



Restless skies at the turn of the first Millennium AD. Climate fluctuations, astronomic phenomena and socio-political turbulences in 10th and 11th century Byzantium and Japan in comparative perspective¹

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<https://dx.doi.org/10.5209/dmae.92793>

Received: November 30, 2023 / Accepted: December 20, 2023 / Published: April 10, 2024

Abstract: Around the turn of the first Millennium AD, both in Christian polities such as the Byzantine Empire as well as in regions with Buddhist communities such as in Heian Japan, expectations of an end of times emerged. Although based on different religious and independent chronological interpretations, they gained attraction at the same time due to the parallel observation and interpretation of the same astronomical phenomena (such as sightings of Halley's comet in 989 AD) or of simultaneous climate anomalies, which can partly be connected with the Oort Solar Minimum of the 11th century. This paper explores and compares the interplay between natural phenomena, religious and political unrest, apocalyptic interpretations and individual decision-making for Byzantium and Japan on the basis of historical and natural scientific evidence.
Keywords: Byzantine Empire; Heian Japan; Climate History; Eschatology; Historical Astronomy; Global History.

ENG Cielos inquietos a principios del primer milenio d.C. Fluctuaciones climáticas, fenómenos astronómicos y turbulencias sociopolíticas en Bizancio y Japón de los siglos X y XI en una perspectiva comparada

Resumen: Hacia el inicio del primer milenio d.C., tanto en entidades políticas cristianas como el Imperio Bizantino como en regiones con comunidades budistas como el Japón Heian, surgieron expectativas de un fin de los tiempos. Aunque se basan en interpretaciones cronológicas independientes y religiosas diferentes, ganaron al mismo tiempo atractivo debido a la observación e interpretación paralela de los mismos fenómenos astronómicos (como los avistamientos del cometa Halley en el año 989 d.C.) o de anomalías climáticas simultáneas, que pueden en parte debe estar relacionado con el Mínimo Solar de Oort del siglo XI. Este artículo explora y compara la interacción entre los fenómenos naturales, los disturbios religiosos y políticos, las interpretaciones apocalípticas y la toma de decisiones individuales en Bizancio y Japón sobre la base de evidencia científica histórica y natural.
Palabras clave: Imperio Bizantino; Heian Japón; Historia del clima; Escatología; Astronomía Histórica; Historia global

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How to cite: Preiser-Kapeller, J. (2024). Restless skies at the turn of the first Millennium AD. Climate fluctuations, astronomic phenomena and socio-political turbulences in 10th and 11th century Byzantium and Japan in comparative perspective. *De Medio Aevo* 13/1, 9-34. DOI: <https://dx.doi.org/10.5209/dmae.92793>

¹ The paper was finished within the framework of the Cluster of Excellence "EurAsian Transformations", funded by the Austrian Science Funds FWF (project number COE 8, <https://www.fwf.ac.at/forschungsradar/10.55776/COE8>).

1. Introduction

The turn of the first Millennium AD among some Christian communities was related to apocalyptic expectations. These fears and hopes clustered not only in the decades before and after the year 1000 AD (anno Domini, years since the birth of Jesus Christ), but also at later dates throughout the 11th century, such as around 1030 AD (one thousand years after the baptism respectively later crucifixion and resurrection of Jesus Christ) or around 1064/1065 AD (based on calculations on a recurrence of the same Easter date as in the year of the resurrection). Such speculations influenced authors in Western Europe, in the Byzantine Empire (such as Leo the Deacon) or in Armenia (such as Matthew of Edessa).² Furthermore, in the same period, but based on different chronologies, expectations of a turn of times arose among Islamic communities (such as in some circles of the al-Isma'īliya) as well as in parts of the Buddhist world (connected with ideas of a “Degenerate Age of Dharma”, in Japanese *mappō*).³

To illustrate and support their visions of history and current affairs, some authors interpreted celestial signs (such as sightings of Halley's Comet in 989), extreme meteorological phenomena (droughts, floods) and other disasters (such as earthquakes or epidemics among humans and animals) as portents of the imminent apocalypse. In fact, modern historical climatology identified an increase of the frequency of extreme events at the turn of the first Millennium across Afro-Eurasia from Western Europe via the Eastern Mediterranean (Byzantium, the Fatimid Empire), the Middle East and Central Asia to China and Japan, which can be partly related to the “Oort Minimum” of solar activity between 1010 and 1080 CE. Earlier clusters of calamities can be related to climate anomalies in the aftermath of major volcanic eruptions (see below).⁴

These natural phenomena, however, were not the cause for apocalyptic expectations, but selectively integrated and interpreted by the observers and authors of the time in their texts. Based on individual narrative strategies, more or fewer calamities were reported for specific periods or rulers in more or less detail. The present paper, based on a more wide-ranging research project, focuses on Byzantium and Japan for the decades before and after 1000 AD. As it demonstrates, extreme climatic events and other celestial portents were related to the quality of rulership, elites or societies at large within frameworks of what has been called “moral meteorology”, a concept discussed in the detail in the introduction to the present issue.⁵

2. The “Medieval Climate Anomaly” and the palaeoclimatological background to the 10th and 11th centuries

In 1959, Hubert Lamb (1913–1997), a pioneer of historical climatology, introduced the term “Medieval Warm Period” for the time between the 10th and 13th centuries AD, based on his reading of medieval sources and the then limited number of temperature reconstructions for England.⁶ The concept, sometimes also termed “Medieval Climate Optimum”, was adapted for other regions, including Japan, where scholarship defined a “Nara-Heian-Kamakura Warm Period” between the 8th and 13th century AD.⁷

Based on an increasing number of proxy data⁸, however, recent scholarship has demonstrated that the “Medieval Warm Period” was neither continuously warm nor “optimal” neither in Europe nor in

² Richard A. Landes, “Lest the Millennium Be Fulfilled: Apocalyptic Expectations and the Pattern of Western Chronography 100–800 CE”, in *The Use and Abuse of Eschatology in the Middle Ages*, ed. Werner Verbeke, Daniel Verhelst and Andries Welkenhuysen (Leuven: Leuven University Press, 1988), 137–211; Johannes Fried, “Endzeiterwartung um die Jahrtausendwende”, *Deutsches Archiv für Erforschung des Mittelalters* 45 (1989): 381–473; James T. Palmer, *The Apocalypse in the Early Middle Ages* (Cambridge: Cambridge University Press, 2014); Paul Magdalino, “The Year 1000 in Byzantium”, in *Byzantium in the Year 1000*, ed. Paul Magdalino (Leiden and Boston: Brill, 2003), 233–270; Wolfram Brandes, “Byzantine Predictions of the End of the World in 500, 1000, and 1492 AD”, in *The End(s) of Time(s). Apocalypticism, Messianism, and Utopianism through the Ages*, ed. Hans-Christian Lehner (Leiden: Brill, 2021), 32–63.

³ David Cook, “Messianism and Astronomical Events during the First Four Centuries of Islam”, *Revue des mondes musulmans et de la Méditerranée* 91–94 (2000): 29–52, <https://journals.openedition.org/remmm/247#tocto1n6>. For Buddhist expectations, see Veronika Wieser and Vincent Eltschinger, “Introduction: Approaches to Medieval Cultures of Eschatology”, in *Cultures of Eschatology*, ed. Veronika Wieser, Vincent Eltschinger and Johann Heiss (Berlin: de Gruyter, 2020), 1–22, esp. 7–8. <https://doi.org/10.1515/9783110597745-004>.

⁴ See also Johannes Preiser-Kapeller, “The Medieval Climate Anomaly, the Oort Minimum and Socio-Political Dynamics in the Eastern Mediterranean and the Byzantine Empire, 10th to 12th Century” in *A Companion to the Environmental History of Byzantium*, ed. Adam Izdebski and Johannes Preiser-Kapeller (Leiden: Brill, 2024), 405–488.

⁵ For this term, see Mark Elvin, “Who Was Responsible for the Weather? Moral Meteorology in Late Imperial China”, *Osiris* 13, *Beyond Joseph Needham: Science, Technology, and Medicine in East and Southeast Asia* (1998): 213–237.

⁶ Christian Rohr, Chantal Camenisch, and Kathleen Pribyl, “European Middle Ages”, in *The Palgrave Handbook of Climate History*, ed. Sam White, Christian Pfister, and Franz Mauelshagen (London: Palgrave, 2018), 247–263, <http://dx.doi.org/10.1057/978-1-137-43020-5>; Colin P. Summerhayes, *Palaeoclimatology. From Snowball Earth to the Anthropocene* (Chichester: Wiley Blackwell, 2020), 440; Christian Pfister and Heinz Wanner, *Klima und Gesellschaft in Europa. Die letzten tausend Jahre* (Bern: Haupt Verlag, 2021), 22–23.

⁷ Y. Sakaguchi, “Warm and cold stages in the past 7600 years in Japan and their global sea level changes and the ancient Japanese history”, *Bulletin of Department of Geography, University of Tokyo* 15 (1983): 1–31 (in Japanese with English abstract); Kazuyoshi Yamada et al., “Late Holocene monsoonal-climate change inferred from Lakes Ni-no-Megata and San-no-Megata, northeastern Japan”. *Quaternary International* 220 (2010): 122–132, <https://doi.org/10.1016/j.quaint.2009.09.006>; Nadezhda G. Razjigaeva et al., “Landscape response to the Medieval Warm Period in the South Russian Far East”, *Quaternary International* 519 (2019): 215–231, <https://doi.org/10.1016/j.quaint.2018.12.006>. On the interplay between climatic change and agriculture in medieval Japan see also Charlotte von Verschuer, *Rice, Agriculture, and the Food Supply in Premodern Japan* (London and New York: Routledge, 2016), 2–4, 10–11, 34–37, 236–237, 241–242.

⁸ For an overview on these types of data see Edmond A. Mathez and Jason E. Smerdon, *Climate Change. The Science of Global Warming and our Energy Future* (New York: Columbia University Press, 2018), 229–238; Stefan Brönnimann, Christian Pfister, and Sam White, “Archives of Nature and Archives of Societies”, in *The Palgrave Handbook of Climate History*, ed. Sam White, Christian Pfister, and Franz Mauelshagen (London: Palgrave, 2018), 27–36, http://dx.doi.org/10.1057/978-1-137-43020-5_3; Pfister and Wanner, *Klima und Gesellschaft in Europa*, 16–20 and 118–131.

Byzantium or Japan, not to mention other parts of the globe.⁹ Therefore, the term “Medieval Climate Anomaly” (MCA) was introduced. It marks a period of globally higher average temperatures than the preceding “Late Antique Cold Period” and the succeeding “Little Ice Age”, but with strong differences in the regional manifestation of this global climate trend, and interrupted by decades of lower average temperatures, as visible from recent temperature reconstructions for Europe for instance (see Fig. 1).¹⁰

Such more turbulent climatic dynamics are equally confirmed by the reconstruction of spring temperatures on the basis of the registered date of the start of the cherry blossom in Kyōto (under the name Heian-kyō capital of Japan since 794).¹⁰ It indicates a decline of spring temperatures in this region of Japan from 970 onwards, with a nadir around the year 1015 and a return to more stable temperature conditions by 1045, followed by two other cold periods in the first and the second half of the 12th century (see Fig. 2).¹¹

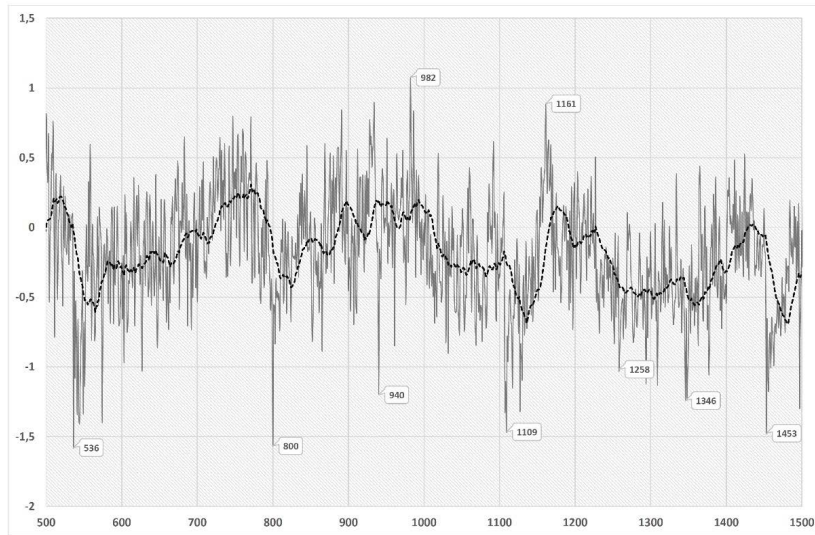


Fig. 1. Average summer temperatures in Western and Central Europe 500–1500 AD, reconstructed on the basis of tree rings (data: Luterbacher et al., “European summer temperatures”; graph: Johannes Preiser-Kapeller, 2023)

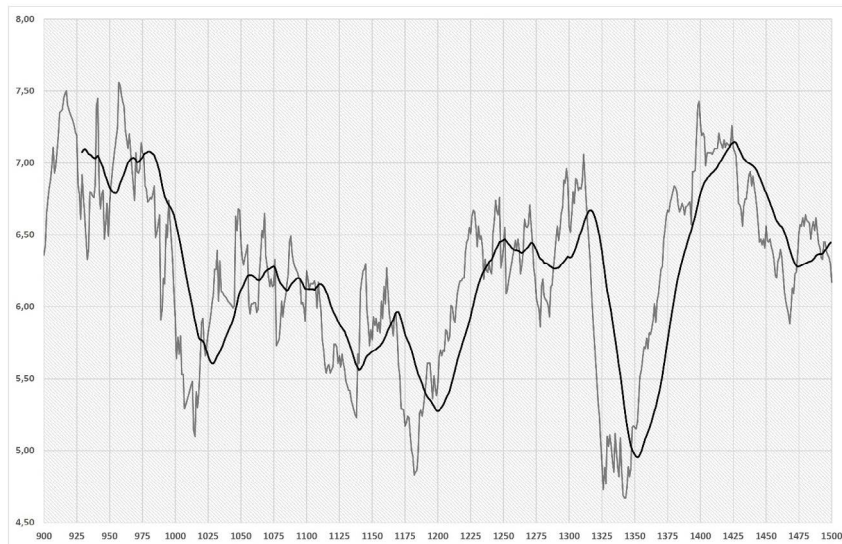


Fig. 2. Reconstructed spring temperatures in Kyōto (Japan) on the basis of the registered start of the cherry blossom, 900–1500 AD (data: Aono/Saito, “Clarifying Springtime Temperature Reconstructions”; dotted line = 30 years average; graph: Johannes Preiser-Kapeller, 2023)

⁹ Elena Xoplaki et al., “The Medieval Climate Anomaly and Byzantium: A review of the evidence on climatic fluctuations, economic performance and societal change”. *Quaternary Science Reviews* 136 (2016): 229-252, <https://doi.org/10.1016/j.quascirev.2015.10.004>; George C. D. Adamson and David J. Nash, “Climate History of Asia (Excluding China)”, in *The Palgrave Handbook of Climate History*, ed. Sam White, Christian Pfister, and Franz Mauelshagen (London: Palgrave, 2018), 203-211, https://doi.org/10.1057/978-1-137-43020-5_18. For a reconstruction of European summer temperatures see for instance Jürg Luterbacher et al., “European summer temperatures since Roman times”. *Environmental Research Letters* 11 (2016): 024001, <https://iopscience.iop.org/article/10.1088/1748-9326/11/2/024001>.

¹⁰ Henry F. Diaz et al., “Spatial and Temporal Characteristics of Climate in Medieval Times Revisited”. *Bulletin of the American Meteorological Society* 92/11 (2011): 1487-1500, <https://doi.org/10.1175/BAMS-D-10-05003.1>; Rohr, Camenisch and Pribyl, “European Middle Ages”; Summerhayes, *Palaeoclimatology*, 442-448.

¹¹ Yasukuyi Aono and Shizuka Saito, “Clarifying Springtime Temperature Reconstructions of the Medieval Period by gap-filling the Cherry Blossom phenological Data Series at Kyoto, Japan”, *International Journal of Biometeorology* 54 (2010): 211-219, <https://doi.org/10.1007/s00484-009-0272-x>.

One factor in the temporal dynamics of the Medieval Climate Anomaly (and of global climate in general) were fluctuations in the sun's activity, which influenced the amount of solar irradiation (as essential form of energy input) that reached planet Earth. The Medieval Climate Anomaly included two solar maxima between ca. 920 and 1010/1020 as well as between ca. 1100 and 1200/1250. Reduced solar activity (and therefore cooler global average temperatures), on the contrast, characterised the "Oort Minimum" (ca. 1010 to 1080), while the "Wolf Minimum" (ca. 1280 to 1345) already marked the transition from the Medieval Climate Anomaly to the "Little Ice Age".¹² In addition, large volcanic eruptions had short-term climatic effects. Eruptive ejections of aerosols caused atmospheric phenomena, which disquieted contemporary observers. Furthermore, these aerosols could contribute to cooler temperatures over several months due to the reduction of solar irradiation, but also created other and regionally diverse climatic effects (decreased as well as increased temperatures, decreases as well as increases of precipitation). Thus, various forms of weather extremes could emerge from the atmospheric perturbations caused by volcanic eruptions. They initiated short term climatic fluctuations also during periods otherwise characterised by higher and more stable temperature conditions as during the above-mentioned solar maxima, such as an eruption described in written sources and also identified due to its chemical signature in ice cores from Greenland for the year 939 (possibly coming from the Eldgjá on Iceland), for 946 (Paektu Mountain in Korea, whose ashes also reached Japan) or a "cluster" of eruptions (maybe in Iceland and Japan) between 1108 and 1110.¹³

The regional effects of solar and volcanic climate forcing depended on their impact on regular climate oscillations between oceans and continents. For weather conditions in western Afro-Eurasia, the Northern Atlantic Oscillation (NAO) plays a decisive role. Its dynamics are measured in an index of the differences in air pressure between the Iceland low and the high over the Azores. A strong difference between these air pressure regions (resulting in a positive NAO-index) usually causes warmer and wetter weather in Western and Central Europe, but drier conditions in the Mediterranean. A low difference on the contrast results in colder and drier weather in Western and Central Europe, but more humid conditions in the Mediterranean. For the more stable periods of the Medieval Climate Anomaly, such as around 950 CE or 1140 CE, a predominantly positive NAO-index was reconstructed, while a weaker NAO has been identified during the Oort Solar Minimum in the mid-11th century.¹⁴

A further oscillation pattern is the El Niño-Southern Oscillation (ENSO), described as interplay between an area usually characterised by low air pressure and warm water temperatures in the western Pacific (around modern-day Indonesia) and an

¹² Ilya G. Usoskin, "A History of Solar Activity over Millennia", *Living Reviews in Solar Physics* 20:2 (2023): <https://doi.org/10.1007/s41116-023-00036-z>; J. L. Lean, "Estimating Solar Irradiance Since 850 CE", *Earth and Space Science* 5 (2018): 133-149, <https://doi.org/10.1002/2017EA000357>; Mathez and Smerdon, *Climate Change*, 180-182; Summerhayes, *Palaeoclimatology*, 455-464; Joel Guiot et al., "Growing Season Temperatures in Europe and Climate Forcings Over the Past 1400 Years". *PLoS ONE* 5(4) (2010): e9972, <https://doi.org/10.1371/journal.pone.0009972>; Irina Polovodova Asteman, Helena L. Filipsson, and Kjell Nordberg, "Tracing winter temperatures over the last two millennia using a north-east Atlantic coastal record", *Climate of the Past* 14 (2018): 1097-1118, <https://cp.copernicus.org/articles/14/1097/2018/cp-14-1097-2018.html>; Shabtai Cohen and Gerald Stanhill, "Changes in the Sun's radiation: the role of widespread surface solar radiation trends in climate change: dimming and brightening", in *Climate Change. Observed Impacts on Planet Earth*, ed. Trevor M. Letcher (Amsterdam: Elsevier, 2021), 687-709, <https://doi.org/10.1016/B978-0-12-821575-3.00032-3>; Lev I. Dorman, "Space weather and cosmic ray effects", in *Climate Change. Observed Impacts on Planet Earth*, ed. Trevor M. Letcher (Amsterdam: Elsevier, 2021), 711-768, <https://doi.org/10.1016/B978-0-12-821575-3.00033-5>; Bruce M. S. Campbell, *The Great Transition. Climate, Disease and Society in the Late-Medieval World* (Cambridge: Cambridge University Press, 2016), 37-38, 50-54; Alexander F. More, "Climate change at the turn of the millennium: new evidence from the consilience of natural and written records" in *L'Eurasie autour de l'an 1000. Cultures, religions et sociétés d'un monde en développement*, ed. Dominique Barthélemy, Frantz Grenet and Cécile Morisson (Leuven, Paris and Bristol: Peeters, 2022), 355-374.

¹³ Xuan-Yu Chen et al., "Clarifying the distal to proximal tephrochronology of the Millennium (B-Tm) eruption, Changbaishan Volcano, northeast China", *Quaternary Geochronology* 33 (2016): 61-75, <https://doi.org/10.1016/j.quageo.2016.02.003>;

Razjigaeva et al., "Landscape response"; Michael Sigl et al., "Timing and Climate Forcing of Volcanic Eruptions for the Past 2,500 Years", *Nature* 523 (2015): 543-549, <https://doi.org/10.1038/nature14565>; Sébastien Guillet et al., "Climatic and societal impacts of a "forgotten" cluster of volcanic eruptions in 1108-1110 CE", *Nature Scientific Reports* 10 (2020): 6715, <https://doi.org/10.1038/s41598-020-63339-3>; Ulf Büntgen et al., "Cooling and societal change during the Late Antique Little Ice Age from 536 to around 660 AD", *Nature Geoscience* 9 (2016): 231-236, <https://doi.org/10.1038/ngeo2652>; Ulf Büntgen et al., "Prominent role of volcanism in Common Era climate variability and human history", *Dendrochronologia* 64 (2020): 125757, <https://doi.org/10.1016/j.dendro.2020.125757>; Mathez and Smerdon, *Climate Change*, 176-180; Summerhayes, *Palaeoclimatology*, 466-468; Georgiy Stenchikov, "The role of volcanic activity in climate and global changes", in *Climate Change. Observed Impacts on Planet Earth*, ed. Trevor M. Letcher (Amsterdam: Elsevier, 2021), 607-643, <https://doi.org/10.1016/B978-0-12-821575-3.00029-3>; Felix Riede, "Doing palaeo-social volcanology: Developing a framework for systematically investigating the impacts of past volcanic eruptions on human societies using archaeological datasets". *Quaternary International* 499 (2019): 266-277, <https://doi.org/10.1016/j.quaint.2018.01.027>; Campbell, *The Great Transition*, 55-58; Thomas Wozniak, *Naturereignisse im frühen Mittelalter. Das Zeugnis der Geschichtsschreibung vom 6. bis 11. Jahrhundert* (Berlin: de Gruyter, 2020), 315-319; Pfister and Wanner, *Klima und Gesellschaft in Europa*, 180-182. On volcanic eruptions and earthquakes in Japan during this periods see Nagayoshi Katsuta et al., "Radiocarbon analysis of tree ring for a catastrophic collapse in the northern Yatsugatake volcanoes: Its implication for seismotectonics in southwest Japan". *Quaternary International* 604 (2021): 68-74, <https://doi.org/10.1016/j.quaint.2021.05.007>.

¹⁴ Hugues Goussé et al., "The medieval climate anomaly in Europe: Comparison of the summer and annual mean signals in two reconstructions and in simulations with data assimilation". *Global and Planetary Change* 84-85 (2012): 35-47, <https://doi.org/10.1016/j.gloplacha.2011.07.002>; Guiot et al., "Growing Season Temperatures"; Polovodova Asteman, Filipsson and Nordberg, "Tracing winter temperatures"; Sebastian Lüning et al., "Hydroclimate in Africa during the Medieval Climate Anomaly". *Palaeogeography, Palaeoclimatology, Palaeoecology* 495 (2018): 309-322, <https://doi.org/10.1016/j.palaeo.2018.01.025>; Mathez and Smerdon, *Climate Change*, 91-97; Summerhayes, *Palaeoclimatology*, 437-438, 464-465; Campbell, *The Great Transition*, 45-48; Pfister and Wanner, *Klima und Gesellschaft in Europa*, 38-40.

area of high air pressure and cooler temperatures off the western coast of South America. These “usual” conditions characterise the “neutral” state of the Southern Oscillation. The “El Niño” state (usually observed around Christmas off the coast of Peru, hence the name) is characterised by cooler than normal conditions in the western Pacific and warmer ones in the eastern Pacific. Its counterpart, “La Niña”, is characterised by warmer than normal water temperatures in the western Pacific warmer and cooler ones in the eastern Pacific. These different states of the Southern Oscillation bring about significant changes in the strength of winds and the distribution of precipitation from the ocean towards the continents.¹⁵ Especially during the Oort Minimum of the 11th century, but also before since the 940s, several El Niño- and La Niña-events have been identified, which influenced the monsoon patterns over East Asia, contributing to longer periods of droughts (also reconstructed for Japan from written records¹⁶), but also to higher frequencies of other weather extremes.¹⁷

3. The “glorious” times of Basil II (976–1025) and Fujiwara no Michinaga (995–1028), their prehistories and coeval apocalyptic expectations

The reign of Emperor Basil II (976–1025), due to his military successes in Anatolia and on the Balkans (see Fig. 3), in scholarship is often seen as apex of medieval Roman power, especially when compared to the later severe crisis of the Byzantine Empire in the 11th century.¹⁸ Also, the times of his predecessors were plagued by calamities. During the late reign of Romanos I Lakapenos (920–944), an epidemic among cattle broke out, which affected the empire for the following years until the reign of his namesake

and grandson Romanos II (959–963).¹⁹ Tim Newfield has collected parallel reports on epizootics among cattle from Western Europe between 940 and 944 and suggests a possible connection of the outbreak and spread of the disease with climate anomalies in the aftermath of volcanic eruptions in 939/940 such as the one of the Eldgjá on Iceland.²⁰

In the early reign of Romanos II in October 960, equally a lack of grain and an increase of prices is reported for Constantinople, which the emperor tried to mitigate with the purchase of grain in “west and east”.²¹ Weather extremes may have contributed to this shortfall; we read about unusual cold and heavy rains during the (ultimately successful) Byzantine expedition against Arab-ruled Crete in 960/961.²² In 963/964, “there was a great famine in Cilicia [which also impeded some of the Byzantine campaigns in the area], and a great many of the people of the Arabs left and fled to Damascus. And there was also a severe famine in Aleppo, and in Harran and in

¹⁵ Mathez and Smerdon, *Climate Change*, 71–73; Richard Grove and George Adamson, *El Niño in World History* (London: Palgrave, 2018).

¹⁶ William Wayne Farris, *Japan’s Medieval Population. Famine, Fertility and Warfare in a Transformative Age* (Honolulu: University of Hawaii Press, 2006), 38–40; William Wayne Farris, “Famine, Climate, and Farming in Japan, 670–1100”, in *Heian Japan, centers and peripheries*, ed. Mikael Adolphson, Edward Kamens, and Stacie Matsumoto (Honolulu: University of Hawaii Press, 2007), 275–304, esp. 278–280, 284; William Wayne Farris, *Daily Life and Demographics in Ancient Japan* (Ann Arbor: University of Michigan Press, 2009), 65–67.

¹⁷ Wataru Sakashita et al., “Relationship between early summer precipitation in Japan and the El Niño–Southern and Pacific Decadal Oscillations over the past 400 years”, *Quaternary International* 397 (2016): 300–306, <https://doi.org/10.1016/j.quaint.2015.05.054>; Jingwei Zhang et al., “Modulation of centennial-scale hydroclimate variations in the middle Yangtze River Valley by the East Asian-Pacific pattern and ENSO over the past two millennia”, *Earth and Planetary Science Letters* 576 (2021): 117220, <https://doi.org/10.1016/j.epsl.2021.117220>; Zhenqiu Zhang et al., “Evidence of ENSO signals in a stalagmite-based Asian monsoon record during the medieval warm period”, *Palaeogeography, Palaeoclimatology, Palaeoecology* 584 (2021): 110714, <https://doi.org/10.1016/j.palaeo.2021.110714>; Chenxi Xu et al., “Tree-ring oxygen isotope across monsoon Asia: Common signal and local influence”, *Quaternary Science Reviews* 269 (2021): 107156, <https://doi.org/10.1016/j.quascirev.2021.107156>; Yamada et al., “Late Holocene monsoonal-climate change”.

¹⁸ Catherine Holmes, *Basil II and the Governance of Empire (976–1025)* (Oxford: Oxford University Press, 2005); Anthony Kaldellis, *Streams of Gold, Rivers of Blood. The Rise and Fall of Byzantium, 955 A.D. to the First Crusade* (Oxford: Oxford University Press, 2017), xxviii.

¹⁹ John Scylitzes, *Synopsis*, Romanos II, 8, ed. Johannes Thurn, *Ioannis Scylitzae Synopsis historiarum*, Corpus Fontium Historiae Byzantinae 5 (Berlin: de Gruyter, 1973), 251–252; John Scylitzes, *Synopsis*, trans. John Wortley, John Scylitzes, *A Synopsis of Byzantine History 811–1057* (Cambridge: Cambridge University Press, 2010), 242–243; Andreas Schminck, “Zur Einzelgesetzgebung der „makedonischen“ Kaiser”, *Fontes Minores* 11 (2005): 269–323, esp. 281, note 73 (arguing of a dating of the lack of grain to October 961), <https://doi.org/10.26015/adwdocs-184>. For further evidence see also Ralph Johannes Lilie et al., *Prosopographie der mittelbyzantinischen Zeit Online*, Berlin 1998–2013, online: <https://doi.org/10.1515/pmbz, nr 26834>, note 17.

²⁰ Timothy P. Newfield, “Early Medieval Epizootics and Landscapes of Disease: The Origins and Triggers of European Livestock Pestilences”, in *Landscapes and Societies in Medieval Europe East of the Elbe. Interactions Between Environmental Settings and Cultural Transformations*, ed. Sunhild Kleingärtner, Timothy P. Newfield, Sébastien Rosignol, Donat Wehner (Toronto: PIMS, 2013), 73–113; Timothy P. Newfield, “Domesticates, disease and climate in early post-classical Europe: the cattle plague of c.940 and its environmental context”, *Post-Classical Archaeologies* 5 (2015): 95–126, http://www.postclassical.it/PCA_Vol.5_files/Newfield_PCA5_print.pdf. See also Sigl, “Timing and Climate Forcing”; Wozniak, *Naturereignisse im frühen Mittelalter*, 680–681. For references to climate extremes in the 940s in Egypt and Mesopotamia see also Ioannis G. Telelis, *Μετεωρολογικά φαινόμενα και κλίμα στο Βυζάντιο*, 2 vols. (Athens: Academy of Athens, 2004), nr 376 and 377.

²¹ Theophanes Continuatus VI, 13, ed. Immanuel Bekker, *Theophanes continuatus, Joannes Cameniata, Symeon Magister, Georgius Monachus* (Bonn: Eduard Weber, 1838), 479, 1–11. Telelis, *Μετεωρολογικά φαινόμενα*, nr 394; John L. Teall, “The Grain Supply of the Byzantine Empire, 330–1025”, *Dumbarton Oaks Papers* 13 (1959): 87–139, <https://www.jstor.org/stable/1291130>; Kaldellis, *Streams of Gold*, 32. For references to extreme events and famines in neighbouring regions of Byzantium such as Armenia and Mesopotamia during the 950s see Matthew of Edessa, *History I*, 1, trans. Ara Edmond Dostourian, *Armenia and the Crusades, Tenth to Twelfth Centuries. The Chronicle of Matthew of Edessa* (Lanham: University Press of America, 1993), 19; al-Maqrīzī, *Ighāthah*, trans. Adel Allouche, *Mamluk Economics: A Study and Translation of al-Maqrīzī’s Ighāthah* (Salt Lake City: University of Utah Press, 1994), 29; Bar Hebraeus, *Chronography*, trans. Ernest A. Wallis Budge, *The Chronography of Gregory Abū’l Faraj, the Son of Aaron, the Hebrew Physician, Commonly Known as Bar Hebraeus: Being the First Part of his Political History of the World*, 2 vols. (London: Oxford University Press, 1932), 165 and 167; Telelis, *Μετεωρολογικά φαινόμενα*, nr 388 and 391–393.

²² Telelis, *Μετεωρολογικά φαινόμενα*, nr 395; Kaldellis, *Streams of Gold*, 34–38.

Edessa”.²³ Around the same time, in 963 and 964, parts of Italy were affected by famine, while severe floods affected the provinces along the Yellow River in China between 964 and 968, thus illustrating the wide geographical dimension of the climate anomalies in these years.²⁴

Byzantium was perturbed by further portents and catastrophes during the reign of Emperor Nikephoros II Phokas (963–969), at least according to the apocalyptically inspired history of Leo the Deacon (ca. 950–995), who mentions an earthquake in northwestern Asia Minor in 967 and a severe storm and flooding

in Constantinople and its environs on 21 June of the same year, so that “people wailed and lamented piteously, fearing that a flood like that fabled one of old [the deluge as described in the book of Genesis] was again befalling them.”²⁵ Furthermore, on 22 December 968 “an eclipse of the sun took place”, so that once more “people were terrified at the novel and unaccustomed sight, and propitiated the divinity with supplications, as was fitting” (see Fig. 3). As Leo does not forget to mention, he was an eyewitness, since “at that time I myself was living in Byzantium [= Constantinople], pursuing my general education.”²⁶

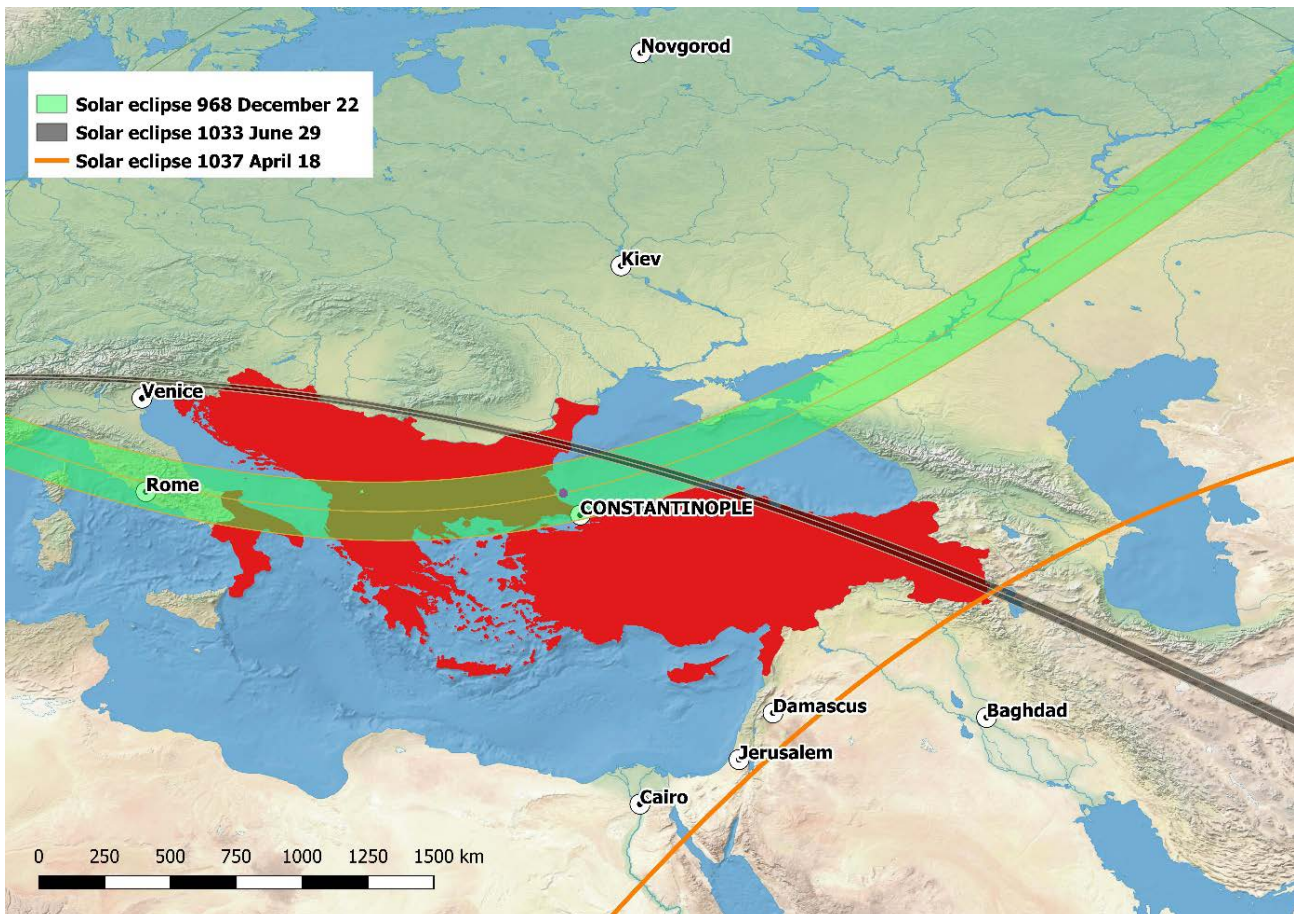


Fig. 3. The Byzantine Empire at the death of Emperor Basil II in 1025 AD and trajectories of selected solar eclipses mentioned in the paper (map created by Johannes Preiser-Kapeller, 2023)

²³ Bar Hebraeus, *Chronography*, trans. Budge, 170. Telelis, *Μετεωρολογικά φαινόμενα*, nr 398; Fekri A. Hassan, “Extreme Nile floods and famines in Medieval Egypt (AD 930-1500) and their climatic implications”, *Quaternary International* 173-174 (2007): 101-112, <https://doi.org/10.1016/j.quaint.2007.06.001>.

²⁴ Wozniak, *Naturereignisse im frühen Mittelalter*, 615 (with citation of sources); Kaldellis, *Streams of Gold*, 46-47; Ling Zhang, *The River, the Plain, and the State: An Environmental Drama in Northern Song China, 1048-1128* (Cambridge: Cambridge University Press, 2016), 110-112; Ruth Mostern, *The Yellow River. A Natural and Unnatural History* (New Haven and London: Yale University Press, 2021), 123-125.

²⁵ Leo the Deacon, *History IV*, 9, ed. Carl Benedict Hase, *Leonis diaconi Caloënsis Historiae libri X* (Bonn: Eduard Weber, 1828), 69-70; Alice-Mary Talbot and Denis F. Sullivan, *The History of Leo the Deacon. Byzantine Military Expansion in the Tenth Century* (Washington, D.C.: Dumbarton Oaks Research Library and Collection, 2005), 117-119. Telelis, *Μετεωρολογικά φαινόμενα*, nr 402; Wozniak, *Naturereignisse im frühen Mittelalter*, 287-288 (on the earthquakes). The ashes could have been the result of an eruption of Vesuvius in 968, see Wozniak, *Naturereignisse im frühen Mittelalter*, 329-330.

²⁶ Leo the Deacon, *History IV*, 11, ed. Hase, 72; trans. Talbot and Sullivan, 122-123. Telelis, *Μετεωρολογικά φαινόμενα*, nr 402; Wozniak, *Naturereignisse im frühen Mittelalter*, 196, 216-217. On the role of solar eclipses in medieval Greek apocalyptic texts see András Kraft, “Natural Disasters in Medieval Greek Apocalypses”. *Scrinium* 17 (2021): 158-171, esp. 161-162, <https://doi.org/10.1163/18177565-bja10042>.

Another eyewitness was Liudprand of Cremona, who visited Constantinople as delegate for the Western Emperor Otto I in 968. He also reported that various texts, “called *horaseis* or visions of Daniel” circulated in the Byzantine capital, which predicted, “from what year to what year an emperor lives, what the future times of his reign will be, whether there will be peace or the opposite (i.e. war) with regard to the Saracens. And so one can read that in the times of this Nikephoros [II Phokas] the Assyrians [the Arabs] cannot resist the Greeks [the Byzantines], and that the latter (scil. Nikephoros II) only lives for seven years.”²⁷ The distribution of such prophecies on the fate of the ruler ran contrary to earlier Roman legislation dating back to the 4th century CE and had been punished severely by Emperor Theophilos in the 830s, for instance. Nevertheless, the production and reception of forecasts on the destiny of individual emperors and/or the empire at large remained popular throughout Byzantine history.²⁸ Equally, texts which have been preserved such as the Apocalypse attributed to the “Holy Fool” (*Salos*) Andrew (who died in ca. 936/940), which predicted the destruction of the City of Constantinople by the hand of God, or several passages in “The Life of St. Basil the Younger” show that the second half of the 10th century was a time of intensified eschatological speculation in Byzantium, with the year 6500 since the creation of the world (usually dated to 5508 BC, so 6500 = 992 AD) and the year 1000 since the birth of Jesus Christ (1000 AD) coming near.²⁹

Such notions even found satirical treatment in the anonymous dialogue *Philopatris* (“The Patriot”), falsely attributed to the 2nd century Greek author Lucian, but written in late 960s. The text’s main character, Kritias, jeers: “Life is full of prodigies, if you care to believe the poets”. And he makes fun of those who predict doom for the capital and the empire based on observations of the sky and astrological calculations:

“But how are things in the sky? Will there be an eclipse of the sun? Will the moon rise on a vertical course? (...) Will they [the celestial

phenomena] send torrential rain? Will they bestrew the earth with drifts of snow? Will they bring down hail and blight? Will they send upon us pestilence, famine, and drought?” (...) [But] you have not mastered the mathematics you have studied so hard. If you have been led astray by prophecies and false pretences, then you are guilty of double folly. For these things are inventions of old women and are infantile.”³⁰

On the contrast, Kritias concludes, the recent victories of Nikephoros II over the Arabs promise a bright future for the Empire of the Romans. The *Philopatris* thus provides a most interesting alternative voice to the apocalyptic readings of the time.³¹

However, a shortage of grain of three or even five years duration reportedly troubled the population during the reign of Nikephoros II Phokas.³² The causes for this calamity are not mentioned, but in the *History* of John Scylitzes (from the late 11th century) we are informed that in May 968 “there were fierce, burning winds (...), which destroyed the crops, even the vines and trees, with the result that in the twelfth year of the indiction there was an intense famine.”³³ A change towards more arid conditions in the late 960s, which continued until the early 11th century, is also indicated in the isotope data from the speleothems in the Sofular cave in Northwestern Asia Minor (see Fig. 4).³⁴ Later historiography accuses Nikephoros II Phokas of insufficient measures against the famine. The resulting low popularity of the emperor according to some modern scholars may also “partly explain the somewhat feeble public reaction to the murder of Nikephoros” by his relative John I Tzimiskes in December 969.³⁵ The new emperor “put an end to the relentless evil of famine by the importation of grain, which he collected quickly [and] with forethought from markets everywhere, stopping the spread of such a calamity”³⁶ – and thereby gaining popularity. John I ruled until his death in 976, when it was finally Basil’s II turn to rule in his own name.

²⁷ Liudprandi Relatio de legatione cap. 39, ed. P. Chiesa, *Liudprandi Cremonensis opera omnia*, Corpus Christianorum, Continuatio Mediaevalis 156 (Turnhout: Brepols, 1998), 204, 617-619. Wolfram Brandes, “Liudprand von Cremona (Legatio cap. 39-41) und eine bisher unbeachtete west-östliche Korrespondenz über die Bedeutung des Jahres 1000 A. D.” *Byzantinische Zeitschrift* 93/2 (2000): 435-463.

²⁸ Brandes, “Liudprand von Cremona”, 444-445; Wolfram Brandes, “Kaiserprophetien und Hochverrat. Apokalyptische Schriften und Kaiservaticinien als Medium antikaiserlicher Propaganda” in *Endzeiten. Eschatologie in den monotheistischen Weltreligionen*, ed. Wolfram Brandes and Felicitas Schmieder (Berlin and New York: de Gruyter, 2008), 157-200, <https://doi.org/10.1515/9783110209709.157>.

²⁹ The Andreas Salos Apocalypse. Greek Text, Translation, and Commentary by Lennart Rydén. *Dumbarton Oaks Papers* 28 (1974): 197-261; *The Life of St. Basil the Younger. Critical Edition and Annotated Translation of the Moscow Version* by Denis F. Sullivan, Alice-Mary Talbot, and Stamatina McGrath (Washington, D. C.: Dumbarton Oaks Research Library and Collection, 2014). For a detailed discussion of these expectations see Magdalino, “The Year 1000 in Byzantium”, 244-253; Brandes, “Byzantine Predictions of the End of the World”, 43-47.

³⁰ *Philopatris*: Lucian vol. VIII, ed. with an English translation by M. D. Macleod (Cambridge, Mass., and London: Harvard University Press, 1967), 422-423 and 456-459.

³¹ Magdalino, “The Year 1000 in Byzantium”, 244.

³² John Scylitzes, *Synopsis*, John I, 3, ed. Thurn, 286, 48-56; trans. Wortley, 273-274; Leo the Deacon, *History* VI, 8, ed. Hase, 103; trans. Talbot and Sullivan, 152-153. Telelis, *Μετewρολογικά φαινόμενα*, nr 406.

³³ John Scylitzes, *Synopsis*, Nikephoros II, 20, ed. Thurn, 277, 37-43; trans. Wortley, 266.

³⁴ Dominik Fleitmann et al., “Sofular Cave, Turkey 50KYr Stalagmite Stable Isotope Data”. *IGBP PAGES/World Data Center for Paleoclimatology Data Contribution Series # 2009-132*, <https://www.ncei.noaa.gov/access/paleo-search/study/8637>.

³⁵ John Scylitzes, *Synopsis*, trans. Wortley, 267, n. 78. On the declining popularity of Nikephoros II Phokas and its causes see also Kaldellis, *Streams of Gold*, 51-54 and 63-64.

³⁶ John Scylitzes, *Synopsis*, John I, 3, ed. Thurn, 286, 48-56; trans. Wortley, 273-274; Leo the Deacon, *History* VI, 8, ed. Hase, 103; trans. Talbot and Sullivan, 152-153. Telelis, *Μετewρολογικά φαινόμενα*, nr 406.

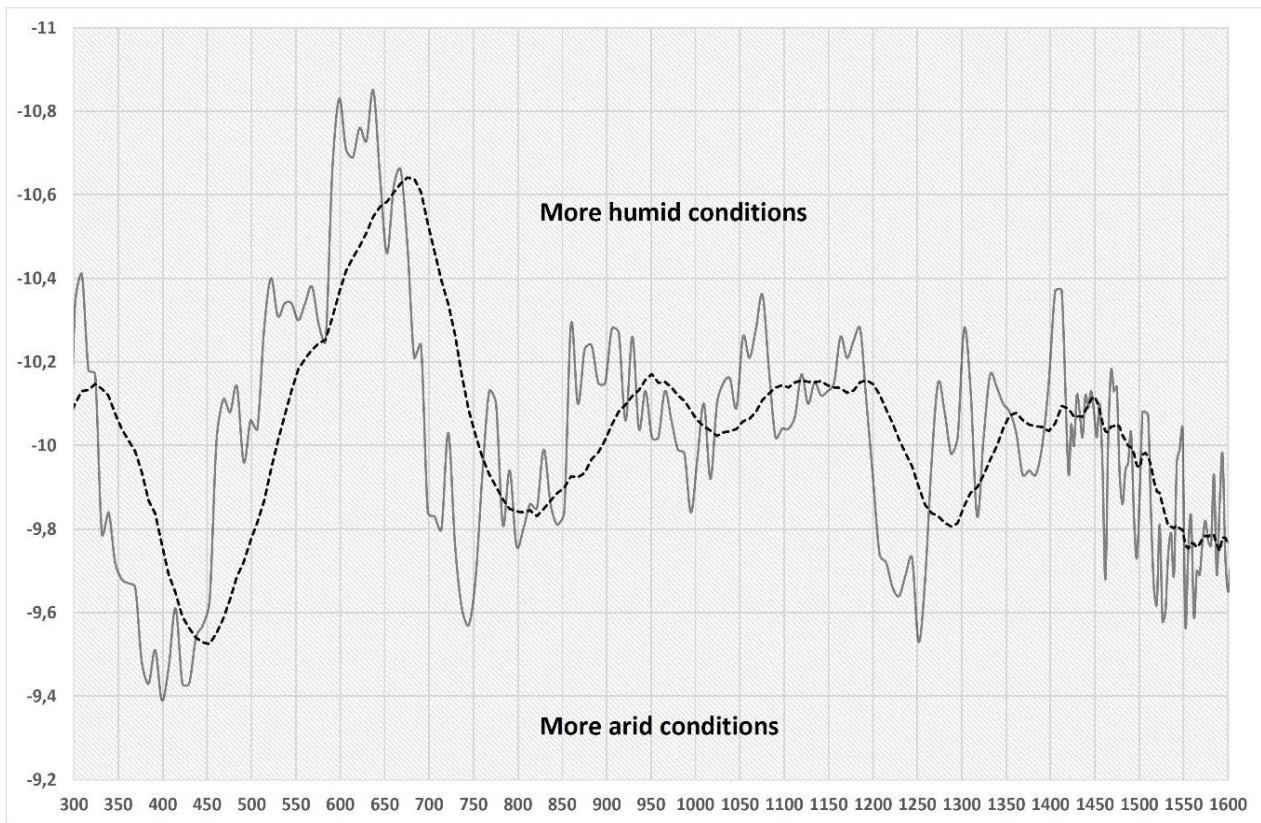


Fig. 4. Sofular Cave (northwestern Turkey) speleothem carbon isotopes record, 300–1600 AD; dotted line = moving average (data: Fleitmann et al., “Sofular Cave”; graph: Johannes Preiser-Kapeller, 2023)

Basil’s early reign between 976 and 989 was overshadowed by attempted military coups of two relatives of his predecessors Nikephoros II Phokas and John I Tzimiskes, Bardas Phokas and Bardas Skleros.³⁷ The succession of two bloody civil wars contributed to the “apocalyptic” mood of the contemporary history of Leo the Deacon, who wrote that

many extraordinary and unusual events have occurred in novel fashion in the course of my lifetime: fearsome sights have appeared in the sky, unbelievable earthquakes have occurred, thunderbolts have struck and torrential rains have poured down, wars have broken out and armies have overrun many parts of the inhabited world, cities and whole regions have moved elsewhere, so that many people believe that life is now undergoing a transformation, and that the expected Second Coming (*deutera katabasis*) of the Saviour and God [Jesus Christ] is near, at the very gates.³⁸

For Basil II, a sequence of portents starts in Leo’s text with a comet in August to October 975 (so already during the reign of John I Tzimiskes), which

“scholars of astronomy” misinterpreted as sign of future victories, while according to Leo it foretold “bitter revolts, and invasions of foreign peoples, and civil wars, and migrations from cities and the countryside, famines and plagues and terrible earthquakes, indeed almost the total destruction of the Roman empire (...).”³⁹ Another “sinking” star in August 986 foreboded a defeat of Basil II’s army against the Bulgarians.⁴⁰ The sighting of Halley’s Comet between August and September 989, which was equally visible in other parts of Europe and across Asia (including Japan, see below)⁴¹, was followed by further military defeats and especially a devastating earthquake in Constantinople on 25 October 989, which even damaged the church of Hagia Sophia. Furthermore, so Leo, “harsh famines and plagues, droughts and floods and gales of violent winds (...), and the barrenness of the earth and calamities that occurred, all came to pass after the appearance of the star. But my history will describe these in detail in their place.”⁴² The reference to drought would find

³⁷ Kaldellis, *Streams of Gold*, 81-102.

³⁸ Leo the Deacon, *History I*, 1, ed. Hase, 4; trans. Talbot/Sullivan, 55-56; Magdalino, “The Year 1000 in Byzantium”, 242; Wolfram Brandes, “Endzeiterwartung im Jahre 1009 a.D.?” in *Konflikt und Bewältigung. Die Zerstörung der Grabeskirche zu Jerusalem im Jahre 1009*, ed. Thomas Pratsch (Berlin: de Gruyter, 2011), 301-320, esp. 312, <https://doi.org/10.1515/9783110253528.301>; Brandes, “Byzantine Predictions of the End of the World”, pp. 47-48.

³⁹ Leo the Deacon, *History X*, 6, ed. Hase, 169; trans. Talbot and Sullivan, 210-212; Magdalino, “The Year 1000 in Byzantium”, 260-261; Brandes “Endzeiterwartung im Jahre 1009”, 313; Wozniak, *Naturereignisse im frühen Mittelalter*, 723-725.

⁴⁰ Leo the Deacon, *History X*, 8, ed. Hase, 172; trans. Talbot and Sullivan, 214; Kaldellis, *Streams of Gold*, 95-96. On this and other observations of this comet see Wozniak, *Naturereignisse im frühen Mittelalter*, 141-142.

⁴¹ Wozniak, *Naturereignisse im frühen Mittelalter*, 106-107.

⁴² Leo the Deacon, *History X*, 10, ed. Hase, 175-176; trans. Talbot and Sullivan, 217-218. Kaldellis, *Streams of Gold*, 104. On the significance of earthquakes in medieval Greek apocalyptic texts see Kraft, “Natural Disasters in Medieval Greek Apoca-

a counterpart in the isotope record from the Sofular cave in Northwestern Asia Minor, which indicates the 990s as the driest decade in the entire 10th century (see Fig. 4).⁴³ Tree ring data from modern-day Albania points to very cold conditions in that region in the early 990s.⁴⁴ Leo's history ends, however, shortly after this passage, and the author most probably died at some point before the year 1000. Thus, he did not witness the later military successes of Basil's II reign, especially his destruction of the Bulgarian Empire in 1018, which earned him the praise of later historians, who also wrote under the impression of the severe crisis of the empire emerging under Basil's successors in the 11th century.⁴⁵ Therefore, we have few information in Byzantine historiography on the further sequence of "harsh famines and plagues, droughts and floods and gales of violent winds" Leo mentioned as underpinnings of his apocalyptic reading of Basil II's reign. We find, however, references in other sources from neighbouring historiographical traditions (such as of the Armenians, see below).

At the same time, we receive an independent interpretation of some of these celestial phenomena and calamities in the poems of John Geometres (ca. 935/940–1000), a military officer and poet active during the reigns of Nikephoros II, John I and Basil II. In one poem, he connects the appearance of a comet (either the one in 975 or Halley's Comet in 989), in Greek *komētēs*, with the rebellion of the Bulgar ruler Samuil, who was the son of a *komēs* (a military officer) and against whom Basil II suffered several defeats in the Balkans: "A Comet set fire to the sky, while below a *komēs* was lighting the west. A symbol is that star of the present darkness, he faded with the radiance of the morning star, and he appeared with the sunset of Nikephoros [that is, the murder of Nikephoros II in 969]."⁴⁶ In another poem, Geometres describes the state of the Byzantine affairs due to victories of Samuil and the rebellions against Basil II in even darker colours: "Once powerful cities – are now but fine dust. Looking at the horse stables where people's settlements used to be, alas, how could I restrain the tears.

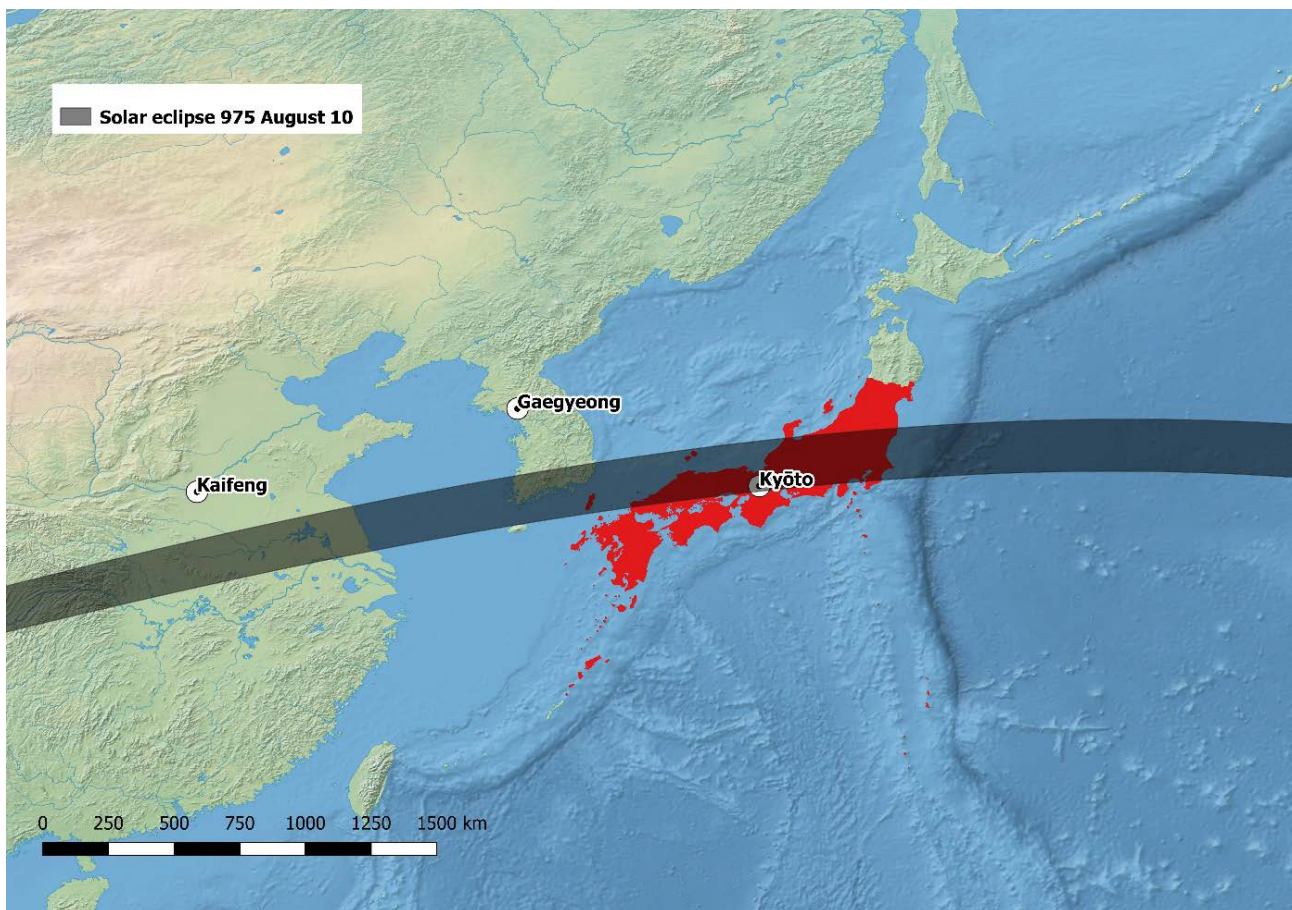


Fig. 5. The Japanese Empire around 1000 AD, capitals of neighbouring empires and the trajectory of the solar eclipse of 10 August 975 (map created by Johannes Preiser-Kapeller, 2023)

lypsen", 165-166; Gilbert Dagron, "Quand la terre tremble...", in *Idées byzantines*, vol. 1, ed. Gilbert Dagron (Paris: ACHCByz, 2012), 3-22. The earthquake damaging Hagia Sophia was also the starting point for an anonymous horoscope of the time, which predicted the destruction of Constantinople for the year 1026 AD, see Brandes, "Liudprand von Cremona", 462.

⁴³ Fleitmann et al., "Sofular Cave".

⁴⁴ PAGES 2k Network consortium, Database S1 - 11 April 2013 version: <http://www.pages-igbp.org/workinggroups/2k-network>.

⁴⁵ Leonora Neville, *Guide to Byzantine Historical Writing* (Cambridge: Cambridge University Press, 2018), 124-125; Kaldellis, *Streams of Gold*, 104-105.

⁴⁶ John Geometres: *Anecdota Graeca, e Codd. Manuscriptis Bibliothecae Regiae Parisiensis*, ed. J. A. Cramer, vol. 4 (Oxford: Oxford University Press, 1841), 283; translation from Mitko B. Panov, *The Blinded State. Historiographic Debates about Samuel Cometopoulos and His State (10th-11th Century)* (Leiden: Brill, 2019), 28 (see also 56-58 on the context and dating of the poem). See also Jean Géomètre. *Poèmes en hexamètres et en distiques élégiaques*, ed. Emilie Marlène van Opstall (Leiden and Boston: Brill, 2008), 314.

That is how countries and settlements fall into fire, and you city – empress, the centre of Byzantium, tell me what doom befell you.”⁴⁷ Similar to Leo the Deacon, Geometres connects these calamities with certain portents: “It [was announced by] earthquakes, and the Macedonian land showed the glow of newly risen star.”⁴⁸ In contrast to Leo, however, John Geometres never links these omens to expectations of an imminent end of the times; he refers to them in order to support his criticism of Emperor Basil II and his advi-

ser, whom he identifies a main culprits for the sad state of Byzantine affairs. Geometres had been relieved from active service in the army by Basil II in 985 and held a grudge against the emperor until his own death in ca. 1000 (thus, like Leo the Deacon, Geometres did not witness the later military triumphs of Basil II).⁴⁹ His poems provide an important alternative voice for the interpretation of the celestial phenomena and extreme events of the 970s to 990s in Byzantium.⁵⁰



Fig. 6. Drawing of Fujiwara no Michinaga (966–1028) by Kikuchi Yōsai (1788–1878); https://commons.wikimedia.org/wiki/File:Fujiwara_Michinaga.jpg

⁴⁷ John Geometres, *Poems*, ed. Cramer, 271-273; translation from Panov, *The Blinded State*, 42.

⁴⁸ John Geometres, *Poems*, ed. Cramer, 282; translation from Panov, *The Blinded State*, 44.

⁴⁹ Marc C. Lauxtermann, “John Geometres – Poet and Soldier”, *Byzantion* 68/2 (1998): 356-380; Marc C. Lauxtermann, “Byzantine Poetry and the Paradox of Basil II’s Reign”, in *Byzantium in the Year 1000*, ed. Paul Magdalino (Leiden and Boston: Brill, 2003), 199-216; Emilie van Opstall and Maria Tomadaki, “John Geometres: a Poet around the Year 1000” in *A Companion to Byzantine Poetry*, ed. Wolfram Hörandner, Andreas Rhoby, and Nikolaos Zagklas (Leiden: Brill, 2019), 191-211, https://doi.org/10.1163/9789004392885_010; Holmes, *Basil II*, 60-61, 250-251; Panov, *The Blinded State*, 40-46.

⁵⁰ Magdalino, “The Year 1000 in Byzantium”, 242, claims that “the same mood [as by Leo the Deacon] of apocalyptic angst is conveyed by John Geometres”. However, although Geometres relates to the same portents and describes the state of the Byzantium in a similar manner, he never explicitly refers to apocalyptic expectations in the same way as Leo the Deacon does. See also in general Armin Bergmeier, “Natural Disasters and Time: Non-eschatological Perceptions of Earthquakes in Late Antique and Medieval Historiography”. *Millennium. Jahrbuch zu Kultur und Geschichte des ersten Jahrtausends n. Chr. / Yearbook on the Culture and History of the First Millennium C.E.* 18 (2021): 155-174, <https://doi.org/10.1515/mill-2021-0005>.

The most powerful contemporary of Basil II in Japan (see Fig. 5) was Fujiwara no Michinaga (966–1028, see Fig. 6), who since 995 like his ancestors since the mid-9th century de facto ran the affairs of the state, while three emperors, bound to his clan through ties of kinship, took turns on the throne. Michinaga's regency is considered the peak of power of the Fujiwara family by scholarship, like in the case of Basil II especially when compared with the later decline of its influence over the course of the 11th century.⁵¹

Similar to 10th century Byzantium, however, contemporaneous voices uttered concerns on the conditions of state and society. Already in 914, the learned court official Miyoshi Kiyoyuki wrote a memorandum on the problems of his times for the emperor. In its first article "How floods and lack of rain can be averted and a good harvest achieved", he stated:

Therefore, the right means of satisfying the people and the secret of ensuring food supply lie only in the fact that the fruit of the year is ripe without catastrophes of floods and droughts. For this reason, the imperial court celebrates the *Toshigo* and *Tsukunami* festivals every year on the fourth day of the second month, on the 11th day of the sixth month and on the 11th day of the 12th month with the support of the divine office. A purification and fasting ceremony is solemnly conducted, the heavenly and earth gods are worshiped in all four directions, the grain is asked to ripen luxuriantly and one makes offerings in return.⁵²

The effectiveness of these rituals was questionable now, however, since

the emissaries of the shrines should actually fast solemnly, keep the gifts reverently and bring them to their shrine. Instead, in front of the highest officials, they put the sacrificial silk in their own pockets, throw away the shaft of the spear and take its point with them, tilt their wine jugs and drink it in one gulp. It is unlikely that the offerings will ever be brought out of the gate of the divine office intact. Not to mention

the gods' horses, which are immediately sold to the traders who come to the Ikuhō gate. How, then, should the gods who were celebrated enjoy the offerings? However, if they are not happy, how can one expect a bountiful harvest? (...) During Your Majesty's reign, the Ninoe festival is still celebrated every year, and if you ask for a fruitful year for the whole people and drive away epidemic and disease, the people and the gods will rejoice, and the whole people will enjoy themselves. But why do floods and droughts not stop yet, and why do disasters often occur? For no other reason, because the priests who preside over these festivals are usually not the right men.⁵³

Thus, only a moral renewal at the court and the shrines would create a remedy for the calamities plaguing the country.

Over the course of the 10th century, the discomfort with the state of the world increased, also identifying symptoms of end time. In 985, the monk Genshin (942–1017) of the Buddhist Tendai school completed his *Ōjōyōshū* ("Collection of Essential [Passages concerning] Birth [into the Pure Land of Amida Buddha]"). In this text he argued that the world as about to enter a "defiled Latter Age", in which the moral and spiritual capacities of the people declined; this would also become manifest in political and social unrest. His interpretation overlapped with the traditional Buddhist identification of three successive ages of Dharma – the periods of the True, Semblance, and Latter Dharma – of which the last one (in Japanese, *mappō*) would be characterised by a decline of Buddhist teaching and religious practices, impeding the escape from the arduous cycle of reincarnations. A possible way out of this dilemma was proposed by Genshin in the devotion to a saviour buddha called Amida, who resides in a paradise-like "Pure Land" (called the "Land of Supreme Bliss" or *Gokuraku* in Japanese) in the far West. By engaging in various practices, especially the *nenbutsu* ("buddha mindfulness"), and thereby focusing the mind on this buddha, one could be re-born after death in the "Pure Land", which – in contrast to the Japan of the time of Genshin – provided ideal preconditions for spiritual fulfilment and even the achievement of the status of Buddhahood.⁵⁴

⁵¹ Donald H. Shively and William H. McCullough, "Introduction", in *The Cambridge History of Japan, Vol. 2: Heian Japan*, ed. Donald H. Shively, and William H. McCullough (Cambridge: Cambridge University Press, 1999), 1-2, 4-6; William H. McCullough, "The Heian court, 794-1070", in *The Cambridge History of Japan, Vol. 2: Heian Japan*, ed. Donald H. Shively, and William H. McCullough (Cambridge: Cambridge University Press, 1999), 45-50; G. Cameron Hurst III, "Insei", in *The Cambridge History of Japan, Vol. 2: Heian Japan*, ed. Donald H. Shively, and William H. McCullough (Cambridge: Cambridge University Press, 1999), 581-586; Sarah Horton, "The influence of the Ōjōyōshū in Late Tenth- and Early Eleventh Century Japan". *Japanese Journal of Religious Studies* 31/1 (2004): 29-54, esp. 42, <https://www.jstor.org/stable/30233736>; Heather Blair, *Real and Imagined. The Peak of Gold in Heian Japan* (Cambridge, Mass., and London: Harvard University Asia Center, 2015), 110-113 (also on the religious aspect of this regency); G. Cameron Hurst III, "*Kugyō* and *Zuryō*. Center and Periphery in the Era of Fujiwara no Michinaga", in *Heian Japan, Centers and Peripheries*, ed. Mikael S. Adolphson, Edward Kamens and Stacie Matsumoto (Honolulu: University of Hawaii Press, 2007), 66-101, <https://doi.org/10.1515/9780824862817-007>.

⁵² Miyoshi Kiyoyuki, *sein Leben und seine Zeit*, ed. Inge-Lore Kluge (Berlin: Akademie-Verlag, 1958), 46-47.

⁵³ Miyoshi Kiyoyuki, ed. Kluge, 47-48.

⁵⁴ Gukanshō, transl. Delmer M. Brown and Ishirō Ishida, *The Future and the Past. Translation and Study of the Gukanshō, an interpretative History of Japan written in 1219* (Berkeley, Los Angeles and London: University of California Press, 1979), 423-425; Stanley Weinstein, "Aristocratic Buddhism", in *The Cambridge History of Japan, Vol. 2: Heian Japan*, ed. Donald H. Shively, and William H. McCullough (Cambridge: Cambridge University Press, 1999), 449-516, esp. 510-513; Allan G. Grapard, "Religious practices", in *The Cambridge History of Japan, Vol. 2: Heian Japan*, ed. Donald H. Shively, and William H. McCullough (Cambridge: Cambridge University Press, 1999), 517-575, esp. 572-573; Horton, "The influence of the Ōjōyōshū"; Robert F. Rhodes, "Ōjōyōshū, Nihon Ōjō Gokuraku-ki, and the Construction of Pure Land Discourse in Heian Japan", *Japanese Journal of Religious Studies* 34/2 (2007): 249-270, <https://www.jstor.org/stable/30233812>; Robert F. Rhodes, *Genshin's Ōjōyōshū and the Construction of Pure Land Discourse in Heian Japan* (Honolulu: University of Hawaii Press, 2017), 1-6, 129-131; Michele Marra, "The development of mappō thought in Japan. Part 1". *Japanese*

While signs of the coming of the age of the Latter Dharma had been already identified by the founder of the Tendai school on Mount Hiei (see Fig. 7), Saichō (767–822), and the concepts of “Pure Land”-Buddhism had been introduced to the school by Saichō’s disciple Ennin (794–864), these ideas gained increased currency during and after the life of Genshin, when the conditions of the time gave further support to the interpretation of imminent *mappō*.⁵⁵ Over the course of the 10th century, tensions between the imperial court dominated by the Fujiwara clan and noble leaders in the provinces had increased, competing for access to positions of power and to land (manifest in the proliferation of tax-free estates, the *shōen*). Between 935 and 941, the rebellion of Taira no Masakado in eastern Honshū,

who even proclaimed himself “New Emperor” (*shin-nō*), shuttered the realm. Around the same time in the year 941 Fujiwara no Sumitomo, leader of pirates in the Inland Sea, threatened the provision of the capital. Furthermore, minor rebellions of Emishi groups occurred in the provinces of Dewa, Owari and Mino, while earthquakes, typhoons, fires, floods and epidemics (maybe of smallpox, which had become endemic in Japan since a first major outbreak in 735-737 and contributed to demographic recession until the 11th century) afflicted the capital and its environs. During these troubled years (called by modern Japanese historians the “Discord of the Jōhei [931–938] and Tengyō [938–947] Eras”), starting from 938 the monk Kūya (who died in 972) preached Pure Land-teachings in Kyōto.⁵⁶

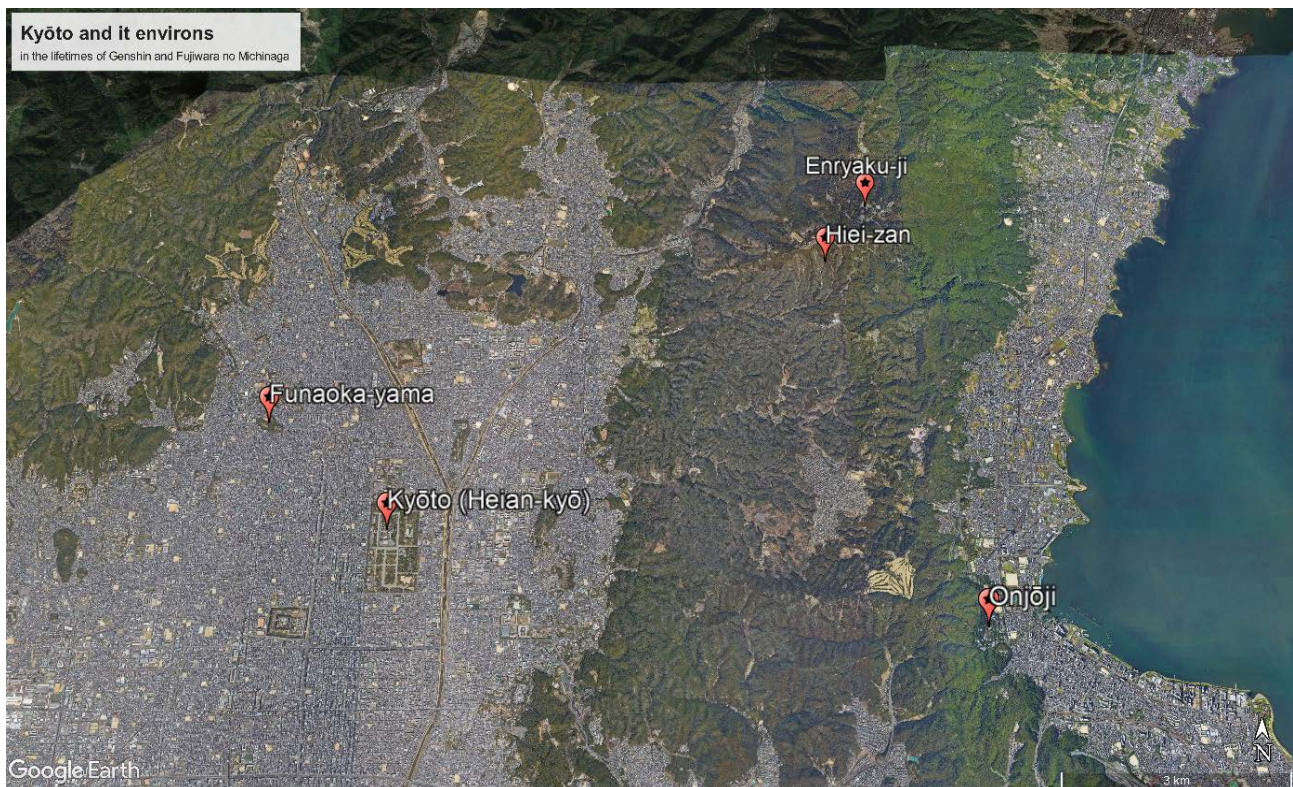


Fig. 7. Map of the Japanese capital Kyōto and its environs in the 10th-11th centuries (base map: Google Earth; created by Johannes Preiser-Kapeller, 2023)

Journal of Religious Studies 15/1 (1988): 25-54, <https://www.jstor.org/stable/30234100>; Michele Marra, “The development of *mappō* thought in Japan. Part 2”. *Japanese Journal of Religious Studies* 15/4 (1988): 287-305, <https://www.jstor.org/stable/30234113>. For some extracts of the *Ōjōyōshū* in English translation see David J. Lu, *Japan: A Documentary History, Vol. 1: The Dawn of History to the Late Tokugawa Period* (London: Routledge, 2005), 121-126. See also Jean-Noël Robert, “Le Genji-monogatari : le roman de la fin des temps ?” in *L’Eurasie autour de l’an 1000. Cultures, religions et sociétés d’un monde en développement*, ed. Dominique Barthélemy, Frantz Grenet and Cécile Morisson (Leuven, Paris and Bristol: Peeters, 2022), 3-22.

⁵⁵ Paul Groner, *Ryōgen and Mount Hiei. Japanese Tendai in the Tenth Century* (Honolulu: University of Hawaii Press, 2002), 2-3; Shively and McCullough, “Introduction”, 15-16; Weinstein, “Aristocratic Buddhism”, 462-473, 507-508; Mikael S. Adolphson, *The Gates of Power: Monks, Courtiers, and Warriors in Premodern Japan* (Honolulu: University of Hawaii Press, 2000), 25-26; Rhodes, *Genshin’s Ōjōyōshū*, 8-9, 51-55.

⁵⁶ George Sansom, George, *A History of Japan to 1334* (Stanford: Stanford University Press, 1958), 142-146, 244-247; William Wayne Farris, *Population, Disease and Land in Early Japan, 645-900* (Cambridge, Mass., and London: Harvard University Asia Center, 1985), 53-59; Shively and McCullough, “Introduction”, 9-10, 18-19; McCullough, “The Heian court”, 30-31, 60-62; Dana Morris, “Land and society”, in *The Cambridge History of Japan, Vol. 2: Heian Japan*, ed. Donald H. Shively, and William H. McCullough (Cambridge: Cambridge University Press, 1999), 183-235, esp. 186-187, 224-235; Cornelius J. Kiley, “Provincial administration and land tenure in early Heian”, in *The Cambridge History of Japan, Vol. 2: Heian Japan*, ed. Donald H. Shively, and William H. McCullough (Cambridge: Cambridge University Press, 1999), 236-340; Weinstein, “Aristocratic Buddhism”, 514-515; Grapard, “Religious practices”, 573-574; Rizo Takeuchi, “The rise of the warriors”, in *The Cambridge History of Japan, Vol. 2: Heian Japan*, ed. Donald H. Shively, and William H. McCullough (Cambridge: Cambridge University Press, 1999), 644-710, esp. 653-664; Lu, *Japan: A Documentary History*, 82-84; Farris, *Japan’s Medieval Population*, 9-10, 26-28; Farris, *Daily Life and Demographics*, 51-53; Rhodes, “Ōjōyōshū”, 252; Rhodes, *Genshin’s Ōjōyōshū*, 60-61, 65-66.

Part of these calamities were attributed to angry spirits (*goryō*) who took revenge upon those who had committed misdeed against them during their lifetimes, especially to the ghost of Sugawara no Michizane. He had risen to high positions at the court under Emperors Uda (887–897) and Daigo (897–930), but succumbed in a power struggle with Fujiwara no Tokihira (871–909) and was exiled to Dazaifu on the island of Kyūshū, where he died in March 903. The death of several members of the imperial family over the next years and decades, the destruction of part of the palace by lightning in 930 (killing four courtiers) and a drought in the same year were attributed to the revengeful ghost of Michizane, who according to the vision of a monk Dōken in 941 claimed responsibility for these calamities. In 947, after further revelations and a severe epidemic, followed by typhoons and droughts, a shrine was erected in Kitano at the western edge of the capital to placate the *goryō*, who eventually became the object of a cult and finally by an imperial decree of 986 was even acknowledged as “Heavenly Deity”.⁵⁷

Extreme events, however, continued over the course of Genshin’s lifetime. In 961, sutra recitations were being performed in the capital in order to pray for more rain; this lack of precipitation was attributed to a *mono no tatarī* (again, curses of vindictive spiritual beings).⁵⁸ Despite this drought, in retrospect the early 12th century *Ōkagami* (“Great Mirror”) stated that “in various ways everything went well through the reign of Emperor Murakami [946–967]”, but that in the reign of Emperor Reizei (967–969) “everyone felt that the world had somehow come to a time of darkness. And there has been deterioration in worldly affairs ever since.”⁵⁹ But already before, a drought caused widespread hunger in 957. In 969, there were rumours of another military rebellion (the “Anna incident”). In 974, a smallpox epidemic ravaged the capital; in 976 a strong earthquake and in 980 a storm damaged the capital, including parts of the imperial palace.⁶⁰ On 10 August 975, the “inky blackness” of a total solar eclipse worried the inhabitants of Kyōto (see Fig. 5).⁶¹ Furthermore, infights for power in the

capital resulted in frequent acts of violence and fires (and a decay of the urban framework especially in the western part of the city).⁶²

Factionalism even intensified within Genshin’s Tendai school in its monastic centre of Enryakuji on Mount Hiei near the capital (see Fig. 7). It had its origins in the conflict between the followers of Ennin (794–864) and those of Enchin (814–891), the fifth *zasu* (“headmaster”) of the Tendai school from 868 onwards. While the later faction had dominated on Mt. Hiei during the earlier 10th century, the influence of the Ennin-faction increased with Genshin’s teacher Ryōgen (912–985), who in 923 joined the community on Mount Hiei and gained the support of the imperial regent Fujiwara no Morosuke (908–960) and his clan. Morosuke’s son Jinzen even became monk and Ryōgen’s disciple. In August 966, Ryōgen was appointed *zasu* and ensured control over the monastic complexes on Mount Hiei within the ranks of the Ennin-faction. For this purpose, he also used a building programme necessitated by a major fire in October 966 – by appointing his followers as supervisors for the many halls rebuilt or newly erected. The monastic community grew to a number of more than 2,700 monks at that time. In order to enforce their will, however, both factions increasingly resorted to violence, employing armed monks (*sōhei*) and even exerting pressure on the government. When in 981 one monk Yokei of the Enchin-faction received a prestigious position as abbot, 160 monks of Ryōgen’s following marched to the residence of chancellor Fujiwara no Yoritada in the capital and in a “forceful protest” (*gōso*) threatened violence until Yokei had to resign.⁶³

Deterred by these skirmishes, Genshin withdrew from active involvement in the politics of the Tendai school to the Yokawa monastery in 980/981, where he finished his *Ōjōyōshū* in 985. He was not the only contemporary interpreting these events as signs of imminent *mappō* and therefore propagating Pure Land-Buddhism. In his *Amida shinjūgi* (“Ten New Doubts concerning Amida”) the monk Zenyu (913–990) claimed:

Because we cannot attain realization quickly in this *sahā* world (which is in) the age of the five defilements, we should seek (birth in) the Land of Supreme Bliss. (...) Now, sentient beings of the present *sahā* world in the age of the five defilements are (characterized by) greed, anger, folly, arrogance, mistaken views, and flattery, and their hearts are lacking in sincerity. Therefore, even if we arouse the aspiration for enlightenment and strive wholeheartedly (for Buddhahood), feelings of envy and slander arise in us and we find it hard to accept

⁵⁷ Robert Borgen, *Sugawara no Michizane and the Early Heian Court* (Cambridge, Mass., and London: Harvard University Asia Center, 1986), esp. 308–324; Sansom, *A History of Japan to 1334*, 215–216; McCullough, “The Heian court”, 58–59; Grapard, “Religious practices”, 559–564; Groner, *Ryōgen and Mount Hiei*, 86–87, 205; Farris, *Daily Life and Demographics*, 63–64; Rhodes, *Genshin’s Ōjōyōshū*, 63, 66–67; Phillips, *Conforming to Invisible Principles*, p. 126.

⁵⁸ Nathalie Phillips, *Conforming to Invisible Principles: The Significance of Meta-Physical Beliefs for the Heian-Period Episteme and their Articulation in Social and Political Relations* (Dissertation, The University of Edinburgh, 2019), 112–115.

⁵⁹ Cited after Gukanshō, transl. Brown and Ishida, 381. See also Helen Craig McCullough, *Ōkagami. The Great Mirror. Fujiwara Michinaga (966–1027) and His Times* (Princeton, New Jersey: Princeton University Press, 1980), 226.

⁶⁰ Gukanshō, transl. Brown and Ishida, 64; Ōkagami, transl. Craig McCullough, 141; McCullough, “The Heian court”, 63–64; William H. McCullough, “The capital and its society”, in *The Cambridge History of Japan, Vol. 2: Heian Japan*, ed. Donald H. Shively, and William H. McCullough (Cambridge: Cambridge University Press, 1999), 97–182, esp. 175–176; Farris, “Famine, Climate, and Farming”, 283; Farris, *Daily Life and Demographics*, 52–53

⁶¹ <https://eclipse.gsfc.nasa.gov/5MCSEmap/0901-1000/975-08-10.gif>. Mitsuru Sōma and Kiyotaka Tanikawa, “Reliability of Eclipse Records in Japanese Ancient

Periods”, 2014, online: <https://www2.nao.ac.jp/~mitsurusoma/WS2014/soma.pdf> (also for the citation).

⁶² Lu, *Japan: A Documentary History*, 72–73; McCullough, “The capital and its society”, 172–173.

⁶³ Sansom, *A History of Japan to 1334*, 221–223; Groner, *Ryōgen and Mount Hiei*, 20–43, 66–70, 75–76, 118–125, 167–189, 194–196, 219–220, 229–233; Weinstein, “Aristocratic Buddhism”, 486–489; Adolphson, *The Gates of Power*, 4–5, 39–45, 63–65; Rhodes, *Genshin’s Ōjōyōshū*, 8–9, 84–85, 111–112, 120–122. For other monastic centres in the period see Blair, *Real and Imagined*.

(the buddha's teachings) in faith. Among the worlds of the ten directions, (our world) is full of numerous pollutions and evils and is (for this reason) called the land in which it is difficult to teach sentient beings. Moreover, the True Dharma has rapidly perished and there is no hope of realizing the fruit (of Buddhahood).⁶⁴

Further "pollutions and evils" over the next decades seemed to confirm the interpretation of Zenyu and Genshin, who would then propose more concrete dates for the onset of the age of Latter Dharma (see below).

4. The "993 event", calamities in the 990s and the reactions of Basil II and Fujiwara no Michinaga

For the late 980s and early 990s, Leo the Deacon informs us that "other calamities were portended (...) by the fiery pillars that were manifested in the north in the middle of the night and terrified those who saw them; for these portended the capture of Cherson [on the Crimea] by the Tauroscythians [Rus, in 989 or 990] and the occupation of Berrhoia by the Mysians [Bulgarians, in 989]."⁶⁵ Similar celestial phenomena for the early 990s are reported from Central Europe and Cairo and have been interpreted as sightings of aurora borealis (northern lights), which rarely shows in such southern latitudes as of Constantinople or Egypt.⁶⁶ According to recent findings, the causative intensive influx of charged particles in upper layers of the atmosphere was a sign of a period of increased solar activity, which peaked in a massive solar eruption in 993/994, whose chemical signature (higher concentration of isotopes of Carbon14 and Beryllium) has been identified in many sites across the globe in the last years⁶⁷ (as it has been for a similar event in 774/775 first detected in data from Japan by Fusa Miyake and her team⁶⁸). While the celestial portents around the year 990 thus find a firm basis in natural sciences, it is unclear to what extent this intensive influx of solar particles equally affected atmospheric circulations and changed "surface weather" patterns, as Timofei Sukhodolov and his team hypothesised.⁶⁹ In any case, calamitous events in Byzantium and Japan overlap with information on portents, weather extremes and calamities affecting Western Asia and North Africa in the 990s.⁷⁰

More interesting from an historian's point of view is the question if such apocalyptic interpretations also had an impact on Emperor Basil II and his politics. His maybe most enigmatic decision was – as only Byzantine emperor – never to get married and thus not to produce a legitimate heir; furthermore, also the daughters of his only brother Constantine VIII never married during Basil's lifetime.⁷¹ According to some scholars, this measure resulted from Basil's fear of the competition a potential male heir to the throne may pose, arising from the experiences of the rebellions of his early reign – and the advice of one of this rebels, Bardas Skleros, who after his defeat according to the later historian Michael Psellos cautioned Basil II: "to abolish over-powerful commands, and to let none of the military enjoy great possessions (...). He advised him to let no woman into the palace and not to make himself accessible to anyone, nor to let many people into his plans."⁷² Another interpretation is provided by the contemporaneous French chronicler Ademar de Chabannes (989–1034), who claims that Basil II, faced with the threat of the Bulgarian rebellion of Samuil, took a vow to live like a monk and to abstain from marriage, sexual intercourse and meat if God would grant him victory against the Bulgarians, which was finally the case after 15 years of warfare.⁷³ The bitterness of this war is also reflected in a letter of Metropolitan Leo of Synada, who advised the emperor in 996: "Don't, however, spare a single Scyth [Bulgarian], 'not even the little boy his mother carries in her womb,' but annihilate and destroy them all together (...)."⁷⁴ This advice may have found its fulfilment in the infamous blinding of 15,000 Bulgarian prisoners of war at the order of Basil II in 1014.⁷⁵ The emperor himself emphasised divine support in several charters issued after the conquest of Samuil's empire in 1018: "that country was granted in subordination to us by God, whose goodness clearly helped us, blending into one the divided parts and putting under one yoke the boundaries (...)."⁷⁶

As Paul Stephenson has outlined, Basil II deliberately build his own legend as divinely authorised warrior-emperor, ultimately also in his verse epitaph:

The emperors of old allotted to themselves different burial-sites: some here, others there; but I, Basil the purple-born, erect my tomb in the region of Hebdomon [seven miles to the west of the city centre of Constantinople, the usual assembly point for imperial campaigns⁷⁷]. Here I rest, [like God after creation]

⁶⁴ Cited after Rhodes, *Genshin's Ōjōyōshū*, 78.

⁶⁵ Leo the Deacon, *History X*, 8, ed. Hase, 172; trans. Talbot and Sullivan, 214.

⁶⁶ Wozniak, *Naturereignisse im frühen Mittelalter*, 266–267.

⁶⁷ Florian Mekhaldi et al., "Multiradionuclide evidence for the solar origin of the cosmic-ray events of AD 774/5 and 993/4". *Nature Communications* 6 (2015): 8611, <https://doi.org/10.1038/ncomms9611>; Ulf Büntgen et al., "Tree rings reveal globally coherent signature of cosmogenic radiocarbon events in 774 and 993 CE". *Nature Communication* 9 (2018): 3605, <https://www.nature.com/articles/s41467-018-06036-0>.

⁶⁸ Fusa Miyake, Kentaro Nagaya, Kimiaki Masuda, and Toshio Nakamura, "A signature of cosmic-ray increase in AD 774–775 from tree rings in Japan". *Nature* 486 (2012): 240–242, <https://doi.org/10.1038/nature11123>.

⁶⁹ Timofei Sukhodolov et al, "Atmospheric impacts of the strongest known solar particle storm of 775 AD". *Science Report* 7 (2017): 45257, <https://doi.org/10.1038/srep45257>.

⁷⁰ Preiser-Kapeller, "The Medieval Climate Anomaly".

⁷¹ Holmes, *Basil II*, 28, 519–520; Magdalino, "The Year 1000 in Byzantium", 263.

⁷² Michael Psellos, *Leben der byzantinischen Kaiser (976–1075)*. *Chronographia* I, 17, Griechisch-Deutsch, ed. and transl. Diether Roderich Reinsch (Berlin: De Gruyter, 2015), 93. Magdalino, "The Year 1000 in Byzantium", 263.

⁷³ Martin Arbagi, "The Celibacy of Basil II", *Byzantine Studies* 2/1 (1975): 41–45. See also Paul Stephenson, *The Legend of Basil the Bulgar-Slayer* (Cambridge: Cambridge University Press, 2003), 73; Holmes, *Basil II*, 45; Panov, *The Blinded State*, 90.

⁷⁴ *The Correspondence of Leo, Metropolitan of Synada and Syncellus*, ed. and transl. Martha P. Vinson, Corpus Fontium Historiae Byzantinae (Washington DC: Dumbarton Oaks, 1985), Epistle 54.8–13; 54.45–49; Panov, *The Blinded State*, 67.

⁷⁵ Detailed discussion by Stephenson, *The Legend of Basil*.

⁷⁶ Cited after Panov, *The Blinded State*, 82.

⁷⁷ Grigori Simeonov, "The Harbour and Landing Stages of Hebdomon" in *The Byzantine Harbours of Constantinople*,

on the seventh day, from the numerous toils I bore and endured on the battlefield, for from the day that the King of Heaven called upon me to become the emperor, the great overlord of the world, no one saw my spear lie idle. I stayed alert throughout my life and protected the children of the New Rome, valiantly campaigning both in the West, and at the outposts of the East (...).⁷⁸

Heavenly support is also evoked in the most famous image of Basil II, his depiction on the frontispiece (fol. 3r) of a psalter written at the order of the emperor and now to be found in the Marcian Library in Venice (Cod. Marc. gr. 17) (see Fig. 8). It shows the emperor standing in the battledress of a Roman gen-

eral holding in his right hand a lance and in his left a sheathed sword, triumphant over his enemies, accompanied by the following lines:

A strange wonder is to be seen here: from Heaven, Christ with his life-bringing right [hand] extends the crown, the symbol of rulership to the faithful and mighty ruler Basil. Below are the first of the incorporeal beings, one of whom, taking [the crown] has brought it down and is joyfully crowning [the emperor]. The other, adding victories to rulership is placing the spear, a weapon that scares the enemies away, in the ruler's hand. The martyrs are his allies, for he is their friend. They cast down those lying at his feet.⁷⁹



Fig 8. Image of Emperor Basil II on the frontispiece (fol. 3r) of a psalter written at his order (Marcian Library in Venice, Cod. Marc. gr. 17; <https://commons.wikimedia.org/wiki/File:Basill.jpg>)

ed. Falko Daim and Ewald Kislinger (Heidelberg: Propylaeum, 2022), 181-198. <https://doi.org/10.11588/propylaeum.911.c12074>.

⁷⁸ Stephenson, *The Legend of Basil*, 49 and 50-51; Lauxtermann, "Byzantine Poetry", 211-212; Panov, *The Blinded State*, 76.

⁷⁹ Stephenson, *The Legend of Basil*, 50-51; Magdalino, "The Year 1000 in Byzantium", 257-258; Panov, *The Blinded State*, 77. See also Philippe Buc, "Eschatologies of the Sword, Compared: Latin Christianity, Islam(s), and Japanese Buddhism", in *Cultures of Eschatology*, ed. Veronika Wieser, Vincent Eltschinger and Johann Heiss, (Berlin: de Gruyter, 2020), 277-293, <https://doi.org/10.1515/9783110597745-016>.

But was this image of an exigent, ascetic and almost holy warrior created by Basil II also connected to any apocalyptic readings of his times? As a matter of facts, expectation of imminent end times continued throughout his reign also after 992 and 1000 AD, with different calculations proposing dates such as 1024 or 1025 (the year Basil II eventually would die) or 1041.⁸⁰ Paul Magdalino therefore asked if Basil decided not get married since he felt “that his personal salvation was more important than the dynastic succession to an earthly empire that might not have a future after the millennial anniversary of the Resurrection?”⁸¹ Furthermore, Magdalino stated that “Basil II (...) emerges as a very individual mixture of hard-line autocracy and ascetic piety. In this, he may remind us of his younger western contemporary and counterpart, the half-Greek Otto III, whose strange behaviour also lends itself to interpretation in terms of an imperial response to the year 1000.”⁸² Yet, if Basil II had such motivations, he was not explicit about them. Magdalino thus adds that “alternatively or additionally, given his celibate piety, Basil may have consciously tried not to behave like the last emperor, hoping and praying that by his personal devotion, the prayers of the monks he supported, and the intercession of the Mother of God, St John the Theologian and all the saints, God would be moved to grant a further stay of execution to the empire and the world.”⁸³ These are all intriguing scenarios, which even try to explain the lack of explicit apocalyptic statements of Basil II; but their absence complicates any definite conclusion about his viewpoint on the eschatological statements of some of his contemporaries and their interpretation of the portents and calamities during his reign.⁸⁴

In 993, the aurora borealis resulting from the intensive influx of solar particles was possibly also visible in Japan. The monk Genshin, however, was less disquieted by celestial portents, but by the escalation of factionalism within his Tendai order on Mount Hiei. After Ryōgen had died in 985, his disciple Jinzen from the Fujiwara clan became *zasu*, which led to an uproar among the opposing Enchin faction. The conflict intensified even when Jinzen retired in 989 and died already in 990. In 993 finally, the monks of the Ennin faction burnt down some of the buildings of their opponents and violently drove out all of them from Mount Hiei. The Enchin monks (after destroying some of the complexes of the Ennin followers in return) found refuge in the monastery of Onjōji (southeast of Mount Hiei, facing Lake Biwa, see Fig. 7), which had been one of their strongholds before. The long

dispute within the Tendai order thus resulted in a permanent schism.⁸⁵

More generally, the early 13th century *Gukanshō* interpreted the reign of Emperor Ichijō (986–1011) as “transitional time (*histosugime*)” and stated:

Following Ichijō’s enthronement in 986 at the age of seven, a comet streaked across the sky in the last third of the 6th month of 989 [Halley’s comet, which also caused concerns in Byzantium in the same year, see above]. The era name was changed to Eiso [989–990 AD] in the 8th month of that year. Then came the incomparable disaster known as the Eiso typhoon. And in the following year the era name was changed to Shōryaku [990–995 AD]. A bitter struggle developed on Mount Hiei in 993 between the followers of Chisho and those of Jikaku, when the Senko Hall was completely burned by the former [see above]. And the years 994 and 995 were marked by a terrible epidemic that caused many deaths in and around the capital. (...) eight high-ranking nobles died in 995, and nothing like that had ever occurred before, or has occurred since.⁸⁶

In total, this epidemic killed up to 20 to 25 per cent of the nobility in the capital and, starting from the island of Kyūshū, spread to the entire country. The disease – from which Fujiwara no Michinaga personally profited, since several of his rivals for power (including two of his older brothers) fell victim to it – was again attributed to the activities of a *goryō*; therefore, various rituals were executed at Mt. Funaoka to the north of the capital (see Fig. 7) to appease the vengeful spirit.⁸⁷ Fujiwara no Michinaga, however, was able to use the interpretation of these calamities and the following performances of rituals for his own interests, since he “appropriated certain explanatory patterns (...) in collaboration with a network of ritual institutions that were well-disposed to his leadership”, as Natasha Phillips explains. Within this framework, coping with the suspected supernatural imbalance was not less important than dampening the physical effects of an extreme event for establishing and maintaining power.⁸⁸ Similar opportunities for expanding Fujiwara no Michinaga’s (and his allies’) influence by the reading of and reactions to portents presented themselves in the following years. In 996, a widespread famine affected Japan,

⁸⁰ Magdalino, “The Year 1000 in Byzantium”, esp. 259–262; Lauxtermann, “Byzantine Poetry”, 215; Brandes, “Endzeiterwartung im Jahre 1009”; Brandes, “Byzantine Predictions of the End of the World”, 44–46.

⁸¹ Magdalino, “The Year 1000 in Byzantium”, 263; Holmes, *Basil II*, 62.

⁸² Magdalino, “The Year 1000 in Byzantium”, 264.

⁸³ Magdalino, “The Year 1000 in Byzantium”, 266.

⁸⁴ See also Brandes, “Liudprand von Cremona”, 462, who regards the interpretations of Magdalino as “sehr wahrscheinlich”.

⁸⁵ Sansom, *A History of Japan to 1334*, 221–223; Groner, *Ryōgen and Mount Hiei*, 20–43, 66–70, 75–76, 118–125, 167–189, 194–196, 219–220, 229–233; Weinstein, “Aristocratic Buddhism”, 491–492; Adolphson, *The Gates of Power*, 42–43, 64–65, 69–70; Rhodes, *Genshin’s Ōjōyōshū*, 8–9, 84–85, 111–112, 120–122.

⁸⁶ *Gukanshō*, transl. Brown and Ishida, 67.

⁸⁷ Sansom, *A History of Japan to 1334*, 159–161; Ōkagami, transl. Craig McCullough, 39 (Introduction); Rhodes, *Genshin’s Ōjōyōshū*, 62–63; Farris, *Daily Life and Demographics*, 52–53; Phillips, *Conforming to Invisible Principles*, 93; Hurst, “*Kugyō and Zuryō*”, 69.

⁸⁸ Phillips, *Conforming to Invisible Principles*, 180, 225–226. See also Mimi Yiengpruksawan, “The Eyes of Michinaga in the Light of Pure Land Buddhism” in *The Presence of Light. Divine Radiance and Religious Experience*, ed. Matthew T. Kapstein (Chicago and London: The University of Chicago Press, 2004), 227–261, esp. 241–244.

which continued on a more regional level around the capital in the year 997 (when it was also affected by fire); in 998 and 1000-1001, Kyōto again suffered from epidemics. In addition, pirates from the Korean peninsula and the island of Amami-Ōshima plundered the coasts of Kyūshū and adjacent areas between 997 and 999. Again, retainers of Michinaga at the court and important shrines interpreted these phenomena and suggested corresponding rituals.⁸⁹

5. The supernova of 1006 and calamities of the first years of the new Millennium

As mentioned above, apocalyptic expectations continued in the Christian world throughout the 11th century also after the year 1000 AD has passed, supported by further portents and climatic extremes. For the year 1006, the Annals of the monastery of St. Gallen (in modern-day Switzerland) report that „a new star of unusual size appeared, brilliant in appearance and dazzling to the eyes, not without horror. In a wonderful way, sometimes it got darker, sometimes it got lighter and sometimes it disappeared. It was visible for three months in the deepest borders of the South, more than any sign that can be seen in the sky.“⁹⁰ This phenomenon

was equally observed by ‘Alī ibn Ridwān (988–1061), who worked as physician in Cairo in Egypt:

Now I will describe for you an event/spectacle [*aṭār*] that I saw at the beginning of my training. This event occurred in Scorpio, opposite the Sun, at the time the Sun was 15 degrees in Taurus and the spectacle was 15 degrees in Scorpio. It was a large *naizak* [comet], round in shape, and its size two and a half or three times the size of the planet Venus. Its light illuminated the horizon and was very sparkling. The magnitude of the brightness was a little over a quarter of the moon’s brightness. It continued to appear and move in that sign of the zodiac with the movement of the equator [diurnal rotation] until the sun arrived in the constellation Virgo, one sixth more, it stopped all of a sudden.⁹¹

Modern-day astronomy has identified these descriptions as observations of a supernova eruption, which was visible worldwide in April to May 1006; the remains of this stellar explosion (NGC [New General Catalogue] nr 5882) can still be found in the constellation Lupus, at a distance of ca. 7,700 lightyears from our sun (see Fig. 9).⁹²



Fig. 9. A Hubble Space Telescope (HST) image of NGC 5882, the remains of a supernova explosion visible worldwide in April to May 1006 (https://commons.wikimedia.org/wiki/File:NGC_5882_HST.tif)

⁸⁹ McCullough, “The Heian court”, 94-95; McCullough, “The capital and its society”, 145-146; Farris, “Famine, Climate, and Farming”, 283; Farris, *Daily Life and Demographics*, 52-53; Phillips, *Conforming to Invisible Principles*, 93.

⁹⁰ *Annales Sangallenses maiores*, ad a. 1006, cited after Wozniak, *Naturereignisse im frühen Mittelalter*, 81.

⁹¹ Cited after Wozniak, *Naturereignisse im frühen Mittelalter*, 79.
⁹² http://www.wikisky.org/starview?object_type=3&object_id=276&object_name=NGC+5882&locale=EN; Graham Philip Wilson, *Candidates for historical supernovae and their comparison against known Chinese records* (MA-Thesis, Durham University, 2003), 80-83; Wozniak, *Naturereignisse im frühen Mittelalter*, 83.

Matthew of Edessa refers to a “certain star, appearing in the form of fire”, which “during the reign of Basil, the Greek emperor (...) arose in the heavens, an omen of the wrath of God towards all living creatures and also a sign of the end of the world” for the year 452 of the Armenian era (1003–1004 AD). As in other cases of celestial phenomena, his chronology (writing more than a century after the events) may be confused, and he actually may refer to the supernova of 1006. According to Matthew, this portent was followed by

a violent earthquake throughout the whole land, to such an extent that many thought that the day of the end of the world had arrived. Like the time of the flood all living creatures shook and trembled, and many fell down and died from fear of the intensity of this wrath. After this outpouring of God’s wrath a plague (...) came upon the area and spreading through many regions, reached Sebasteia [modern-day Siwas, in Byzantine Cappadocia, where many Armenians lived]. This plague clearly manifested itself on men’s bodies and, because of its harshness, many had no time to make their confession or take communion. Men and beast diminished from the land, and those remaining quadrupeds roamed about the countryside without anyone to take care of them.⁹³

After the deaths of Leo the Deacon and John Geometres a few years before, we do not have a contemporaneous reading of these portents from the perspective of Constantinople – and the later Byzantine historians of the 11th century did not refer to these phenomena, which also did not fit in their triumphalist characterisation of the reign of Basil II.

Beyond Anatolia and Armenia, however, between 1005 and 1008, low Nile floods caused shortages of food and a rise of grain and bread prices in Egypt, which Caliph al-Hākīm and his officials tried to mitigate with price regulations and drastic measures (such as flogging and public parading) against millers, bakers, hoarders of grain and speculators, who were suspected to take advantage of the misery of the population – obviously with some success, since “prices decreased and harm was averted (...)”⁹⁴ In 1007, “snow fell in Baghdad”, but the next harvest brought “great abundance” and low prices for wheat. But later, “violent black winds” in the area of Tikrīt to the northwest of Baghdad “destroyed many houses and tore up very many palm-trees and olive-trees by the roots; and great ships were sunk in the Sea of Persia”.⁹⁵ In 1010, “(...) swarms of locusts appeared in the country of Mosul, and the nomads raided the country on all sides, and there was also a great pestilence. And the famine waxed strong in the country of Khorasan [in eastern Iran] until one litre of bread

was sold for a gold dinar.” People would even resort to cannibalism, Bar Hebraeus and other sources tell us.⁹⁶

Several floods occurred in various province along the Yellow River in the years between 1000 and 1014 in the reign of Emperor Song Zhenzong (997–1022).⁹⁷ Accordingly, the astrological specialists in the Chinese capital of Kaifeng (see Fig. 5) were unsure in their interpretation of the celestial phenomena caused by the supernova eruption of 1006, as we read:

During the third year of the Jing-De reign period (1006 AD) a large star appeared at the west of the Di lunar mansion. Nobody could identify its (omen category); some said that it was an ‘ominous star’ of the Ke Huang type, which forewarned a disastrous war. At that time Zhou Ke-ming was away on duty in the southern part of China. On his return he spoke to the emperor saying that according to the Tian Wen Lu and the Qing-Zhou Chang the star should be identified as Zhou-Bo, which is (supposed to be) yellow in its colour and brilliant in its brightness. As an ‘auspicious star’, it would bring great prosperity to the state over which it appeared. He had noticed on his way back that people inside and outside the capital were quite confused over the matter. For this reason he asked the emperor to allow all civil and military officers to celebrate the occasion to calm the people. The emperor praised him and followed his suggestion. He then promoted him to the post of Librarian and Escort of the Crown Prince.⁹⁸

The mood of the time was less optimistic in Japan, where the supernova of 1006 was also visible in the capital on the southern horizon during May.⁹⁹ In 1005, a fire had consumed large parts of the imperial palace; in 1008, extreme rainfall damaged the harvest and led to famine around Kyōto.¹⁰⁰ In 1010, continuous heavy rain affected the capital again. When a divination was performed, it indicated that a spiritual pollution (*tatari*) had occurred from burial grounds to the south-west of Kyōto.¹⁰¹ These and other portents may

⁹³ Matthew of Edessa, *History I*, 46, trans. Dostourian, 43.

⁹⁴ al-Maqrīzī, *Ighāthah*, trans. Allouche, 31–33. Telelis, *Μετεωρολογικά φαινόμενα*, nr 424–427, 430–431; Hassan, “Extreme Nile floods”; Wozniak, *Naturereignisse im frühen Mittelalter*, 619.

⁹⁵ Bar Hebraeus, *Chronography*, trans. Budge, 183–184. Telelis, *Μετεωρολογικά φαινόμενα*, nr 428–429; Heribert Busse, *Chalif und Großkönig. Die Buyiden im Irak (945–1055)* (Beirut: Ergon, 2004), 389.

⁹⁶ Bar Hebraeus, *Chronography*, trans. Budge, 185. Busse, *Chalif und Großkönig*, 389. Another plague of locusts occurred in Baghdad in 1018, see Bar Hebraeus, *Chronography*, trans. Budge, 185. In general, on the “topos” of cannibalism during famines see Wozniak, *Naturereignisse im frühen Mittelalter*, 731–739.

⁹⁷ Zhang, *The River, the Plain, and the State*, 37, 110–112; Mostern, *The Yellow River*, 142–144.

⁹⁸ History of Song, ch. 461, cited after Wilson, *Candidates for historical supernovae*, 81–82.

⁹⁹ Mimi Yiengpruksawan, “Countdown to 1051. Some Preliminary Thoughts on the Periodization of the Buddhist Eschaton in Heian and Liao” in *Texts and Transformations. Essays in Honor of the 75th Birthday of Victor H. Mair*, ed. Haun Sau-ssy (Amherst, New York: Cambria Press, 2018), 369–434, esp. 376.

¹⁰⁰ Hurst, “*Kugyō* and *Zuryō*”, 81; Farris, “Famine, Climate, and Farming”, 298.

¹⁰¹ Phillips, *Conforming to Invisible Principles*, 149–150. See also Bernhard Scheid, “Death and Pollution as a Common Matrix of Japanese Buddhism and Shintō”, in *Cultures of Eschatology*, ed. Veronika Wieser, Vincent Eltschinger and Johann Heiss (Berlin: de Gruyter, 2020), 528–545, <https://doi.org/10.1515/9783110597745-027>.

have confirmed Genshin's expectation of the onset of the Age of Latter Dharma. In one of his last texts (*Ryōzen'in shiki*, "Liturgy of Ryōzen Cloister") Genshin in 1007 presented two calculations on the number of years that had passed since Buddha Śākyamuni had entered *nirvāṇa*. According to the first one, in 1007, 1,963 years had elapsed since that time, while one of Genshin's contemporaries, Xingchan, calculated that it had been 1,990 years. The beginning of the Age of Latter Dharma was expected for the year 2000 after Buddha's death, therefore *mappō* would begin either in the year 1017 or 1041 AD.¹⁰²

This interpretation again resonates with later ones such as in the late 11th century *Eiga Monogatari* ("Tales of Splendor") which on the occasion of a palace fire of 1013 states: "World affairs became quite disturbed and people died. Actually, the Emperor's feelings were just right, and the Minister was not bad. But it seems that such things [as this disastrous fire] had to occur because the world is in its Final Age (*yo no sue*). Epidemics break out every year and people die. Many things occur that are very disturbing."¹⁰³ In the middle of 1016, another great fire destroyed over 500 houses in the capital.¹⁰⁴ Furthermore, the exercise of power by Fujiwara no Michinaga arose criticism among some monastic circles on Mount Hiei. When in 1012 Michinaga had organised a pilgrimage from the capital to the mountain, he was not able to finish the journey himself due to illness. Some members of his entourage, however, did and passed by the shrines on their horses in contrast to the tradition to do so on foot. Furthermore, their procession caused rocks and stones to slide down from the mountain's slopes, which not only injured several monks but also damaged some temples, causing the wrath of the deities venerated there. This was at least the interpretation of several clerics from the Enryakuji-temple, who were increasingly in opposition to Fujiwara no Michinaga's interference into the affairs of their communities.¹⁰⁵

In 1017, locust plagued the fields of Japan, and the court ordered the reading of sutras to cast out the insects.¹⁰⁶ Finally, Fujiwara no Michinaga himself was affected by supernatural powers, when his illness, which also affected his eyesight, in 1018 was attributed by diviners to the activities of the spirit of Fujiwara no Michikane, an older brother of Michinaga, who had acquired the leading position at the imperial court in 995, but died after a few days, thus making room for Michinaga. With such an interpretation, the context of Michinaga's rise to power was under critical scrutiny, highlighting the increasing political crisis of these years.¹⁰⁷ Since his health problems continued, Fujiwara no Michinaga in 1019 pledged and until 1020 executed the erection of the *Muryōjuin*, a

magnificent Hall for *Amitāyus* (the Amida Buddha of the Pure Land) next to his main residence, with reportedly nine big golden statues of the Buddha. At its centre was a worship chamber for the sole use of Michinaga. This building thus was intended for his individual preparation for salvation (aiming at reincarnation in the Pure Land) – also in the face of the Age of Latter Dharma, whose imminent beginning Michinaga himself mentioned in this diary – but it was equally a strong manifestation of his still considerable power.¹⁰⁸

6. Conclusion: "Strange Parallels"

It is unclear, which calculation for the onset of Age of Latter Dharma Genshin himself accepted. He lived to see the year 1017 AD, in which he died.¹⁰⁹ As mentioned above, the frequency of climatic fluctuations increased around this time which the incipient Oort Minimum of solar activity. This was also the case for the Byzantine Empire in the years after the death of Emperor Basil II in 1025, especially in the 1030s and 1040s.¹¹⁰ In addition, 1000th anniversaries of the baptism and later the crucifixion and resurrection of Jesus Christ around 1030 AD, together with portents such as solar eclipses provided further reasons for apocalyptic expectations, as Matthew of Edessa reports:

In 478 of the Armenian reckoning (1029/30 AD), in the years of the Greek Emperor Vasil [Basil II, d. 1025], there appeared in the heavens a frightful and horrible sign, and anger against all creation. On the third of the month of October at the third hour of the day the upper firmament was rent from the east side to the west, the blue sky was split in two and a brilliant light was thrown down on the earth from the north, and the entire earth trembled with a great shaking; and before the light faded there was a shout and a frightful noise over all creation; the sun darkened and the stars appeared as if in the middle of the night, and all the world was clothed in mourning, and all peoples cried out to God with bitter tears. And then after three days all the princes and nobles were assembled by order of the Armenian king Yovhannēs, and they came before the holy *vardapet* Yovhannēs Kozerñ (...). And when the Armenian princes came to question him and to understand about the marvellous spectacle and sign, they saw that the holy *vardapet* Yovhannēs had fallen upon his face in sorrow and was crying bitterly. And when they questioned him, he gave an answer with a bitter air and miserable sighs and said 'O children, listen to me; woe and wretchedness to all humankind, for behold today is one thousand years since the binding of Satan whom our

¹⁰² Rhodes, *Genshin's Ōjōyōshū*, 120-123, 130-131, 168-173, 178; *Gukanshō*, transl. Brown and Ishida, 423-424.

¹⁰³ Cited after *Gukanshō*, transl. Brown and Ishida, 375.

¹⁰⁴ *Ōkagami*, transl. Craig McCullough, 355.

¹⁰⁵ Phillips, *Conforming to Invisible Principles*, 227-232.

¹⁰⁶ von Verschuer, *Rice, Agriculture, and the Food Supply*, 34-37.

¹⁰⁷ Yiengpruksawan, "The Eyes of Michinaga", 246-247; G. Cameron Hurst III, "Michinaga's Maladies. A Medical Report on Fujiwara no Michinaga". *Monumenta Nipponica* 34/1 (1979): 101-112, <https://www.jstor.org/stable/2384283>; Phillips, *Conforming to Invisible Principles*, 103; Hurst, "Kugyō and Zuryō", 69.

¹⁰⁸ Yiengpruksawan, "The Eyes of Michinaga", 234-237; Yiengpruksawan, "Countdown to 1051", 371.

¹⁰⁹ Rhodes, *Genshin's Ōjōyōshū*, 120-123, 130-131, 168-173, 178.

¹¹⁰ Johannes Preiser-Kapeller, "A Collapse of the Eastern Mediterranean? New results and theories on the interplay between climate and societies in Byzantium and the Near East, ca. 1000-1200 AD". *Jahrbuch der Österreichischen Byzantinistik* 65 (2015): 195-242, http://austriaca.at/Ox-claa5576_0x0033c615.pdf.

Lord Jesus Christ bound with his holy cross, and particularly with his holy baptism in the Jordan river. And now Satan has been freed from his bonds, according to the testimony of the vision of John the evangelist, as the angel of God told him that Satan would be bound for 1000 years and would then escape his bonds. And behold today Satan has been freed from his thousand years of bonds, as this is the year 478 in the Armenian era (1029/30). With 552 years gone before, it comes to 1030 years; given thirty years up to Christ's baptism, and there are 1000 up to today. And now because of this the rending of the heavens has occurred.¹¹¹

Again, Matthew's chronology is confused: while Basil II had already died in 1025, a (spectacular) annular solar eclipse was visible in Armenia and across the Mediterranean on 29 June 1033 (see Fig. 3).¹¹² It was followed by another annular solar eclipse on 18 April 1037 (see Fig. 3), near the date of Easter, which became the occasion for a second apocalyptic prophecy by Yovhannēs Kozefn, this time connected with the 1000th anniversary of the crucifixion and resurrection of Jesus Christ.¹¹³

Large parts of Japan suffered from another epidemic in 1020/1021 as well as of drought and epidemic in 1025 and a cold and rainy summer in 1029, also causing hunger, as did a drought around the capital in 1030 (which was answered with rainmaking rituals, performed several times between 1028 and 1044). In between these calamities, Fujiwara no Michinaga in 1025 had his Hall of Amitāyus dismantled and rebuilt, maybe considering it inadequate in the face of new powerful portents, but also devastated by the death of his daughters Kenshi (who was the consort of Emperor Sanjō) in 1024 and Kishi in 1025, and expanded it to a big temple complex. There he died on 3 January 1028, according to the *Eiga Monogatari* devoted to the recitation of *nenbutsu* in order to achieve re-incarnation in the "Pure Land" of Amida Buddha.¹¹⁴ After his death, political unrest increased and aggravated supply shortfalls, such as the rebellion of Taira no Tadatsune between 1028 and 1031; warfare equally led to famine in the affected provinces until 1032. In addition, we have hints at regional and over-regional outbreaks of epidemics, contributing to a lack of labour force in various provinces.¹¹⁵ Equally, the often violent conflicts between the factions within the Tendai order continued and intensified again in

the 1030s and 1040s: in 1035, warrior monks from the Enchin monastery of Onjōji attacked the Ennin faction's complexes on Mount Hiei. Followers of the latter in 1039 protested at the Fujiwara regent's residence in Kyōto and set it on fire.¹¹⁶

Furthermore, Emperor Go-Suzaku (1036–1045) suffered from illness in 1040, while natural disasters destroyed various buildings in and around the capital, such as the important outer shrine of Ise. Divination performed by the *Onmyōryō* (the court department devoted to these tasks, see the introduction to the present issue) connected these calamities to *tatari* caused by the angered deities venerated in Ise, who had not received their usual offerings.¹¹⁷ These events, however, also allowed the emperor to regain control over the interpretation and handling of such portents which mostly had been in the hands of Fujiwara no Michinaga and his network among monks and diviners. Michinaga's son Yorimichi had been able to establish himself in a similar position at the court like his father, but not to maintain the same influence of his family, providing room of manoeuvre for a more autonomous governance by the emperors.¹¹⁸ Against the background of these calamities and tensions in the centre of power, expectations of the *mappō* found additional food. In contrast to the earlier calculation reported by Genshin in 1007, however, over the course of the 11th century and later, the year 1052 (which was preceded by another outbreak of provincial rebellion in 1051, leading to the so-called "Earlier Nine Years' War") became the most popular date in Japan for the onset of the Age of Latter Dharma.¹¹⁹

Victor Lieberman in the second volume of his brilliant comparative study in 2009 identified various "strange parallels" between polities across Afro-Eurasia in the medieval and early modern periods. Among the possible factors leading to "synchronized trajectories", he identified the rhythms of climate change.¹²⁰ A combination of the "archives of society" and the "archives of nature" as undertaken in the present paper partly confirms these assumptions, augmented with evidence for other celestial phenomena. Their simultaneous interpretation as portents of end time in two polities at the extreme ends of Asia without any direct contact was also motivated by (coincidentally) overlapping apocalyptic calculations in both Buddhist and Christian traditions. These interpretations found further confirmation in crisis-prone political and socio-economic conditions,

¹¹¹ Translation cited from Tara L. Andrews, *Matt'ēos Urhayec'i and His Chronicle. History as Apocalypse in a Crossroads of Cultures*, (Leiden: Brill, 2017), 185.

¹¹² <https://eclipse.gsfc.nasa.gov/5MCSEmap/1001-1100/1033-06-29.gif>.

¹¹³ <https://eclipse.gsfc.nasa.gov/5MCSEmap/1001-1100/1037-04-18.gif>; Andrews, *Matt'ēos Urhayec'i and His Chronicle*, 189-197.

¹¹⁴ Hurst, "Michinaga's Maladies", 106 and 112; Yiengpruksawan, "The Eyes of Michinaga", 234-237; Christian Ratcliff, "The Thematic Structure of Eiga monogatari: Secular Success, Buddhist Concerns and the Function of the Fifteenth Chapter, Utagai". *Studies in Humanities / 神奈川大学人文学会 編* 183 (2014): 33-61.

¹¹⁵ Sansom, *A History of Japan to 1334*, 167-169; McCullough, "The Heian court", 74; Grapard, "Religious practices", 536-537; Takeuchi, "The rise of the warriors", 664-670; Farris, "Famine, Climate, and Farming", 283; Farris, *Daily Life and Demographics*, 52-53.

¹¹⁶ Weinstein, "Aristocratic Buddhism", 495-496; Adolphson, *The Gates of Power*, 64-65.

¹¹⁷ Phillips, *Conforming to Invisible Principles*, 122, 144.

¹¹⁸ Bernhard Scheid, *Der Eine und Einzige Weg der Götter. Yoshida Kanetomo und die Erfindung des Shinto* (Vienna: Verlag der Österreichischen Akademie der Wissenschaften, 2001), 73-78 (on the significance of the clan of Urabe, who specialised on specific forms of divination, in this network); Phillips, *Conforming to Invisible Principles*, 227-231.

¹¹⁹ Gukanshō, transl. Brown and Ishida, 423-424; McCullough, "The Heian court", 30-31, 74; Grapard, "Religious practices", 572-573; Takeuchi, "The rise of the warriors", 670-675; Rhodes, *Genshin's Ōjōyōshū*, 287. Yiengpruksawan, "Countdown to 1051", also on the wider context of this specific date. On the actual impact of Genshin's writings during and after his lifetime see also Horton, "The influence of the Ōjōyōshū".

¹²⁰ Victor Lieberman, *Strange Parallels: Volume 2, Mainland Mirrors: Europe, Japan, China, South Asia, and the Islands: Southeast Asia in Global Context, c.800-1830* (Cambridge: Cambridge University Press, 2009), 398-407.

such as struggles between the imperial centre and provincial elites, in Byzantium as well as in Japan.¹²¹ At the same time, both Fujiwara no Michinaga as well as maybe also Basil II used such interpretative frameworks to expand their influence respectively to strengthen their image as efficient rulers after their rise to power had faced significant challenges.

A comparison between different texts and (independent) historiographies as well as between the “archives of society” and the “archives of nature” may equally help us to “triangulate” the extent of these climatic fluctuations or the visibility of celestial phenomena across wider distances. As indicated above, however, the impact of various interpretative frameworks on the narrative strategies of authors (and rulers) at the same time prohibits to use these texts as just another piece of uniform empirical data – to be simply aggregated within long data series in order to determine possible correlations with natural scientific data, as done also in recent studies.¹²² This is even true beyond historiography¹²³ or religious writing for documentary evidence; in 918, for instance, the imperial council of state in Kyōto declared: “When within a district damage occurs from drought, flood, frost, sleet, worms, or locusts, and the chief official makes an exaggerated report, the penalty is seventy blows of the heavy rod.”¹²⁴ Similar rules were repeated in 927 and later.¹²⁵ References to such calamities in texts thus always served a purpose beyond mere reporting, and to identify these motivations as ways of a “social embedding” of climatic or celestial events is at least as relevant for the historians of the environment as the determination of past geo- and biophysical parameters.¹²⁶

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¹²² On these issues see Dagomar Degroot et al., “Towards a rigorous understanding of societal responses to climate change”, *Nature* 591 (2021): 539–550, <https://doi.org/10.1038/s41586-021-03190-2>.

¹²³ See Dimitris Krallis, “Historiography as Political Debate”, in *The Cambridge Intellectual History of Byzantium*, ed. Anthony Kaldellis and Niketas Siniouoglou (Cambridge: Cambridge University Press, 2017), 599–614, <https://doi.org/10.1017/9781107300859.036>.

¹²⁴ Cited after Kiley, “Provincial administration and land tenure”, 308–309.

¹²⁵ Kiley, “Provincial administration and land tenure”, 309–310.

¹²⁶ Johannes Preiser-Kapeller, *Die erste Ernte und der große Hunger. Klima, Pandemien und der Wandel der Alten Welt bis 500 n. Chr.*, (Vienna: Mandelbaum Verlag, 2021); Johannes Preiser-Kapeller, *Der Lange Sommer und die Kleine Eiszeit. Klima, Pandemien und der Wandel der Alten Welt von 500 bis 1500 n. Chr.* (Vienna: Mandelbaum Verlag, 2021).

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