adeo absumpsit, ut plures ville et opida habitatoribus consumptis vacuae desertaeque remanerent. Malum autem huiusmodi ex imbrum multiplicitate proveniens, hiems grandis et sine exemplo proveniens ingravit sub quo eciam tempore peccorum et peccudum magna mortalitas pestisque secuta est.</p>		<p>neighbouring countries where similar phenomena occurred. For first there was a murrain among domestic animals due to lack of fodder, then for three years there was continuous, severe famine and it killed many people, especially peasants who were weak from lack of food. Many villages and towns became utterly deserted due their inhabitants dying. And the calamity brought by the great amount of rain was aggravated by a severe, unparalleled winter. At that time there was a great murrain and pestilence among the cattle and flock.</p>
1225	<p>Diese Fürsten alle mitt bruder Hermann Balke landtmeistern vnd 28 brüderm seines ordens mit hundertt Knechten zogen mit vffgerichtten fanen am tage Simonis Judae bei dem Vogelsange vber die Weissel, welche damals von der hefftigen kilde gefroren ware, [...]</p>	<p>Die Heilsberger Chronik, [in:] Monumenta Historiae Warmiensis, ted. C.P. Woelky, . 8, 1889, p. 232</p>	<p>The princes with brother Hermann Balke, Provincial Master, and 28 religious brothers with hundreds of servants marched with banners unfurled on the day of Sts Simon and Jude near Vogelsang across the Vistula River, which at that time was frozen due to a heavy frost [...]</p>
1235	<p>Irrepsit et aliud malum, alique pernicies in Poloniae Regnum, que priorem ingeminavit. Frumentis siquidem tam estivalibus quam hiemalibus, tum per asperitatem hiemis tum per imbrum frequentem inundacionem consumptis ingens fames universam Poloniam longo tempore oppressit [...]</p>	<p>Ioannis Długossii Annales seu Cronicae incliti Regni Poloniae, Lib 5-6 1973, p. 273; Jan Długosz, Roczniki czyli kroniki sławnego Królestwa Polskiego, ks. 5-6: 1140-1240, 2009, p. 342</p>	<p>The Kingdom of Poland was struck with another misfortune and another plague that was double the previous one. As spring and winter crops alike were destroyed, by both the harsh winter and the constant rains, a terrible famine was felt throughout Poland for a long time.</p>
1253 20 April – 25 July, 1 November	<p>Rubrica de tempore pluviali. Eodem itaque anno a festo Paschalis usque ad festum sancti Jacobi tempore messis nocte dieque pluivit incessanter et tanta fuit inundatio aquarum facta, quod per agros et vias homines navigabant et cum segetes metebantur,</p>	<p>Chronica Poloniae Maioris, [in:] Monumenta Poloniae Historica, ed. B. Kürbis, s.n., t. 8, 1970, s. 100</p>	<p>Rubric about the time of rains. That same year, from Easter until the day of St Jacob during the harvest, it rained night and day, and there was such a flood of water that people sailed across fields and roads, and after harvesting, mounds were built [on which] to store the</p>

	<p>querebantur monticuli ad fruges repondendas. Inveniebantur eciam pisces per agros in sulcis, in gulgustribus prendebantur. Et extunc terra Wyszniensis tum ex infestacione paganorum, tum ex multitudine ymbrium fuit desolata. Et post hoc in festo Omnium Sanctorum post miassam maiorem [...] audita sunt sexies tonitrua mugire.</p>		<p>harvests. Fish were also found in hollows in fields and caught in channels. And after that, the land of Wisko was left deserted by pagan raids and numerous rains.</p>
1253	<p>Annus hic apud Polonos insignis et beatissimi martiris Stanislai Cracowiensis episcopi, que septuaginta quinque et centum annis neglecta erat, canonisacione, et duorum sub uno tempore, Poznaniensis videlicet et Plocensis, pontificum morte et nunquam alias apud Polonos visa alluvione. Nocte siquidem et interdium, a festo Pasche usque ad diem vicesimam quintam Iulii, celo imbres et continuas effundente in Polonorum regionibus pluvias, tanta aquarum moles et inundacio erupit, ut in quibuslibet bassis et humilibus locis, aut amnibus proximis, frumenta cooperiret, et agri atque campi iuxta atque amnes navigabiles forent; querebantur editiora loca que frumenta collecta susciperent. Ea quoque inundacione et Litwanorum infestacione Viszensis terra in solitudinem et desolacionem redacta est.</p>	<p>Ioannis Dlugossii Annales seu Cronicae incliti Regni Poloniae, Lib 7-8 1975, p. 95; Jan Długosz, Roczniki czyli kroniki sławnego Królestwa Polskiego, ks. 7-8: 1241-1299, 2009, p. 117-118</p>	<p>This year became famous among Poles for the canonisation of the most holy martyr Stanisław, Bishop of Kraków that had been neglected for 175 years, and for the death of two bishops at almost the same time, namely those of Poznań and Płock, and a flood whose likes had never been seen before in Poland. Because from Easter to the twenty-fifth of July it rained continuously in Poland day and night, so much water accumulated and there was such a flood that it covered the cereals in all the lowlands and places near rivers, and it was possible to navigate across cultivated fields and meadows as on rivers. Higher places were sought so that the harvested grain could be stored. As a result of this flood and, moreover, the hostile attack of the Lithuanians, the land of the land of Wisnina was depopulated and deserted.</p>
1253	<p>W Krakowie była duża powódź, ponieważ przez całe lato padały bez przerwy deszcze i woda zalała wszystkie zasiewy na polach.</p>	<p>Buczinskij I.E., O klimacie proszłowo russkoj rawniny, 1957, p. 24</p>	<p>There was a big flood in Kraków, because it rained continuously all summer and the water flooded all the crops in the fields.</p>
1259 after 30 November	<p>Qui dum Wislam et ceteros fluvios gelida hieme et glaciebus induratis facile transissent, subito Sandomiriam perveniunt [...]</p>	<p>Ioannis Dlugossii Annales seu Cronicae incliti Regni Poloniae, Lib 7-8 1975, p. 124; Jan Długosz, Roczniki czyli kroniki sławnego</p>	<p>These, because they easily crossed the Vistula and other rivers iced up by the cold winter, suddenly reach Sandomierz [...]</p>

		Królestwa Polskiego, ks. 7-8: 1140-1240, 2009, p. 156	
1269	Na Śląsku, między Nysą a Odrą, przez trzy dni padał krwawy deszcz. Również przez całe lato padały silne deszcze i woda zalała wszystkie zasiewy, i nie tylko zasiewy, lecz również młody przychówek, wskutek czego powstała drożyzna.	Buczinskij I.E., O klimacie proszłowo ruskowej rawniny, 1957, p. 67	In Silesia, between the Nysa and the Oder rivers, a bloody rain fell for three days. Heavy rains also fell throughout the summer, and the water flooded all the crops, and not only the crops, but also the young livestock, resulting in high prices.
1269	Wandalus fluvius subito inundavit.	Annales Polonaie Maioris II, [in:] Monumenta Poloniae Historica, t. 3, p. 170	The Oder River suddenly overflowed.
1270	Nec prodigiis tantummodo, sed et tempestatibus et diluviis annus hic aput Polonos insignis fuit. A vicissima siquidem et secunda die Iunii usque prope dimidium Augusti continuos nocte et interdiu celo fundente imbres, adeo inflati aquis fluvii ripas excesserant, ut non solum segetes, agros, prata et campos, sed etiam villarum fastigia operirent. Wisla insuper fluvius in tantum excesserat, ut universum spacium inter montem Lyaszothinum et ecclesiam sancti Stanislai de Rupella positum occuparet rabidoque suo cursu et homines et domos plures, peccora, pecudes, iumenta et queque reptilia molendinaque absorbendo, vomeret et agris silvisque induceret exterminium aut orbitatem, non agros solum, sed et villas culminaque earum et villarum incolas sorbens et demersos tunc agros ad longa tempora steriles et inutiles efficiens	Ioannis Dlugossii Annales seu Cronicae incliti Regni Poloniae, Lib 7-8 1975, p. 166-7; Jan Długosz, Roczniki czyli kroniki sławnego Królestwa Polskiego, ks. 7-8: 1241-1299, 2009, p. 211	This year was marked for Poles not only by extraordinary signs, but also by thunderstorms and torrential rains. From from the twenty-second of June to almost mid-August it rained continuously, day and night, the swollen rivers overflowed their banks so much that they covered not only crops, fields, meadows and fields, but even higher-lying places in villages. Forthermore, the Vistula river swelled so much that it flooded the entire space between the Lasota mountain and the Church of St Stanislaus on the Rock and its rushing current carried away people and many houses, cattle, swine, pack animals and all amphibians, as well as mills, and destroyed and left bare fields and forests, flooding not only fields, but also villages, their houses and inhabitants villages and causing the flooded fields to be barren and useless for a long time.
1270 ca. 21 July	Ipsa anno fluvius qui dicitur Niza fluxit sanguine tribus diebus, id est a feria sexta usque ad diem dominicum. Circa idem tempus fluvius Odra fluxit tribus diebus ita, quod color eius aque fuit	Annales Trascaae, [in:] Monumenta Poloniae Histoirca, v. 2, p. 841	This year the river called Niza flowed with blood for three days, that is, from Friday to Sunday. At that time, the river Oder flowed for three days so that its waters were very green in colour, then for three

	<p>viridissimus, postea aliis tribus diebus tota aqua sanguinea. Iterus circa festum beatae Marie Magdalene tribus diebus fuit maxima inundacio aquarum in Cracovia per Wyslan, qualis nunquam visa fuit, quia occupavit villas, segethes, prata et totum campum et spacium a monte sancti Stanislav usque ad montem sancti Benedicti, et multos homines submersit et domos et molendina, et duravit hoc malum per 15 dies, et hoc diluvium per diversas provincias mundi, et fecit Raba et Dunaiecz [...] Eodem anno in terra Zlesie circa Michalow pluit de celo sanguis - erat autem tempus estivum et maximus fervor illo die.</p>		<p>more days all the water was bloody. Around the day of St Mary Magdalene, there was a great outpouring of water from the Vistula in Kraków such as had not been seen before and which took villages, crops, meadows and entire fields and space from St Stanislaus' hill to St Benedict's mountain, and many people drowned and houses and mills were destroyed, and this misfortune lasted for fifteen days, and this deluge affected various countries of the world, and the Raba and the Dunajec. [...] That year in the Silesian land near Michałów it rained blood from the sky – it was then summertime and it was very hot in those days.</p>
<p>1270 21 August</p>	<p>12 Kalendae Augusti, fuit inaudita inundacio fluviorum, precipue Wizle, Rabe et Dunaiech. Verum quanta dampna fecerit horror est referre. Namque sua torrenti violencia in utraque parte littorum et riparum longe lateque villas agrosque miserabiliter abolevit. Homines, iumenta ceteraque animalia in parte maxima submergendo.</p>	<p>Annales Polonorum, [in:] Monumenta Germaniae Histoircia, Scriptores, v. 19, p. 604</p>	<p>On August 12, there was an unheard-of flood of waters, mainly on the Vistula, Raba and Dunajec rivers. How much damage it did can be found in descriptions. For under its tearing force, villages and fields disappeared along and across both riverbanks. People, draft animals and others were mostly drowned.</p>
<p>1276 6 October</p>	<p>In octava sancti Michaelis cecidit in Cracovia in magna copia nix.</p>	<p>Annales Trascae, [in:] Monumenta Poloniae Histoircia, v. 2, p. 843</p>	<p>In the octave of St Michael there fell a great quantity of snow in Kraków.</p>
<p>1276 September, 6 October</p>	<p>Hiems insueta tempore insolito Cracoviae. Frigore immenso et sine exemplo Cracowiensem provinciam in fine Septembris mensis premente, sexta deinde Octobris die tanta nivium congeries descendit, Alpibus, Sarmaticis, qui Poloniam et Hungariam dividunt, et aliis, quos Thatri appellamus ad Keszmark sitis insolitum celi rigorem augmentibus, ut omnem regionem spissitudine grossa vestiret et pro autumpno gelidam hiemem induceret.</p>	<p>Ioannis Dlugossii Annales seu Cronicae incliti Regni Poloniae, Lib 7-8 1975, p. 192; Jan Długosz, Roczniki czyli kroniki sławnego Królestwa Polskiego, ks. 7-8: 1241-1299, 2009, p. 211</p>	<p>A terrible winter at an unusual time in Kraków. When, at the end of September, a sharp, unprecedented frost gripped the Kraków area, then on October 6, such a great amount of snow fell that in the Sarmatian Alps separating Poland from Hungary and in other mountains – which we call the Tatras – located near Keżmarok and intensifying the unusual harshness of the climate, it covered the entire area with a thick coating and brought a freezing winter instead of autumn.</p>

1278	Cum ergo eo anno esset hyems magis aspera solito [...]	Annales Trascae, [in:] Monumenta Poloniae Historica, v. 2, p. 844	So when that year the winter was harsher than usual [...]
1281	[...] et inundacio aquarum fuit per totum fere mundum	Annales Polonorum, [in:] Monumenta Germaniae Historica, Scriptores, v. 19, p. 646, 647	[...] and there was a flood of waters across almost the whole world
1283	Ci, którzy wyjeżdżali z miasta [Lwowa], umierali z powodu mrozu w drodze, bo zima była bardzo mroźna. W tym roku zmarła w miastach niezliczona liczba osób, inne umierały we wsiach. Tej zimy panowała w Polsce silna zaraza morowa [...] Miały miejsce silne burze i błyskawice, i okropne wiatry z wichurą.	Buczinskij I.E., O klimacie proshlowo russkoj rawniny, 1957, p. 68	Those who left the city [Lviv] died of cold on the way, because the winter was very cold. Countless people died in cities that year, others died in villages. That winter there was a severe pestilence in Poland [...] There were strong thunderstorms and lightning, and terrible winds with gales.
1285/86	Mare balticum nimio gelu contrigitur.	Petri Olai Minoritae Roskildensis chronica regum Danicarum a Dano ad obitum Johannis regis, [in:] Scriptores rerum Danicarum medii aevi, ed. J. Langebek, 1772, p. 188	The Baltic Sea froze due to the severe frost.
1300	Eodem anno tempestas fuit magna	Annales Polonaie Minoris II, [in:] Monumenta Poloniae Historica, t. 3, p. 186	This year the foul weather was great
1303	Anno Domini 1303 habita fuit eyms estivalis, quod homines nullum frigus senserunt.	Rocznik wroclawski dawny i rocznik magistratu wroclawskiego, ed. A Bielowski, [in:] Monumenta Polonaie Historica, v. 3, 1878, p. 684	In the year of our Lord 1303, the winter was permanently mild, such that people felt no cold.
1304 ca. 1 November	Item jm jare 1304 vmme alle gades hilligenn, weyede so einn groth stormwindt, nicht gehortt bi minschenn thiden, bome wth der erdenn, dorpe, molen vmme, vnnd makede so groth water vmme ditt	Johann Berckmanns Stralsundische Chronik und die noch vorhandenen Auszüge aus alten verlorengegangenen	Therefore in the year 1304 around All Saints Day there blew such a strong storm wind as had not been heard of in human times, [it uprooted] trees from the ground, destroyed villages, mills, and

	landt, dat datt Nyedep vthbrack; vnnd dar de van Cikere plegenn eren weitenn tho seyen vp denn Rudenn vnnd thogande van dem einenn lande vp datt ander, dat wass water. Item anno 1300 vnnd 4 iss dat Nyedep vor dem Sunde vth middell eines stormes gekamenn.	Stralsundischen Chroniken, [in:] Stralsunder Chronikon, ed. G.C.E. Mohnicke, E.H. Zober, 1933, p. 4	caused such great water on the land that it broke the Nieuwediep [river]; and then those of Cikere watched over their pastures that were beyond [the village of] Ruden and they went from one land to another because there was water. So in 1304, the Nieuwediep [river] before Sund was caught in the middle of a storm.
1304 ca. 1 November	Facta est tempestas maxima in mari, per quam multe domus ecclesie et turres prostrate sunt et naves plurime confracte et submerse. Et in eodem nocte factus est novus portus apud Rugiam, quae vocatur das neue tieff	Des Thomas Kantzow Chronik von Pommern in niederdeutschen Mundart, ed. G. Gaebel, 1929, p. 224	There was a very powerful storm at sea that destroyed many houses, churches and towers and broke and sank many ships. And that night a new port was created at Rügen, which was called the new deep.
1306	Tanta in Germania et Gallia frigora fuerunt, quanta in Norvegia solito maiora sunt. Tunc quidam de Rostochio in Daniam per fretum Codanum [super glacie] ambularunt.	Annales Islandorum Regii, [in:] Scriptores rerum Danicarum, p. 127	In Germany and France there were frosts so great that usually only Norway gets colder. At that time, some walked from Rostock across the Baltic to Denmark.
1306	fuit hyems maxima ita quod mare inter Olandiam et Gutlandiam et Estoniam extitit congelatum [...]	Diarium Fratrum Minorum Wisbyensium, [in:] Scriptores rerum Suecicarum, v. 1, ed. E.M. Fant, 1818, p. 33	It was the greatest winter, even the sea between Öland, Gotland and Estonia froze.
1306	Tanta fuit hyemps, quod inÿter omnes terras et insulas Dacie et Svecie omnes pontus per XIV septimanas et ultra quasi in solidos pontes conversi sunt.	Nicolai archiepiscopi Lundensis chronica episcoparue Lundensium (1104-1497), [in:] Scriptores rerum Danicarum, medii aevi, v. 6, p. 628	It was such a winter that between the lands and islands of Denmark and Sweden all the waters became like solid bridges for 14 weeks and more.
1306 [1305?]	Eodem anno arsit circa ecclesiam omnium sanctorum; de illo igne ventus portavit super ecclesiam cathedralem et exussit totam et castrum , quam ecclesiam [...]	Rocznik Małopolski, [in:] Monumenta Polonaie Historica, v. 3, 1878, p. 188	This year, [there was] a fire near the Church of All Saints, from which the wind carried the fire to the cathedral church and burned both the castle and the church in their entirety [...]
1310	Sterilitas anni et fames propter inundationem aquarum. Eo anno in Italia, Polonia, Bohemia et Almannia, maximis tempestatibus	Ioannis Dlugossii Annales seu Cronicae incliti Regni Poloniae, Lib 9, 1978, p. 65	A barren year and famine caused by flood. This year in Italy, Poland, the Czech Republic and Germany, violent thunderstorms were



	coortis, tanta inundacio subsecuta est, ut multa opida, ville et rura simul cum hominibus et peccoribus perpetua alluvione absorberentur. Sol quoque ultima Ianuarii passus est eclipsim; ?????		followed by a great flood that the uninterrupted inflow of water destroyed many towns, villages and settlements along with people and cattle. On the last day in January there was also a solar eclipse. As a result, there was a failure of vine and grain crops such as no one had apparently ever heard of from their ancestors.
1310 25 July	in die beati Jacobi apostoli mane incepit pluere; et duravit continue illa pluvia per duos dies et noctes, per quam aqua, que Niza vocatur, tam inundavit, quod ante civitatem Glatz multas domos subruit et deduxit, et mille quingentos homines, ut dicunt, ibidem submersit, exceptis aliis locis, ubi eciam plurimi perierunt.	Annales Cistercienses in Heinrichow, [in:] Monumenta Germaniae Histoirca, v. 19, p. 545	On the day of St James the Apostle, in the morning, rain started and lasted for two days and nights without a break, such that the waters called Niza [Nysa] overflowed their banks causing them to collapse before the city of Kłodzko and destroy and carry away many houses, and it was said that 1,500 people there drowned, not counting other places, where also a great many died.
1310 25 July	Anno Domini 1310 in die beati Iacobi apostoli circa horam primam incepit pluere, et duravit illa pluvia per duos dies et noctes, ey qua pluvia fluvius, que Niza vocatur, tantum inundavit, quod civitatem, que Glatz vocatur, multas domos subruit et mille quingentoas homines ibidem submersit, exceptis allis locis, ubi eciam plurimi perierunt	Annales Cistercienses Henricoviensium, [in:] Monumenta Poloniae Histoirca, v. 3, 702-703	In the year of our Lord 1310 on St James' Day, around one o'clock it began to rain and it continued for two days and two nights and caused the river called Niza [Nysa] to overflow, which flooded Kłodzko, many houses were destroyed and 1,500 people drowned, and even more people in other places
1310 26 July	Den andern tak czu Cladeze dertrenckte es die gancze vorstat, also das da dertruncken wol pey czwey tausent menschen. Man sach vil wilder tir auff den cloczem flissen, gancze hewser mit leuten, vnd wigen mit lebenden kindern, also das das wasser grossen schaden tate vnd vil dorfer vnd leute dertrenckte	Die pehemische Cronica dewcz, [in:] Fontes rerum Bohemicarum, 3, 1882, p. 295	On the second day in Kłodzko, the entire suburb was flooded, such that over two thousand people drowned there. Many wild animals floating on logs were seen, as were whole houses with people and cradles with living children; the water did a lot of damage and drowned many villages and people.
1312	Wisla maxime inundavit	Annales Polonaie Minoris II, [in:] Monumenta Poloniae	The Vistula flooded very severely

		Historica, t. 3, p. 171	
1315	Bellis externis et commotionibus domestici paulisper in Regno Poloniae sedatis, fames omni bello atrocior Poloniae regiones invasit. Dum etenim, nivibus ultra solitum terram occupantibus, veris dies supervenissent, fruges terrae mandatae, a calore vernali paludamento nivis opertae, depastae extinctaeque. Ex qua coeli inclementia, contagio famis ad universos perveniens, plures ex agrestibus afflixit, plures atrocitate sua confecit	Ioannis Dlugossii Annales seu Cronicae incliti Regni Poloniae, Lib 9, 1978, p. 91-92	When external wars and internal unrest subsided somewhat in the Kingdom of Poland, a famine struck Poland more severe than any war. For when, after unusually heavy snowfalls that covered the ground, spring came, the crops protected from the spring warmth by a layer of snow were completely destroyed. The famine, which owing to the disfavour of heaven afflicted all, took its toll on many peasants, and exhausted many with its severity
1316	Praecessit eodem Anno Nissi inundatio, qua Gorlicii S. Spiritus nosocomium perripit, pontem urbis et multos alios convulsos abripuit, moletrinis omnibus et aedificiis flumini propinquis multum nocuit: in plateam usque Nissensem pertigit.	Mart. Meisterus, Annales Gorlicensis, v. 1, pars 2, p. 8; Carpzow J.B. Analecta Fastorum Zittaviensium etc. Zittau 1716, p. 262	That year, a flood on the Nysa that in Zgorzelec tore down the hospital of the Holy Spirit, swept away the city bridge and many other torn down bridges, [and] caused a lot of damage to all the riverside mills and buildings, and the water reached all the way to Nyska Street.
1316	Eodem anno fuerunt multe tempestates et inundacia aquarum tam in estate quam in yeme sive autumpno.	Canonici Sambiensis Annales (1338) [in:] Monumenta Germaniae Historica, Scriptorum, v. 19, p. 706	This year there were numerous foul spells and floods, in summer, winter and autumn alike.
1316	Estat namque tempore contra naturam huius temporis facta est ex continuatis imbris tam copiosa aquarum habundancia, quod more diluvia in loci pluribus subverteret edificia, muros et castra. In partibus Saxonie tantum Albea fluvius excrevit, quod quadringentas et quinquaginta villas aque vicinas cum hominibus et pecoribus partier delevit. In Austria, Polonia, Vngaria et Mysna de hoc Diluvio omnium hominum querimonia nunciabat infinita pericula esse facta. Hec aquarum inundacio campos et valles cooperuit, fenum et segestes destruxit, summumque plura, que	Chronicon aulae regiae (1338), [in:] Fontes rerum Bohemicarum, Iva, 1884, p. 232; Chronicon Francisci Pragensis (1353), [in:] Fontes rerum Bohemicarum, I – IV, 1874 – 1884, v. 4, p. 383	For in the summer season, contrary to the nature of the season, unbroken rains caused such flooding of the rivers that in many places, as in a deluge, overturned houses, walls, and fortified places. In parts of Saxony, the river Elbe swelled so much that 450 waterside towns were destroyed along with people and animals. From Austria, Poland, Hungary and Meissen there came complaints from all people about this deluge, that there was great danger. This flood covered fields and valleys with water, destroyed hay and crops, washed away and carried off much with it.

	rapuit, deduxit.		
1318 12 December	11 Kal. Ianuarii, id est in crastino beati Thome apostoli, circa horam vesperarum ventus vehemens venit, qui cum tanto inpetu nivem spargebat et circumferebat, quod homines, qui in viis et in campis erant, quasi excecati per nivem, ad sua hospitia redire non potuerunt et sic plures frigore perierunt.	Rocznik cystersów henrykowskich, [in:] Monumenta Poloniae Historica, v. 3, p. 703	On January 11, the day after St Thomas the Apostle, around evening, there was a strong wind that brought snow and dispersed it with such force that people who were on the roads and in the fields could not return to their homes and suffered from the cold.
1320 November- December	In nocte beati Nicholai magna fuit tempestas et aquarum inundation. Nam aqua in portu Travenae a solito statu crevisse dicebatur in altitudinem 7 cubitorum. Propter quos in Lubeke et in aliis locis et civitatibus maritimis in Slavia et alibi multa bona et similiter homines perierunt. Qua inundatione transacta, infra quindenam sequentem supervenit alia quaedam inundatio modico prima remissior.	Annales Lubicensis (1264 – 1324), [in:] Monumenta Germaniae Historica, Scriptores, v. 16, p. 428	In the night of St Nicholas there was a powerful storm and flooding. For the water in the port of Travene was said to have risen from its normal level to seven cubits. As a result, in Lübeck and in other coastal towns in the land of the Slavs and elsewhere, a lot of goods and people were lost. After the flood, within fifteen days, there was another flood, but less severe than the first.
1320 November- December	Maxima inundacia aquarum ascendit in partibus astagnalibus secundum cronicam Obotritorum. Nam in urbe Lubicana flumen Trabena cooperuit pontem illum altum, per quem de civitate itur in terram Holtzatorum, et deiecit ipsum in magna parte. Multi eciam homines et iumenta innumera perierunt in domibus et stratis prope Trabenam situates et bona mercatorum plura in casis et cellariis sunt exinanita.	H. Korner H., Chronica novella de quarto opere bis 1435 – Lünebürger Handschrift und Chronica novella de secundo opera bis 1423 – Linköpinger Handschrift (1201 – 1435), [in:] J. Schwalm. Die chronica novella der Hermann Korner, 1895, p. 229	There was a very large flood of waters according to the second chronicle of the Obotrites. For in the city of Lübeck, the river Trave flooded those high bridges that lead from the city to Holstein, and largely destroyed them. Many people were also killed, and countless draft animals in the houses and streets near Trave, and many goods were lost from merchants in storehouses and cellars.
1320 November- December	Tanta inundacio aquarum facta est in partibus maritimis, quod Trabena parva aqua pontem, quo itur versus Holtzaciā, in civitate Lubicensi transcenderet ad mensuram ulne unius. Ex qua inundacione plures perierunt homines et iumenta secundum cronicas Lubicensium.	H. Korner, Chronica novella de quarto opere bis 1435 – Lünebürger Handschrift und Chronica novella de secundo opera bis 1423 – Linköpinger Handschrift (1201 – 1435), w [in:] J. Schwalm. Die chronica novella der Hermann	There was such a flood of water in the coastal regions that the water level of the Trave, a small river, at Lübeck was one cubit higher than the bridge leading to Holstein. As a result of this flood, according to the second chronicle of the city of Lübeck, many people and draft animals died.

		Korner, 1895, p. 229	
1320 November- December	In sunte Nicolaus daghe was de Travene so grot van upwater van der se, dat de Travene stot uppe dem damme anderthalve elen ho, unde warde twe daghe unde twe nacht.	Aufzeichnungen eines Unbekannten vom Jahre 1320, [in:] Die Chroniken der deutschen Städte, v. 26, 1899, p. 336	On the day of St Nicholas, the river Trave became so large with the tide of water from the sea that the Trave rose one-and-a-half cubits above the dam, and this lasted two days and two nights.
1320 November- December	tho sunte Andreas dage do wart in den steden bi der Ostersee so grot storm [...] sodder worden tho Lubeck de huse bi der Traven und de straten seer gehoget	Aufzug aus des Stades-Chronik, Fragment von 1315-1349, [in:] Die Chroniken der deutschen Städte, v. 26, p. 281; Der sogenannten Rufus-Chronik, I. t. von 1105-1395, , [in:] Die Chroniken der deutschen Städte, v. 26, p. 231	On the day of St Andrew, there was a great storm in the cities on the Baltic Sea [...] that the houses in Lübeck on the Trava and the streets were badly damaged.
1322, 1332?	Ipsa anno talis estus fuit, ut homines vetuli dixerunt nunquam se diebus suis in terra Cracoviae talem estum fuisse expertos, unde ad magne indicium siccitas Wandalus fluvius in tantum decrevit, ut decennis et duodecennis pueris in pluribus locis viabilis et vadabilis esset.	Annales Polonaie Minoris II, [in:] Monumenta Poloniae Historica, t. 3, p. 195-196	This year it was so hot, the older people said, that such heat had never been known in their days, and hence, as a sign of a great drought, the Vistula River was so shallow that it was fordable by ten- and twelve-year-old boys in numerous places.
1322/23	Inter Norwegiam etiam, Angliam et Flandriam multae naves in medio maris congelatae fuerunt in glacie, ita quod mercatores ex navibus se mutuo visitabant, eundo per glaciem, pro solatiis habendis	Annales Lubicensis (1264-1324), [in:] Monumenta Germaniae Historica, Scriptores, v. 16, p. 428-429	Also between Norway, England and Flanders, many ships on the open sea froze, such that merchants from ships visited each other on the ice for amusement.
1322/23	Fuit enim inter Daciam et Slaviam et Imbriam totum mare Balticum congelatum, ita quod latrones, de Slavia intrantes, quasdam partes Daciae depraedarunt, et tabernae in medio maris in glacie pro transeuntibus factae fuerunt.	Annales Lubicensis (1264-1324), [in:] Monumenta Germaniae Historica, Scriptores, v. 16, p. 428	For between Denmark, Slavic lands and Jutland the whole Baltic Sea was frozen, so that robbers from Slavic lands came, some parts of Denmark were plundered, and inns were set up on ice in the middle of the sea for those travelling by.
1322/23	des winters bi sunte Andreas daghe stunt an grot vrost unde warede to midvasten, de schepe bevoren in der zee midweghe tuschen deme Swene unde Norweghen; [...] in der Osterze wuste nement jeneghe	Dettmar Chronik von 1101-1395 und Fortsetzung von 1395-1400, [in:] Die Chroniken der deutschen Städte, v. 19, p. 443	In winter on the day of St Andrew a heavy frost set in and remained until Mid-Lent, ships froze at sea halfway between Sweden and Norway [...] in the Baltic, no one knew of a Sound or waters not

	Sunde eder wathern, se ne weren mit yse hart beleghet		covered with thick ice.
1322/23	yss so grot wynter gewest, dat men van Reuel yn Dennemarcken vnd wedder auer ynt lant to Mekelenborch vnd Pameren heft myt perden ryden vnd gan konnen auer iss	Hamburger Chronik vom Jahre 799 bis 1559, [in:] Hamburgische Chroniken in niederdeutscher Sprache, ed. J.M. Lappenberg, 1861, p. 396	In winter, the ice was so great that from Reval [Tallinn] to Denmark and back, and in the country to Mecklenburg and in Pomerania you could ride horses and walk on the ice.
1322	Hyems erat tam saeva, ut homines super maria equitarent	Chronologia rerum memorabilium ab a. 1020 usque ad a. s rerum Danicarum, v. 2, p. 528	The winter was so severe that people crossed the sea by horse
1322/23	Uppe de tiid van sunte Andreas dage wente to midvasten vros id so sere, dat de koplude mit waghene voreden ere gut ute Norweghen wente in dat Swen unde wedder umme, unde uppe der see weren tavernen unde krughe buwet, dar se ere beer selleden unde ere spise. Ok voren de koplude do sulven van der see steden in Prutzen unde in Liflande unde dar weren ok tavernen uppe maket	H. Korner, Die chronica novella ... , Deutsche Bearbeitung bis 1438, [in:] J. Schwalm. Die chronica novella der Hermann Korner, 1895, p. 542	From the day of St Andrew to Mid-Lent it was so cold that merchants used carts to transport their goods from Norway to Sweden and back, and there were taverns and bars on the sea where they ate their beer and food. Merchants also traveled there from ports in Prussia and Livonia, and there were also taverns at the market.
1330	Rex Wladislaus [...] venit tempore autumnali usque ad fluvium Drawoczam [...] ubi vada erant [...] fluvium transivit [...] fertilitas [...] in Polonia	Rocznik Traski, [in:] Monumenta Poloniae Historica, v. 2, p. 854; Annales Polonaie Minoris II, [in:] Monumenta Poloniae Historica, t. 3, p. 190f.	King Władysław [...] came in autumn as far as the Drwęca River [...] where there were shallows [...] they crossed the river [...] good harvests in Poland
1332 before 24 June	Ipso anno talis estus fuit, ut homines vetuli dixerunt nunquam se diebus suis in terra Cracoviae talem estum fuisse expertos, unde ad magne indicium siccitas Wandalus fluvius in tantum decrevit, ut decennis et duodecennis pueris in pluribus locis viabilis	Annales Polonaie Minoris II, [in:] Monumenta Poloniae Historica, t. 3, p. 195-196; Rocznik Traski, [in:] Monumenta Polonaie Historica, v. 2, p. 857	In the same year the heat was so great that the old folks said they had never seen such heat in the Kraków region, and that the Vistula River was so much reduced by the great drought that in many places ten- and twelve-year-old boys could easily wade across.
1332	Siccitas maxima et aestus solis in Polonia. Ingens adeo solis ardor estusque in Polonie regionibus eo	Ioannis Dlugossii Annales seu Cronicae incliti Regni Poloniae,	Terrible drought and heat in Poland. In the Polish lands there was a great sweltering heat this

	anno provenerat, ut ante festum beati Iohannis Baptiste fruges debitam maturitatem nocte ad quemlibet usum apte forent et undis desiccatis, alveos suos flumina desererent et tam fervida ignitaque siccitas apud homines veteranos sine exemplo accidens prodigii monstrique haberetur loco.	Lib 9, 1978, p. 176-177	year, such that before the celebration of St John the Baptist, the crops were fully ripe and fit for all purposes. The waters of the rivers dried up so much that the channels were empty. This violent heat and drought, such as the oldest people could not remember, was considered a terrible phenomenon.
1333 23 April - 28 April	nix magna fuit in Polonia circa festum sancti Adalberti et duravit quinque diebus	Notae Gnesnenses, XI-XIV saec., [in:] Monumenta Poloniae Historica, v. 3, p. 45; Spominiki gnieźnieńskie, [in:] Monumenta Poloniae Historica, s.n., v. 6, ed. B. Kürbis, 1962	Great snow in Poland around St Adalbert's Day and [it] lasted five days.
1333 6 May	Die Iohannis ante portam Latinam magna nix cecidit et ros super gramen versus est in glaciem.	Rocznik miechowski, [w:] Monumenta Poloniae Historica, t. 2, p. 884	On the day of St John Before the Latin Gate, a great snow fell and the dew on the grass turned to ice.
1334	Nix grandis in die sancti Adalberti cadens, induxit magnam in frugibus fertilitatem. In die sancti Adalberti ingenti mole nix cum gelu in Regno Poloniae descendens, cum quinque diebus durasset, pavoremque grandem, ne per illam fruges depasci absumique contingeret, in estimacione hominum, presertim agrestium, produxisset, tandem quinta die dissoluta, prestiti humo et frugibus suo imbre et irroracione insolitam fecunditatem qualem nec stercorisacio contulisset.	Ioannis Dlugossii Annales seu Cronicae incliti Regni Poloniae, Lib 9, 1978, p. 183	The huge snow that fell on St Adalbert's Day caused a great harvest. The snow, which, due to the cold, fell in large quantities on St Adalbert's Day in the Kingdom of Poland and lay for five days, caused great fear among people, especially among peasants, that it would completely destroy the crops. Finally, after five days, it melted and saturated the earth with its moisture, and provided the crops with an extraordinary harvest that even fertilisation would not have given them.
1335 28–29 October	Anno Domini MCCCXXXV magnus ventus fuit. Crastina lux Symonis prostravit turbine lucos.	Notae Gnesnenses, XI-XIV saec., [in:] Monumenta Poloniae Historica, v. 3, p. 97.	In the year of our Lord 1335 there was a great wind. The next day, the light of Simon [St Simon's Day?] blew the groves with wind.
1337	Wysla inundatur.	Annales Poloniae Minoris II, [in:] Monumenta Poloniae Historica, t. 3, p. 199	The Vistula overflowed.

1337	[...] dampnum, quod factum fuit in minori insula per Wislam: cum per impetum et inundationem transcederat et rupit aggerem in parte illa, que ad monasterium pertinebat	Chronica Olivensis, [w:] Monumenta Poloniae Historica, t. 6, p. 335	[...] the damage that was done in Małe Żuławy by the Vistula River, when it invaded with the violence of a raging flood and broke the part of the embankment adjacent to the monastery
1339/40	Forti exercitu Theodoricus de Aldemborg magister Prussie congregato, habens in suo comitatu comitem pallatinum Reni et Almanos, Lithuaniam hieme ingressus castrum Wyelunya obsidione cingit multiplicique infestacione impugnat. Verum cum omnes suos conatus recidere videret in irritum, quippe et locus egregie a natura munitus etiam probe a barbaris tutabatur, frigore etiam gelidissimo premente exercitum, redire Prussiam coactus est.	Ioannis Dlugossii Annales seu Cronicae incliti Regni Poloniae, Lib 9, 1978, p. 214.	The Prussian master Theodoric of Altemburg, having gathered a powerful army together with the count, the palatine of Rhine and a unit of Germans, having entered Lithuania in winter, besieges Wielona castle and tries to capture it by multiple assaults. But when he saw that all his efforts were in vain because the castle was perfectly protected by nature but also well guarded by the barbarians and, moreover, the bitter cold was taking its toll on the army, he was forced to return to Prussia.
1345	In kalendis Marcii mensis magister Henricus Dusemer Cruciferorum de Prussia, habens in suo comitatu Hungarie et Bohemie milites, item marchionem Holandie et nonnullos ex Almannia comites et nobiles in Lithwanos et eorum terras expeditionem agit. Et licet exercitum haberet fortem et frequentem ac omnium victualium et necessariorum abundancia refertum, parva tamen vastacione terre Lithwanie, Lithwanis in castris et nemoribus delitescens, perfunctus, de Lithuania excedere propter glacierum dissolucionem et terre lubricitatem ac in Prussiam redire, nullo edito memorabili facto, coactus est.	Ioannis Dlugossii Annales seu Cronicae incliti Regni Poloniae, Lib 9, 1978, p. 237-8	In the calends of March, the Teutonic master from Prussia, Denryk Dusemer, with Hungarian and Czech knights, as well as a Dutch margrave and some German counts and knights, conducts an expedition against the Lithuanians and their lands. And although he had a strong and numerous army, provided with plenty of food and everything necessary, after causing insignificant destruction in the Lithuanian land, because the Lithuanians hid in castles and forests, he had to withdraw from Lithuania because of the thaw and the muddiness of the ground and, having done nothing worthy of memory, to return to Prussia.
1346	Premislaus Otokarus venit in Thorun [...] propter adversitatem temporis et hiemis immansuetam [...] retro domus est reversus	Spominki władysławskie (włocławskie), [in:] Monumenta Poloniae Historica, v. 2, p. 945	Przemysław Ottokar came to Toruń [...] due to the unfavourable season and powerful winter [...] he returned home
1347	Anno domini 1347, octavo ante divi Michaelis festum die, cecidit	Johannes Bergenhagens Pomerania, ed. O.	In the year of our Lord 1347, the octave before the day of St

21 September	nix adeo multa, ut mole sua, cum arboribus superiaceret, ramos fregerit, cui mox deinde nimia superveniens pluvia tantam fecit aquarum inundatiam, ut homines super domorum tabulata aliquot diebus coacti fuerint habitare.	Heinemann, [in:] Quellen zur Pommerschen Geschichte, v. 4, 1900, p. 163	Michael, so much snow fell that the weight it put on the trees broke branches, and soon there was a very heavy rain, which caused such a flood of water that people were forced to stay on roofs for several days.
1347 September	Anno 1347 acht dage vor Michaelis is gefallen so grot schnee, dat hir tho Stralsund - sonderlick dewile hier an dem drüdden dage darna en grot regen fill - solk ene flot thowegg gebracht ist, dat an etlicken orden sick de lüde up den bömen und böhnen erholden möten. Ock geschach tho dersuluen tidt wegen des velen waters grot schaden an dem vehe dat thom dele vordrank, thom dele vorfror.	Auszüge aus Stralsunder Chroniken von Jahre 1230-1521, [in:] Stralsunder Chronikon, ed. G.C.E. Mohnicke, E.H. Zober, 1933, p. 162	In 1347, the octave before the day of St Michael, it snowed so much that, here in Stralsund, especially because it rained heavily on the third day afterwards, it caused such a flood that in several places people had to support themselves in trees and in attics. Also at the same time, because of the high water, there was great damage to cattle, which drowned in the water or froze.
1347 7 March, 27 May – 2 June	Feria quarta post dominicam Oculi domus Miechoviensis vix consumata per ventum deiecta et contrita fuit. Eodem anno intra octavam corporis Christi alia domus in eodem loco constructa per ventum similiter est conminuta [...]	Rocznik miechowski, [w:] Monumenta Poloniae Historica, t. 2, p. 884	The Wednesday after Oculi Sunday, the Miechów house was consumed, blown down and smashed by the wind. In the same year, during the octave of Corpus Christi, another house built on the same site was similarly damaged by wind [...]
1351 May	Grosse Bober-Uberschwemmung und Schaden	J.G. Bergemann, Chronik der Stadt Bunzlau, v. 2, p. 19	A great flood of the Bóbr and damage
1351 May	Grosse Queis-Uberschwemmung, drei Hauser fortgerissen	J.G. Bergemann, Beschreibung und Geschichte der Stadt Friedeberg a. Queis, 1829, p. 54	A great flood of the Kwisa, three houses were destroyed
1353	Nix valida in Polonia circa finem mensis Maii decidens magnam frugum fertilitatem effecit. Evenit in Polonie Regno anno eodem sabbato in vigilia Penthecostes prodigiosum et nunquam antea visum ac sine omni exemplo portentum. Nam dum mensis Marcus, Aprilis et maior pars Maii calida, mansueta et apta tempora edidissent frugesque solis et	Ioannis Dlugossii Annales seu Cronicae incliti Regni Poloniae, Lib 9, 1978, p. 269	The great snow that fell in Poland at the end of the month of May resulted in an extraordinary harvest. This year in the Kingdom of Poland on Saturday, on the eve of Pentecost, an extraordinary, never-before-seen, unparalleled phenomenon happened. Whereas the months of March and April and most of May were warm and mild as befits, and the crops, thanks to



	<p>temporis suavitate in culmos et aristassuccevisent, in uberem frugem perventure, subito frigoribus immensis coortis, gelu terram vehementer premebat. Quo aliquantulum restricto nix valida et immensa, duorum cubitorum altitudinem faciens, insperate et subito descendit omnesque regiones Regni Polonie sua mole cooperiens, homines, presertim agriculture deditos violento et grosso suo descensu plurimum exterruit, presertim dum usque in sextum diem sine aliqua resolutionis spe perdurasset, veritos, ne sub tam gravi mole et statera frumentorum germina imbre huiusmodi et nivibus exterminatunde voratumque iri contigisset. Verum universis colonis ad tam inauditum spectaculum paventibus et fortunas suas atque labores perditum iri fletu et lamentis vociferantibus pietas Agni Celestis affuit et quod humanus intellectus et ratio ad interitum credebant descendisse et perniciem, id Divina propiciacio, que ex insolitis operibus vilescentibus et nullam admirationem afferentibus quotidianis vult laudari, vertit in augmentum et salutem. Nivosus suquidem ipse imber sexta die resolutus non solum fruges vernaes et hiemaes, quibus insidebat, non lesit nec perculit, imo illas sua placida infusione quasi quodam rore suavissimo adeo rigavit vivificavit, ut nullum humanum ingenium per stercorisationem proveniens tantam fecunditatem et ubertatem agris et frugibus afferre potuisset. Unde ex admodum terribili et tristi anno fecundus et hilaris, omnium abundanciam et locupletacionem secum ferens annus ipse apparuit et</p>		<p>the gentle action of the sun and the seasons, had sprouted stalks and ears, announcing a bountiful harvest, it suddenly became very cold, and a bitter frost gripped the ground. When it had lightened a little, there fell an unexpectedly great, excessive snow, two cubits high. Covering with its heavy coat all the vicinity of the Kingdom of Poland with its rapid, thick fall, it scared people, especially those engaged in cultivation – especially since it lay until the sixth day without any hope of melting – who feared that under such a heavy weight the cereal sprouts would be completely destroyed by such a snowfall. But when all the peasants were trembling with fear at this unheard-of phenomenon, weeping and lamenting that their crops and work would be in vain, the goodness of the Heavenly Lamb came to their aid. And what, according to the deepest human conviction, was to bring total annihilation, God's Providence, which wants to be praised for extraordinary works, when they are everyday and do not arouse any admiration, turns it to use and good. For the aforementioned snowfall, which melted on the sixth day, not only did not completely damage the vegetables and winter cereals on which it lay, but rather, with its beneficial moisture, as if with the mildest dew, watered and enlivened them in such a way that no man could by fertilisation, to provide the fields and crops with such fertility and abundance. Thus, the year that evokes fear and sadness has become a fruitful and joyous one. It brought with it an extraordinary abundance and lifted the spirits of the villagers with a very auspicious outcome.</p>
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	colonos eventu felicissimo refecit.		
1359 24 June	Fuit maxima inundacio in terra Poloniae et in aliis locis circa festum Ioannis baptostae	Rocznik Sędziwoja, [in:] Monumenta Poloniae Histoircia, v. 2, p. 880	There was the greatest flood in Poland and in other places around St John the Baptist's Day.
1359	Fuit grandis inundatio aquarum	Christophori Manlii Gorlicensis patricii commentariorum rerum Lusaticarum, [in:] Scriptores rerum Lusaticarum, ed. C.G. Hoffmann, 1719, v. 1, p. 19	There was a great flood of waters.

\*We abandoned the notice in the chronicle of Gallus Anonimus about the winter in 1108 (and removed it from the statistics) because it is not clear whether it was really a severe winter. The severity of this winter is only conjectured by some historians.

Table S4. Examples of typical descriptions of weather in winter and summer based on which we classified thermal and precipitation conditions into six extreme categories (-3, ..., +3)

a) Indices of temperature in summer

Index	Year	Original weather description	Translation	Source
-3	1451	Nam diebus quindecim continuis et totidem noctibus sine repausatione et intermissione pluvia ingens descendebat, quae post quindecim dies interpellatim superveniebat, quasi videres fontes aquarum disruptos, et maria et flumina cum Neptuno in cataclysmum conspirasse. Non solum autem messium labor fuit tunc per pluviam suspensus, sed villarum, quae in locis bassis prope alveos fluviorum consistebant, frumenta, vel absorpta, vel raptu fluminis deorsum fuere transportata. Quod idem contingebat in foeno. Propter quod inundatio illa aquarum damna plurima mortalibus intulit, et collectionem frugum, seminationemque autumnalem plurimum retardavit, sequensque tempus aestatis et autumnus plus de humore et pluvia habuit, quam de siccitate aut	The bad weather was strange and unprecedented. For, for fifteen days and as many nights there fell a constant, unbroken, heavy rain. After fifteen days, it rained from time to time. It was as if the bursting springs of the sea and river had conspired with Neptune to bring about a flood. And not only did the rain interrupt the work of the harvesters, but the grain in villages in the low-lying riverside lands was either destroyed or carried away by the river's current. The same happened with hay. Therefore, this flood caused much loss of life and greatly delayed the harvesting and autumn sowing, and the following summer and autumn had more wetness and rain than drought	Jana Długosza Roczniki czyli Kroniki sławnego Królestwa Polskiego, Księga dwunasta: 1445-1461, Warszawa 2009, p. 121-122

		calore.	and heat.	
-2	1462	Diese ungesunde und nasse Witterung, der Krieg und Mangel an Lebensmitteln, verursachte wieder ansteckende Krankheiten.	This unhealthy and wet weather, war and lack of food caused infectious diseases.	Benjamin Gottlieb Sutorius, Die Geschichte von Löwenberg, Th. 1, Bunzlau 1784, p. 109
-1	1495	Am Abend Maria Magdalena [21. July] war ein grosser Wind, schlug das Getreide aus und war eine sehr nasse Ernte.	On the eve of St Mary Magdalene, there was a great wind, it destroyed the grain, and the harvest was very wet.	Nicolaus Pol, Jahrbücher der Stadt Breslau, ed. J. G Büsching, Bd. 2, Breslau 1815, p. 165
1	1470	Ambo duces declarabant bonitatem dei, qui tam bona tempora daret; iam bona fuisset estas plenissimam fertilitatem portantem.	Both dukes thanked God for the good that such good times brought. The summer was good, bringing very good harvests.	Peter Eschenloer, Historia Wratislaviensis, in: Scriptorum rerum Silesiacarum, Bd. 7, Breslau 1872, p. 221
2	1471	Nullus homo vivens cogitabat pulchriorem et sicciozem estatem, paucissime pluvie, messis matura omnium frumentorum ante festum s. Jacobi	No living person remembered such a beautiful and dry summer, with little rain, all the fruits ripened before St James Day [25 June].	Petrus Eschenloer, Historia Wratislaviensis, hrsg. v. Hermann Markgraf, [in:] Scriptorum rerum Silesiacarum, Bd. 7, Breslau 1872, p. 242
3	1473	Et anno 1473 fuit estas feruentissima et siccitas inaudita et in quibusdam terris ignis sub terra succensus usque ad arenam fuit	And in 1473 there was a most fervent summer and an unprecedented drought, and in some lands fire burned the earth down to the sand.	Rocznik Jana z Targowiska, wyd. E. Kalitowski, [in:] Monumenta Poloniae Historica, t. III, Lwów 1878, p. 236

b) Indices of temperature in winter

Index	Year	Original weather description	Translation	Source
-3	1422/23	Asperrima hyemps fuit, quo incepit circa festum beate Elizabeth et duravit ad 40, paucis diebus exceptis per festum nativitatis Cristi [25 XII], in quibus resolutio glaciei facta fuit in aliquibus partibus maris. Tanta enim rigidate gelu illud Balticum pelagus constrinxerat, quod quidam mercatores asserebant se equitasse in soliditate glacierum de Prutzia in Lubek per viam	It was the harshest of winters that began around St Elizabeth's Day and lasted 40 days except for a few days around the Nativity of Christ [25 Dec], when in some parts of the sea the ice melted. The Baltic Sea so froze over that some merchants reported they had travelled on solid ice from Prussia to Lübeck, a route usually sailed by ships. From Denmark they travelled on horseback over the ice to other	Cronica novella de secundo opere bis 1423, Lüneburger Handschrift und Cronica novella de secundo opere bis 1423, Linköpinger Handschrift, [in:] Die chronica novella des Hermann Korner, hrsg. v. J. Schwalm, Göttingen 1895, p. 454

		regiam, quam naves ire consueverunt in aquis resolutis. De dacia eciam equestres per glaciem ad omnes maritimas civitates repedaverunt ille in tempore.	coastal cities.	
-2	1454/55	...hiems quoque validissima, nivibus eciam illam augmentibus, exercitum regis premeret et iam in circuitu ad aliquot miliaria commeatus consumpti reperiri non possent: solvit rex campum et exercitum feria tertia post octavas Epiphaniae [14 I] licentiat...	... also a very severe winter, with heavy snows, the royal army suffered and food could not be found for several miles around, and supplies were exhausted: the King broke camp and gave the army leave on Tuesday after the eighth day of Epiphany ...	Joannis Dlugossii Annales seu Cronicae incliti Regni Polniae, lib. XII, Cracoviae 2003, p. 224
-1	1450/51	A. d. 1451 dies dies Christi fuit feria sexta, hyems dura [pluvia], frigida usque ad medium et tunc tempus pluviosum ventosum fulminosum nocuum	In A.D. 1451, at Christmas on Friday, it was severe [rainy] and cold, and stayed so until mid-winter, and from then on it was a rainy, windy season with lightning doing damage several times.	Sigismundi Rosiczii, Gesta diversa transactis temporibus facta in Silesia et alibi, [in:] Scriptores rerum Silesiacarum, Bd. XII, Breslau 1883, p. 62
1	1419/20	Tam calida hiems, vt die XX. Martij inciperent florere arbores die IIII April. etiam vineae.	The winter was so warm that the trees began to bloom on March 20, and the vineyards began to bloom on April 4.	Georgii Fabricii Chemnicensis Rerum Misnicarum libri VII, Ienae 1597, p. 59
2	1375/76	Anno 1376 [...] sed marscalcus non potuit stare propter hiemis humiditatem.	In the year 1376 [...] the marshal could not support himself [with the troops] because of the wet winter.	Annales Thorunnensis, hrsg. v. E. Strehlke, [in:] Scriptores rerum Prussicarum, Bd. 3, Leipzig 1866, p. 99.
3	1412/13	Anni huius hiems calidissima et absque exemplo ab omnia horrore pruinae aliena, adeo ut frigidissima regio Lithuanica circa Purificationis Sanctae Mariae festum olera et flores, de quibus usus communis habebatur, producens, vulgo pene in miraculum, atque ut dici solet, in religionem fuerit.	The winter this year was very warm and, as never before, without any horrifying frosts, so much so that when in the very cold Lithuanian land, near the celebration of the Purification of the Virgin Mary [February 2] there was a feast of greens and flowers that were widely in use, producing what the commoners considered a miracle, as they say, a wonder.	Jan Długosz, Roczniki czyli Kroniki sławnego Królestwa Polskiego, Ks. 10 i 11 (1406-1412), Warszawa 2009, p. 242-243

c) Indices of precipitation in summer

Index	Year	Original weather description	Translation	Source
-3	1473	Annus hic omni Europa et universo Regno Poloniae, sidere solari plus solito effervescente et nullas dante pluvias.	This year was marked throughout Europe and the entire Kingdom of Poland by the fact that the sun shone more than usual and there was no rain.	Jana Długosza Roczniki czyli Kroniki sławnego Królestwa Polskiego, Księga dwunasta 1462-1480, Warszawa 2009, p. 336-337
-2	1442	A.d. 1442 fuerunt intentissimi calores a festo s. Georgii [23 IV], quod anno illo nulla pluvia erat usque ad tempus messis, ita quod frumenta in agris comburebantur per calorem solis.	In A.D. 1442 there was very intense heat from St George's Day onwards, so that this year there was no rain until harvest, so that the grain in the fields was burned by the sun.	Annales Glogovienses bis z. J. 1493, [in:] Scriptores rerum Silesiacarum, Bd. 10, Breslau 1877, p. 18
-1	1429	Na gades bort 1429 jar do was ene grote dure tiid by der zee, wente de schepel rogghe gholt  24 ß sund., umde dat schippunt mels gholt 15 mrk sund.	In 1429 there was a dry period on the sea coast, a sheaf of grain cost 24 Sundische Shillings, a pound of flour cost 15 Sundische Marks.	Stralsundische Chronik B., [in:] Zwei Stralsundische Chroniken des funfzehnten Jahrhunderts, hrsg. v. Rudolf Baier, p. 20.
1	1388	Gros schade geschach von irgysunge der wasser. Item dry tage vor Margarethe [10. VII] was so gros reyn im lande czu Pruszin, das desin gebitegern: Strasburg, Redin. Roghusen, Engelsberg, ere molen usbrochin, und geschach gros schade, das des kompthurs gemach von Grudencz nedit vil in die Wysel	A flood caused great damage. Thus, three days before St Maragaret's Day, there was so much rain in the Prussian land that in its areas: Strasburg, Redin. Roghusen, Engelsberg [Brodnicza, Radzyń, Rogóźno, Pokrzywno], the mills there were destroyed and there was great damage, the commandery building in Grudziądz also fell to the Vistula.	Johann's von Posilge, officials von Pomesanien, Chronik des Landes Preussen, (von 1360 an, fortgesetzt bis 1419, zugleich mit den auf Preussen bezüglichen Abschnitten aus der Chronik Detmar's von Lübeck, hrsg. v. Ernst Strehlke, [in:] Scriptores rerum Prussicarum, Bd. 3, p. 152-153
2	1441	A. d. 1441 per totam messem fuerunt dies pluviales absque intervallo, ita quod fruges non potuerunt meteri integraliter	In A.D. 1441 throughout the month there were days of rain without interruption, so the fruit could not ripen fully before the Assumption of the Blessed Virgin Mary, and there	Annales Glogovienses bis z. J. 1493 nebst urkundlichen Beilagen, hrsg. v. Hermann Markgraf [in:]

		ante festum Assumptionis Mariae, et raro fuerunt dies sereni.	were rarely peaceful days.	Scriptores rerum Silesiacarum, Bd. X, Breslau 1877, p. 18
3	1475	In disem sommer woren vil regen, grosse wasser.	There was a lot of rain this summer.	Peter Eschenloer, Geschichte der Stadt Breslau, hrsg. v. Gunhild Roth, Teilband II, Chronik ab 1467 (Quellen und Darstellungen zur schlesischen Geschichte, Bd. 29 I, II), Münster-New York-München-Berlin 2003, p. 984.

c) Indices of precipitation in winter

Index	Year	Original weather description	Translation	Source
-3	1474/75	Der Herbst war sehr schön, worauf ein milder und angenehmer Winter folgte; es schneiete nur einmal, und dies am zweiten Weihnachtsfeiertage, der Schnee blieb aber auch nur eine Nacht liegen.	The autumn was very beautiful, followed by a mild and pleasant winter; and there was only one snowfall, and that on the second day of Christmas, but the snow disappeared after just one night.	Bergemann J. G., Beschreibung und Geschichte der Stadt Friedeberg a. Queis, Hirschberg 1829, p. 98
-2	1493/94	Anno domini 1494 fuit hyems instabilis; ante festum nativitatis domini fuit gelu non magnum sine nive, et Visla congelata non nimis firma, quod multi homines et equi cum curribus et mercanciis sunbmersi. [...] Tandem quarta feria post dominicam Invocavit [19. February] fuit intensum gelu cum magno et denso nive, et Visla fluxit clara et gelu tantum duos dies duravit et iterum nix	In 1494 the winter was unstable. Before Christmas, there was a not very strong frost, without snow, and the Vistula River did not freeze too much, so many people and horses with carts and goods drowned. [...] Finally, on the Wednesday after the first Sunday of Lent [February 19], an intense frost began with heavy and thick snow. The Vistula River turned white, but the frost lasted only two days and the snow melted again.	Die Aufzeichnungen des Thorner Pfarrers Hieronymus Waldau (1190-1495), hrsg. v. Günther, Zeitschrift des Westpreussischen Geschichtsvereins, H. 49, 1907, p. 245

		conflavit.		
-1	1406/07	Von eyne weichin winthir.] Ouch was deser winter ane allin vrost und reynik, das keyne flys bestundin; und dy lute gedochtin des glichin ny mer.	About a warm winter.] And it was a winter without any frost or snow, so that not a single river froze.	Johann's von Posilge, officials von Pomesanien, Chronik des Landes Preussen (von 1360 an, fortgesetzt bis 1419), [in:] Scriptorum rerum Prussicarum, t. 3, p. 284
1	1450/51	A. d. 1451 dies dies Christi fuit feria sexta [25. XII 1450], hyems dura [pluvia (pluviosa), frigida usque ad medium et tunc tempus pluviosum ventosum fulminosum nocuum	In A.D. 1451, on Christmas Day, which was a Friday, it was a severe, rainy winter until the middle of that season, then rain, winds and lightning did damage.	Sigismundi Rosiczii, Gesta diversa transactis temporibus facta in Silesia et alibi, [in:] Scriptorum rerum Silesiacarum, Bd. XII, Breslau 1883, p. 62
	1496/97	Fuit autumpnus sequens una cum yeme magne humiditatis assiduaque excrescencia aquarum unum diluvium aliud insequebatur, tempusque yemis instabilissimum, assiduis gravissimisque ventis, humiditatibus et pluviis agitatus nulliusque vel pauce frigiditatis.	There were an autumn and a winter with great wetness and constantly rising water levels, many floods, it was an unstable time, with constant winds, wetness and rains and little cold.	Catalogus abbatum Saganensium, [in:] Scriptorum rerum Silesiacarum, Bd. 1, , hrsg. v. G. A. Stenzel, Breslau 1835, p. 418-419
3	1439/40	Nix enim grossissima a festo Sancti Martini descenderat, et toto hiemis et veris tempore usque ad diem Sancti Georgi dissolutae, praebebantque et per terram et per fluviorum alveos euntibus transitum.	There was very heavy snow and it was very frosty from St Martin's Day throughout the winter and spring, and the snow and ice did not melt until around St George's Day and allowed the river beds to be crossed on foot as if by land.	Jan Długosz, Roczniki czyli Kroniki sławnego Królestwa Polskiego, Księga 12, Warszawa 2009, p. 245-246

Explanations: The individual weather notes do not always fully reflect the temperature or precipitation of an entire season, because the classification we performed usually used anywhere from a few to more than ten various weather notes. Average weather (index "0") was usually not described in historical sources.

Table S5. Pointer years of *Abies alba*, *Pinus sylvestris* and *Quercus* spp. for four historical regions: „-” – negative; „+” - positive

Year	<i>Quercus</i> spp.			<i>A. alba</i>	<i>P. sylvestris</i>	
	Greater Poland	Lower Silesia	Lesser Poland	Lesser Poland	Lesser Poland	Kuyavian-Pomeranian
1004	-					
1007	+					
1010	+					
1016	-					
1017	-					
1028		-				
1029	-					
1030	+	+				
1035	+					
1036	-					
1037	+					
1039	-					
1040		+				
1052	+					
1053	-					
1058	-	-				
1061		+				
1070	-					
1071		+				
1078		-				
1082	+					
1083		-				
1115	+					
1118	+					
1129		-				
1142		-				
1143		+				
1153	+					
1160	+		+			
1162			+			
1164			-			
1165			-			
1168	+					
1172		+		+		
1173			-			
1177	-	-				
1180			-			
1183			+			
1184			-			
1186	+	+	+			
1187				+		
1188	+				-	
1189				-		
1190			+		+	
1191	+					
1192	-				-	
1195	+					
1202	-					



1205				-		-
1206		+		+		
1209				-		
1210		+				
1218				+		
1219		+				-
1220				+		
1224				-		
1228						-
1231		-		-		
1232				-		-
1233					-	
1234	+					
1235				-		
1239				+	+	
1241				-		-
1242				+		
1245				+		
1249		+				
1250				-		
1254						-
1255		+				+
1256	-				-	
1259			-			
1261	+					
1264				+		
1270				-		
1271		+	+	+		
1272				-		-
1275			+	+		
1276			-			
1279			+			
1280					+	
1284				-		
1285					+	
1290				+		
1293		-				
1294			+			
1296					-	
1304			-			
1305						-
1307		+	+			
1309			+			
1311						-
1313			+	+		
1314			-			
1317			-	-		
1325		+	+			
1326			-			
1327			+			
1328				-		-

1331				+		
1332			-	-		
1333				-		
1334			+	+		-
1335			-			
1352		-				
1361			-	-	-	
1362					+	
1363					-	-
1372				-	-	-
1374				+		
1376			+			
1377						+
1379					-	
1380						+
1383				+		
1387			+			
1388					-	-
1390		-				
1397			-			
1401	-	-	-			
1402	+					
1403				-		
1406	+					
1407		-				-
1410	+					
1413		-				
1414				-		
1417				-	-	-
1420	-	-				
1421	+	+				
1425				+		
1429	-					
1431				-		
1432		+				
1437		-				
1438						-
1439	-					
1440				-		
1441				+		+
1445		+		+		
1446						-
1447						-
1453				-	-	
1456			+	+		
1459				+		
1460				-	-	
1461				+		
1464			-			
1467					+	
1469			-			

1470						-
1471				+		
1474					-	-
1475					+	
1478					+	
1481					+	
1486			+			
1491				-		
1494						-
1495					+	+
1497			-			