



**A comparative approach to climate, environment and society in Eurasia, 300-1900
Towards understanding the impact of climate on complex societies**

Annual Report (October 2019)

This is the fifth annual report produced by the *Climate Change and History Research Initiative* (henceforward CCHRI) since its inception in 2015 and is intended to summarize our results and output to October 2019. We draw your attention in particular to the outcomes and impact of our Initiative outlined in sections **B – E** below, with the supporting material in the Appendices.

A: Aims

The aim of the CCHRI is to bring together archaeologists, historians and palaeo-environmental scientists in an endeavor to transcend disciplinary boundaries and examine the climate history of the eastern Mediterranean basin within a global comparative context over the period ca. 300 – ca. 1900 CE. The focus is on issues that have the largest potential for cross-disciplinary cooperation within the broader field of climate-history related study. At the same time, the initiative aims to provide concrete methodological and practical solutions to challenges that such collaboration involves. In this way, our hope is to contribute to a transformation of the way historians look at the past. Our team now includes ecologists and risk-assessment specialists as well as historians, archaeologists and palaeoscientists, in light of the increasing attention we are paying to the ways in which historical data can be of use in finding solutions or approaches to contemporary issues relevant to the ways in which societies respond to environmental stress factors.

The research initiative involves three streams of activities, each of which contributes to the basic aims, and includes specifically:

1. Entry-level workshops for pre-modernist junior scholars in history, archaeology and related disciplines, addressing issues of data collection, management, access, and interpretation covering key fields in the palaeosciences (**Appendix 1**). Workshops – in Princeton or internationally – are taught by recognized experts in the relevant specialist fields who remain involved in our subsequent activities.
2. Guest lectures on campus on a theme linking the study of climate and the environment to the history and archaeology of past societies (**Appendix 2**).
3. An annual colloquium at Princeton held to bring together current research in light of the key themes dealt with in the guest lectures and the workshop within the framework of the project as a whole (**Appendix 3**).

A key element in our strategic planning is to bring scholars from history, archaeology and the palaeosciences together, to work on problems jointly and face-to-face on a regular basis. We have established a truly multidisciplinary network of scholars, a team unlike any other in the field of premodern environmental history. While there have been several publications in the field of environmental history involving large numbers of contributing scholars, our project is the only one of which we are aware that

has generated (a) a common and ongoing program of research (as opposed to a one-off publication on a single theme, for example) and (b) regular face-to-face personal interaction and discussion focused on key research themes, led by a research group with such a stable and committed membership.

B: Outcomes and impact

The CCHRI continues to develop and expand its research remit in relation to the primary fields of interest outlined above:

* The CCHRI has been a leader in interdisciplinary collaboration between scholars that has resulted in an ongoing series of publications (now over 50 articles) in both historical and scientific journals, as well as contributing to chapters within monographs (lists of present and past publications at **Appendix 4**). Given the diverse specializations required for such work today we believe this is an absolute necessity in contemporary research, yet – as noted above – our project is one of very few that function successfully in this way.

* As a result of our research efforts, we have established Princeton as a leading focus for the study of relationships between historical societies and their environments both in the US and internationally. One of our recent publications, in the prestigious journal *Proceedings of the National Academy of Sciences of the USA*, has attracted international press attention, resulting in radio and newspaper interviews/interventions by Haldon (*New York Times*, *Der Spiegel*, *BBC* breakfast show, etc.) as well as coverage on the front page of Princeton’s website ([link](#)).

* A recent key result of our work has been the negotiation of a book series contract with Oxford University Press (see E below for details).

C: Outreach

* Beginning already in 2016 with a co-sponsored meeting in London (*Environment and society in the first millennium A.D.*, Saturday 8th October 2016, published as no. 10 in **Appendix 4** below), we have continued to extend our operations abroad. Most recently, we organized a joint colloquium with the Max Planck Institute for the Science of Human History in Jena, Germany in March 2019 (**Appendix 5**), and led an introductory workshop for environmental history in Athens, Greece in partnership with Hellenic Studies and the Princeton Athens Center (**Appendix 6**) a few days later. Both were very well attended, with standing room only for the Athens event. Current plans include a short workshop at an international conference in Birmingham/UK in March 2020, an intensive 2-day workshop at the Koç University Centre for Anatolian Civilisations in Istanbul, slated for Sept. 7-9 2020; and a year-long exhibition in the Koç University Centre for Anatolian Civilisations Museum entitled (provisionally) “*Anatolia: the climates of change. History, science and environment.*”

* We have established a high level of visibility on campus through a continued series of high profile events, the most recent of which was the recent colloquium at Princeton (**Appendix 7**). Members of the Initiative have also delivered a number of talks and lectures highlighting the results of our work at venues in the USA and internationally.

* Our website (<http://cchri.princeton.edu/>) has been very effective in disseminating information about our work, that of our collaborators, and meetings, while our newsletter is circulated to our mailing list and communicates our work with former event participants and other interested scholars on and off campus. Our work has also been taken up by popular science outlets such as the online *Atlas of Science* (<https://atlasofscience.org/can-historians-work-with-environmental-scientists-new-insights-for-addressing-climate-change-from-interdisciplinary-research/>)

* We have been successful in establishing a positive relationship with the Princeton Environmental Institute, other partners on campus, and the Institute for Advanced Study. Core members of the Initiative (Haldon, Di Cosmo, Mordechai, Newfield) have presented papers both in PEI and in the IAS, Newfield was awarded a Research Fellowship at the PEI in 2016, and Mordechai was awarded a fellowship at PECS (Princeton Energy and Climate Scholars) over 2015-2017.

D: Career development/enhancement, graduate and student involvement

* The CCHRI has been instrumental in the career development of several scholars that have been affiliated with Princeton. As part of their work, these scholars have moved on to receive prestigious awards:

- Dr. Timothy Newfield, originally a postdoc and then research fellow at Princeton, began a tenure-track position (jointly between History and Biology) in environmental history (with the emphasis on epidemiology and climatology) at Georgetown University as a direct result of his CCHRI work.
- Dr. Adam Izdebski (Krakow University) came to Princeton originally as a Council for the Humanities guest professor, and in part as a result of his collaboration with the CCHRI has been awarded a substantial 5-year grant from the Max-Planck-Gesellschaft to establish a Centre for Environmental History in Germany (2018-2023).
- Dr. Lee Mordechai, a former graduate student at Princeton, was awarded a postdoctoral fellowship at SESYNC for 2018-2019 (the National Socio-Environmental Synthesis Center) and has now taken up a tenure track position in ancient history at the Hebrew University of Jerusalem. His CCHRI work in environmental history and environmental science were significant factors in his success on the job market.
- Dr. Merle Eisenberg, whose work as a member of our team on the Justinianic plague of the 6th century is ongoing, has likewise been awarded a postdoctoral fellowship at SESYNC for 2019-2021.

* Several of the junior scholars who attended our Introductory Workshops have benefited from their experiences with us and have gone on to deploy the skills and knowledge they acquired in their research and publications, demonstrating the changes in their approaches in presenting their work in our colloquia.

* We have involved a number of members of the Princeton community. Dr. Janet Kay from Princeton's Society of Fellows, for example, collaborated with our members on a paper about the Justinianic Plague. Besides the aforementioned former history graduate students, others have also been closely involved: Mateusz Falkowski, Abigail Sargent, Lucas McMahon and Skyler Anderson. Many more attended our workshops and colloquia, from Princeton as well as from Georgetown, Harvard, UPenn, NYU, Columbia and Yale. Several undergraduate students have also attended our events, including an entire class that came to one of our panels (on environmental migration)

E: Deliverables

* We are especially pleased to announce the launch, in collaboration with Oxford University Press, of a series of volumes devoted to historical environmental topics and themes. The series, currently with the working title of *Studies in Premodern History and Environment*, will be launched officially in November this year, and we already have five titles lined up for publication in the course of the first eighteen months. This will provide a much-needed forum for scholars at all career-levels working within the broad field of historical environmental studies.

* The team, as a group, in project-specific sub-groups or individually, has produced over fifty published works, including multi- and joint-author articles in a range of scientific as well as social science and humanities journals, monographs, and edited volumes (**Appendix 4**).

* We have been developing a unique digital application on the Justinianic Plague (541-c.750 CE), which allows users to search and visualize all primary sources that cover this pandemic. The app also provides

critical analysis of the plague and the biases involved in digital form representation. The app will be housed on our website (<https://cchri.princeton.edu/justinianic-plague-app>), directing more traffic to it. The application has been developed with support from Princeton's Center for Collaborative History and Princeton's Center for Digital Humanities.

* We have number of further deliverables currently in preparation (see also **Appendix 4**):

- three multi-author articles in *Annales* focusing on collapse, sustainability, and methodology, representing a group effort
- a series of four articles and a monograph on the Justinianic Plague written by Mordechai and Eisenberg
- a number of articles that will arise from our 2019 events (**Appendices 5-7**)

Summary

The Initiative continues to be extremely active locally and internationally as we develop new threads of our research. As noted above, we have activities planned already until 2021, including international events in March and September 2020. We await the outcome of an application for funding from the National Socio-Environmental Synthesis Center (SESYNC) at Annapolis, MD, and have active collaborations with colleagues at Georgetown, at Giessen, and with the Center for Environmental History in Berlin.

The CCHRI represents a solid foundation for future collaborative, team-based research, training and publication nationally and internationally as well as the promotion of junior scholars in Princeton and elsewhere. The CCHRI has generated original research that challenges both simplistic historical explanation as well as causal determinism at all levels, and has further consolidated Princeton's reputation as a leading center in a field that has much relevance for current policy. For example, as a direct result of the work and publications of the initiative, Haldon was invited to join the advisory council for, and to speak at, the UNESCO-funded international conference "Impacts of climate change on cultural heritage: facing the challenge" (Athens, June 2019), a first step in the establishment of a new UNESCO-supported Climate Committee for Preservation of Heritage (CCPH). As already noted, and together with Dr Warren Eastwood (U Birmingham/UK) he has been invited to curate an exhibition on the environmental history of Anatolia, in Istanbul in 2021.

Our sponsors:

The Department of Art History & Archaeology, the Committee for the Study of Late Antiquity, the Center for Collaborative History, the Humanities Council, Princeton Environmental Institute, Princeton Institute for International and Regional Studies, the Department of Near Eastern Studies M. Munir Ertegun Turkish Studies Foundation, the Program in the Ancient World, the Seeger Center for Hellenic Studies, with the support of the Stanley J. Seeger Hellenic Fund.

John Haldon (Director CCHRI, Princeton)

Appendix 1: CCHRI workshops 2015-2019

The fall 2015 workshop for pre-modernists (September 15-17) was devoted to an introduction to **Palaeoclimates and Dendroclimatology** and was led by palaeoclimate modeler Jürg Luterbacher (Justus Liebig University, Germany) and dendroclimatologist Ulf Büntgen (Swiss Federal Research Institute WSL, Switzerland). Over 15 participants (graduate students, postdocs, assistant professors) from Princeton and other universities attended the three-day event.

The fall 2016 workshop (September 12-14), the second annual palaeoclimate workshop in the series, was focused on **palynology**, and was led by Professor Neil Roberts, Plymouth University, and Professor Warren Eastwood, Birmingham University. 25 junior scholars (graduate students to assistant professors) took part and over the course of three days tackled a number of issues from the principles of palynology, pollen dispersal and chronology development to the archaeological and palaeoclimate applications of pollen analysis. While the concentration was Mediterranean, the course leaders addressed the state of palynology in a number of world regions and introduced attendees to international pollen databases.

The fall 2017 workshop (7-9 September) was devoted to an introduction to the sciences of **glaciology** (ice cores) and **speleothemology** (stalagmites and stalactites) and how to use their data to reconstruct past climate on both local/regional and global scale. There were 19 participants from Princeton and a number of domestic and international universities and research centers internationally. A third day concentrated on **resilience theory** and its application to the study of past complex societies. Joe R. McConnell (Desert Research Institute), Dominik Fleitmann (University of Reading) and Marty Anderies (Arizona State University) led the workshop.

For our fourth workshop in 2019 (March 22-23) we offered a two-day introductory workshop **on the frontier between science and history**. CCHRI leaders, members and colleagues introduced scientific methods in the first day, then followed it with a historical discussions and case study analysis during the second day. The 2019 workshop was also the first one that took place outside Princeton, in this case in Princeton's Athens center. Attendance was very high.

The CCHRI workshops have been an unmitigated success, with excellent feedback. Through them we have been able to introduce junior scholars to a range of palaeo-science techniques and approaches, and encourage them to deploy these resources effectively in their own research. It is partly through the agency of these workshops that Princeton has become well-established as a focus for historical-environmental research. Our April 25 colloquium featured a number of talks by scholars who have participated in our workshops and are now using their new skills in their research.

Appendix 2: CCHRI guest lectures 2015-2019

2018/19

4.25.19 'Understanding the Past to Project Future Climate Change-Induced Migration. Lessons from the Groundswell Project', Alex de Sherbinin (Columbia)

2017/18

10.25.17 'Climate and Bronze Age Collapse in the Mediterranean Region,' Guy Middleton (Newcastle University)

2.27.18 'Environmental Change and Societal Resilience in Roman Egypt,' Katherine Blouin (University of Toronto)

2016/17

11.10.16 'Toward a Global Climate History of the 1780s: Iceland and Egypt,' Alan Mikhail (Yale University)

11.30.16 'Mediterranean Tsunamis and the Port of Caesarea Maritima,' Hendrik Dey (Hunter College)

2.15.17 'Climate Change and Conflict: Perspectives from the Little Ice Age,' Dagomar Degroot (Georgetown University)

3.15.17 'Climate, Biodiversity, and Epidemics: The Ottoman Plague Experience,' Nükhet Varlık (Rutgers University)

4.26.17 'Climatic Variability and the Fisheries of Medieval and Early Modern Europe,' Richard Hoffman (York University)

2015/16

10.27.15 'Digitizing Patterns of Power in Macedonia (12th-14th C.): What do Nomads, Pasture, Camels and Hydrography Have in Common?', Mihailo Popović (Vienna)

12.9.15 'Violence and Extreme Weather in Medieval Ireland,' Francis Ludlow (Yale)

2.17.16 'Climate and Rural Society in the Eastern Mediterranean, c.300-1000: using vegetation and landscape history to transform our understanding of the past,' Adam Izdebski (Krakow)

3.9.16 'Reconstructing Climate using Tree Rings and Speleothems,' Inga Labuhn (Lund)

4.6.16 'Climate, Crusades and Collapse? The Eastern Mediterranean ca. 1000-1200,' Johannes Preiser-Kapeller (Vienna)

Appendix 3: CCHRI colloquia 2015-2019

The **first spring colloquium** took place in May 2016 and was focused on the theme *Resilience and climate change in history*. The speakers included Kevin Anchukaitis (UofArizona, Tree-Ring Lab); Nicola di Cosmo (IAS, History); John Haldon (Princeton, History); Adam Izdebski (UofJagiellonian & Princeton, History); Inga Labuhn (UofLund, Geology); Sofia Laparidou (UofTexas, Anthropology); Lee Mordechai (Princeton, History); Don Nelson (UofGeorgia, Anthropology); Tim Newfield (Princeton, History); Arlene Rosen (UofTexas, Anthropology); Paolo Squatriti (UofMichigan, History). Some 35 people attended from campus and outside, including the speakers.

The **second spring colloquium** took place in May 2017 and focused on the theme: *Vulnerability and resilience: from catastrophe to complexity in the pre-modern Mediterranean and the pre-Columbian Americas*. Speakers included John Bintliff (Leiden), Vera Candiani (Princeton), Arlen Chase (University of Nevada), Warren Eastwood (University of Birmingham), Martín Medina Elizalde (Auburn University), Dominik Fleitmann (University of Reading), Benjamin Graham (University of Memphis), John Haldon (Princeton), Adam Izdebski (Krakow and IAS), Jürg Luterbacher (Giessen), Lee Mordechai (Princeton), Joseph Manning (Yale), Sturt Manning (Cornell), Jason Nesbitt (Tulane University), Tim Newfield (Georgetown University), Johannes Preiser-Kapeller (Austrian Academy of Sciences), Arlene Rosen (University of Texas), Billie Lee Turner (Arizona State University), Elena Xoplaki (Giessen). The program is attached as **Appendix 6**.

The **third spring colloquium** took place in May 2018, on the theme: *Society, environment and change in historical perspective. Recent collaborative and interdisciplinary research*. Speakers include: Peregrine Horden (Oxford), Johannes Preiser-Kapeller (Austrian Academy), Qing Pei (Hong Kong), Patrick Klinger (U Kansas), Kevin Bloomfield (Cornell), David Patterson (U Michigan), Lee Mordechai (Notre Dame), Patricia McAnany (UNC Chapel Hill), Marty Andeies (U Arizona), Guy Middleton (York), Ronnie Ellenblum (Jerusalem) and some 15 other speakers and participants, many of whom have been members of the group from the beginning.

The **fourth spring colloquium** took place in April 2019, on the theme: *Climate, Environment and Migration in Historical Perspective*. Speakers and chairs included Maia Call (SESYNC), Alex de Sherbinin (Columbia), Nicola di Cosmo (IAS, Princeton), John Haldon (Princeton), Emmanuel Kreike (Princeton), Sarah Klassen (University of British Columbia), Rosina Lozano (Princeton), Kathryn de Luna (Georgetown), Tom McGovern (Hunter College), Lee Mordechai (SESYNC), Tim Newfield (Georgetown), and Sam White (Ohio State University). Attendance at this conference was very high (30-40 people from Princeton and the community).

Appendix 4:

CCHRI research publications 2018/9

Publications

1. J. Haldon, H. Elton, S. Huebner, A. Izdebski, L. Mordechai, T. Newfield, Plagues, climate change, and the end of an empire: A response to Kyle Harper's *The Fate of Rome* (1): Climate. *History Compass* 16(12) (2018) <https://onlinelibrary.wiley.com/doi/full/10.1111/hic3.12508>
2. J. Haldon, H. Elton, S. Huebner, A. Izdebski, L. Mordechai, T. Newfield, Plagues, climate change, and the end of an empire: A Response to Kyle Harper's *The Fate of Rome* (2): Plagues and a crisis of empire. *History Compass* 16(12) (2018) <https://onlinelibrary.wiley.com/doi/10.1111/hic3.12506>
3. J. Haldon, H. Elton, S. Huebner, A. Izdebski, L. Mordechai, T. Newfield, Plagues, climate change, and the end of an empire: A Response to Kyle Harper's *The Fate of Rome* (3): Disease, agency and collapse. *History Compass* 16(12) (2018) <https://onlinelibrary.wiley.com/doi/10.1111/hic3.12507>
4. J. Haldon, 'Some thoughts on climate change, local environment and grain production in Byzantine northern Anatolia', in A. Izdebski and M. Mulryan, eds., *Environment and society during the long late antiquity*, Late Antique Archaeology 11 (Brill: Leiden 2018), 200-206
5. A. Izdebski, K. Wnęk. 'A history of Krakow's climate' [in Polish], in: A. Izdebski & R. Szmytka (eds.), *Ekobiografia Krakowa* (Znak Horyzont, Kraków 2018), 51-87
6. A. Izdebski, 'Setting the scene for an environmental history of Late Antiquity', in A. Izdebski and M. Mulryan (eds.), *Environment and society in the long late antiquity*, Late Antique Archaeology 11 (Brill: Leiden 2018), 3-13
7. A. Izdebski, 'Catastrophes aside: environment and the end of Antiquity', in A. Izdebski and M. Mulryan (eds.), *Environment and society in the long late antiquity*, Late Antique Archaeology 12 (Brill: Leiden 2018), 185-18
8. I. Labuhn, M. Finné, A. Izdebski, N. Roberts, J. Woodbridge, 'Climatic changes and their impacts in the Mediterranean during the first millennium A.D.', in A. Izdebski and M. Mulryan (eds.), *Environment and society in the long late antiquity*, Late Antique Archaeology 12 (Brill: Leiden 2018), 65-88
9. M. Morellón, G. Sinopoli, A. Izdebski, L. Sadori, F. Anselmetti, R. Hodges, E. Regattieri, B. Wagner, B. Brushulli, D. Ariztegui, 'Environment, climate and society in Roman and Byzantine Butrint', in A. Izdebski and M. Mulryan (eds.), *Environment and society in the long late antiquity*, Late Antique Archaeology 12 (Brill: Leiden 2018), 3-17
10. A. Izdebski & M. Mulryan M. (eds.), *Environment and society in the long late antiquity*, Late Antique Archaeology 11 & 12 (Brill: Leiden 2018)

11. N. Roberts, 'Re-visiting the Beyşehir Occupation phase: land-cover change and the rural economy in the eastern Mediterranean during the first millennium AD', in A. Izdebski and M. Mulryan (eds.), *Environment and society in the long late antiquity*, Late Antique Archaeology 11 (Brill: Leiden 2018), 53–68
12. L. Mordechai, M. Eisenberg, 'Rejecting Catastrophe: the case of the Justinianic Plague', *Past and Present* 244/1 (2019), 3-50.
13. M. Eisenberg, L. Mordechai, 'The Justinianic Plague: An Interdisciplinary Review', *Byzantine and Modern Greek Studies* 43/2 (2019), 156-180.
14. M. Eisenberg, Merle, D.J. Patterson, J. Kreiner, E.F. Arnold, and T. P. Newfield. 'The Environmental History of the Late Antique West: A Bibliographic Essay.' *Environment and society in the long late antiquity*, Late Antique Archaeology 11 & 12 (Brill: Leiden 2018)

Forthcoming:

15. J. Haldon and W.J. Eastwood. 'Euchaïta, landscape and climate in the Byzantine period', in J. Preiser-Kapeller, A. Izdebski and M. Popović, eds., *A companion to the environmental history of Byzantium* (Brill: Leiden 2019)
16. A. Izdebski, 'Byzantine ecologies', in M. Decker (ed.), *Cambridge Companion to Byzantine Archaeology* (CUP: Cambridge 2020) (in press).
17. A. Izdebski, 'Palynology and historical research', in A. Izdebski & J. Preiser-Kapeller (eds.), *Companion to the Environmental History of Byzantium* (Brill: Leiden 2020) (in press).
18. L. Mordechai, 'Archaeoseismology', in J. Preiser-Kapeller, A. Izdebski and M. Popović, eds., *A companion to the environmental history of Byzantium* (Brill: Leiden 2020)
19. L. Mordechai, 'Berytus and the Aftermath of the 551 Earthquake'. To appear in *Late Antiquity – Studies in Source Criticism*. (2020)
20. L. Mordechai, M. Eisenberg, T. P. Newfield, A. Izdebski, J. Kay and H. Poinar, 'The Demographic Insignificance of the Justinianic Plague'. *Proceedings of the National Academy of Sciences USA*.

Under review/revision:

21. M. Eisenberg, L. Mordechai, 'Constructing the Justinianic Plague: Pandemics as Historical Scripts', Submitted to *American Historical Review*.

22. A. Izdebski, P. Guzowski, J. Haldon, F. Ludlow, J. Luterbacher, J. Manning, L. Mordechai, T. Newfield, A. Stein, E. Xoplaki. 'The challenge of interdisciplinary history: approximating time and space', submitted to *Annales*.
23. T. Newfield, I. Labuhn, 'Charlemagne's Famines: Climate and Subsistence Crises in Carolinian Europe' submitted to *Speculum*.
24. L. Mordechai and L. White. Modeling the Justinianic Plague: the case of Constantinople. Submitted to PLOS ONE.

In advanced preparation:

25. L. Mordechai. Late antique environment and the economy: from Apamea to Epiphania
26. M. Eisenberg, R. Alpert and L. Mordechai. *Mass Death in Popular Culture as Reflected in Zombie and Epidemic Films* (provisional title)
27. T. Newfield, K. Blouin, S. Marciniak, M. Sigl, I. Labuhn, 'Plagued by Doubt Again: A Crisis in Egypt, the Antiquity of Smallpox and the Antonine Plague'

CCHRI research publications 2015-2018

1. J. Haldon, L. Mordechai, T. Newfield, A.F. Chase, A. Izdebski, P. Guzowski, I. Labuhn and C.N. Roberts, 'History meets palaeoscience. Consilience and collaboration in studying past societal responses to environmental change', *Proc. National Acad. of Sciences of the USA* 115 (13): 3210-3218 (2018) <https://doi.org/10.1073/pnas.1716912115>
2. J. F. Haldon and A.M. Rosen, 'Introduction: Problems of resilience, adaptation and transformation', *Human Ecology* 46/3 (2018) <https://doi.org/10.1007/s10745-018-9972-3>
3. I. Labuhn, M. Finné, I. Izdesbki, N. Roberts and J. Woodbridge,. 'Climatic changes and their impacts in the Mediterranean during the first millennium A.D.', in A. Izdebski and M. Mulryan, eds., *Environment and society in the first millenium AD* (Late Antique Archaeology 13. Leiden 2018)
4. A. Izdebski, S. Allcock, M. Cassis, S. Laparidou, L. Mordechai, J. Pickett and S. White, 'Environmental stress and resilience in complex historical societies. Insights from Eastern Mediterranean case studies,' *Human Ecology* 46/3 (2018)
5. M. Cassis, O. Doonan, H. Elton and J. Newhard, 'Evaluating archaeological evidence for demographics, abandonment, and recovery in Late Antique and Byzantine Anatolia,' *Human Ecology* 46/3 (2018)
6. L. Mordechai, 'Short-term cataclysmic events in premodern complex societies', *Human Ecology* 46.3 (2018) <https://doi.org/10.1007/s10745-018-9971-4>

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8. L. Mordechai, 'Antioch in the Sixth Century: Resilience of Vulnerability?', in A. Izdebski and M. Mulryan, eds., *Environment and society during the long Late Antiquity* (Late Antique Archaeology 13. Leiden 2018)
9. N. Roberts, M. Cassis, O. Doonan, W.J. Eastwood, H. Elton, J.F. Haldon, A. Izdebski, J. Newhard, 'Not the End of the World? Post-Classical Decline and Recovery in Rural Anatolia', *Human Ecology* 46.3 (2018) <https://doi.org/10.1007/s10745-018-9973-2>
10. M. Soroush and L. Mordechai, 'Adaptation to short-term cataclysmic events: flooding in premodern riverine societies', *Human Ecology* 46.3 (2018) <https://doi.org/10.1007/s10745-018-9986-x>
11. E. Xoplaki, J. Luterbacher, J. Haldon and A. Izdebski, 'Modeling resilience', *Human Ecology* 46.3 (2018)
12. J.F. Haldon, 'Some thoughts on climate change, local environment and grain production in Byzantine northern Anatolia', in A. Izdebski and M. Mulryan, eds., *Environment and society during the long Late Antiquity* (Late Antique Archaeology 13. Leiden 2018)
13. C. Oppenheimer, A. Orchard, M. Stoffel, T. Newfield, S. Guillet, C. Corona, M. Sigl, N. di Cosmo, U. Büntgen, "The Eldgjá Eruption: Timing, Long-Range Impacts and Influence on the Christianization of Iceland" *Climatic Change* (2018),
14. T. Newfield, "Mysterious and Mortiferous Clouds: Towards an Historical Epidemiology of the Late Antique Little Ice Age" in A. Izdebski and M. Mulryan, eds., *Environment and society in the first millenium AD* (Late Antique Archaeology 13. Leiden 2018).
15. T. Newfield, "The Global Climatic Downturn of c.535-550: The State of the Art" in F. Mauelshagen, C. Phister, S. White eds., *The Palgrave Handbook on Climate History* (London, 2018).
16. U. Büntgen, O. Eggertsson, L. Wacker, M. Sigl, F. Ljungqvist, N. di Cosmo, G. Plunkett, P. Krusic, T. Newfield, J. Esper, C. Lane, F. Reinig and C. Oppenheimer, 'Multi-Proxy Dating and Climate Forcing of Iceland's Pre-Settlement Katla Eruption in 822/3 CE' *Geology* 45 (2017), 783-786.
17. T. Newfield, 'Malaria and Malaria-Like Disease in the Early Middle Ages' *Early Medieval Europe* 25 (2017), 251-300.
18. T. Newfield, I. Labuhn, 'Realizing Consilience in Studies of Pre-Instrumental Climate and Pre-Laboratory Disease' *Journal of Interdisciplinary History* 48 (2017), pp. 211-240.
19. T. Newfield, "Livestock Plagues in Late Antiquity, with a Disassembling of the Bovine Panzootic of A.D. 376-386" *Journal of Roman Archaeology* 30 (2017), pp. 490-508.

20. T. Newfield, M. D. Teasdale, S. Fiddymment, J. Vnouček, V. Mattiangeli, C. Speller, A. Binois, M. Carver, C. Dand, C. C. Webb, D. G. Bradley and M.J. Collins, 'The York Gospels: a 1000-year biological palimpsest', *Royal Society open science* 4 (2017): 170988.
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Appendix 5: CCHRI-Jena colloquium, March 2019

Resilience, environmental change and society Perspectives from History and Prehistory

March 18-20, 2019

Jena, Germany

The aim of our annual meeting was to bring together – for the first time – interdisciplinary projects on climate and environmental change that work on two different “human pasts”: history and prehistory. We want to see whether the levels of social and cultural complexity and the types of evidence we study lead to different conclusions about human capabilities of coping with environmental challenges; or perhaps our approaches are complementary and their synergy increases our understanding of the mechanisms of human resilience to climatic change and other “natural” stressors. As always with the CCHRI Colloquia, we plan to publish the results of our discussions either as a special issue in an interdisciplinary journal, or as one or two multi-author articles in highly-visible journals.

Monday, 18 March 2019

12.00-13.15 Lunch for the conference participants (in the institute)

13.15 Opening remarks – Nicole Boivin, John Haldon, Adam Izdebski

Session 1: Consilient approaches: where do we stand?, Chair: Hugh Elton (Trent, Canada)

13.30-14.30

1. Adam Izdebski, Alessia Masi & Georgios Liakopoulos (MPI SHH Jena & La Sapienza, Rome): *Pollen counts and tax registers: numbers as the common language of palaeo-science & history*
2. Ricardo Fernandes (MPI SHH Jena): *Learning from history: proposal of a complex systems approach to the study of past human lifeways*

14.30-15.00 Coffee break

15.00-16.00

3. Leonor Peña Chocarro & Guillem Pérez Jordà (not attending) (Madrid) *Crop choice, agricultural systems and adaptability in Iberian prehistory*
4. Lisa Onaga (MPIWG Berlin) *Sericulture, genes and the environment in modern Japan*

16.00-17.00

Discussion – Commentator: Martin Bauch (Leipzig) & Kristina Sessa (Ohio)

Tuesday, 19 March 2019

Session 2: Resilience and sustainability, Chairs: Elena Xoplaki (Giessen) & Juerg Luterbacher (Giessen)

9.00-10.00

1. Neil Roberts (Plymouth/Oxford): *Resolving the climate-population paradox: an analysis of long-term change in the Mediterranean*
2. John Haldon (Princeton): *What counts as collapse for a historian?*

10.00-10.30 coffee break

10.30-11.30

3. Erika Weiberg & Martin Finne (Uppsala): *The lure of complexity: expansion periods and climate in Bronze Age Greece*
4. Steve Goldstein (MPI SHH Jena): *Small-scale responses to large-scale climate change: A 6000 year record of forager resilience at Lake Turkana, Kenya*

11.30-12.30

Discussion – Commentator: Agata Stasik (Warsaw)

12.30-13.30 Lunch for the conference participants (in the institute)

Session 3: Case studies – disease, Chair: Kirsten Bos (MPI SHH Jena)

13.30-14.30

1. Maria Spyrou (MPI SHH Jena): *Tracing historical plague pandemics through analysis of ancient *Yersinia pestis* genomes*
2. Lee Mordechai (SESYNC-National Socio-Environmental Synthesis Center and HU Jerusalem): *Catastrophe or Construct? The Justinianic Plague between history, historiography, and science*

14.30-15.00 Coffee break

15.00-16.00

3. Tim Newfield (Georgetown) & Sabine Hübner (Basel): *Epidemics in the pre-plague Roman world*

16.00-17.00

Discussion – Commentator: Phil Slavin (Stirling)

Wednesday, 20 March 2019

Session 4: Case studies – droughts, Chair: Inga Labuhn (Bremen)

9.00-10.00

1. Michael Petraglia (MPI SHH Jena): *Environmental Variability, Droughts and the History of Human Populations in Arabia*
2. Kevin Bloomfield (Cornell) – *Consilience and The Fossae Mariana: History and Fluvial Regimes of the Rhône Delta during the Early Empire*

10.00-10.30 Coffee break

10.30-11.30

3. Laura Sadori (La Sapienza, Roma): *Drought and adaptation in the Bronze Age Mediterranean*
4. Nicholas Dunning (Cincinnati): *Resilience and Vulnerability: In Failure lie the Seeds of Success; In Success lie the Seeds of Failure. Perspectives from the Maya Lowlands*

11.30-12.30

Discussion – Commentator: Johannes Preiser-Kapeller (Austrian Academy of Sciences)

12.30-13.30 Lunch for the conference participants (in the institute)

Session 5: Case studies – “success” stories, Chair: Dominik Fleitmann (Reading)

13.30-14.30

1. Andrew Dugmore (Edinburgh) *Norse Greenland's Glory Days: successful adaptations from the Western frontier of Medieval Europe*
2. Piotr Guzowski (Białystok): *The Little Ice Age as the Golden Age? The case of early modern Poland*

14.30-14.45 Coffee break

15.45-16.45

3. Huw Groucutt (MPI CE Jena): *How humans crossed the Saharo-Arabian arid belt and spread across the world*
4. Tristram Kidder (Washington University in St Louis): *“A heartbreaking story of the improvidence of man” or a self-evident success story? 4000 years of vulnerability and resilience in the lower Yellow River Valley*

15.45-16.45

Discussion – Commentator: Piotr Filipkowski (Polish Academy of Sciences)

17.00-18.00 Final discussion

Appendix 6: CCHRI Introductory workshop at Athens, March 2019

History, Environment and Climate: An Introductory Workshop

March 22-23, 2019

Princeton Athens Center

Stanley J. Seeger '52 House, 3 Timarchou St., 11634 Athens Greece

Friday, March 22	An Interdisciplinary Approach to History and the Environment
09:00-09:30	Coffee and General Introduction John Haldon Princeton University
09:30-10:30	<i>Palynology</i> Warren Eastwood Katerina Kouli University of Birmingham National and Kapodistrian University of Athens
10:30-11:00	Coffee break
11:00-12:00	<i>Multiproxy Climate Reconstructions: Ways and Means</i> Juerg Luterbacher Justus-Liebig-University Giessen
12:00-12:30	General discussion
12:30-14:00	Lunch break
14:00-15:00	<i>Climate Models: Potential, Challenges and Perspectives</i> Elena Xoplaki Justus-Liebig-University Giessen
15:00-16:00	<i>Who Needs a Bioarchaeologist? The Human-Environment Interaction in the Byzantine Context</i> Chryssa Bourbou Hellenic Ministry of Culture
16:00-16:30	Coffee break
16:30-18:00	<i>Climate, Weather and Environment: Ways, Means and Challenges</i> General discussion CCHRI Team
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Saturday, March 23	Some Applications of Environmental History
09:00-09:15	Coffee
09:15-09:45	<i>Historical Research and Interdisciplinarity: Some Introductory Remarks</i> John Haldon Princeton University
09:45-10:30	<i>Greek Frappé? The Little Ice Age in the Ottoman Greek Lands</i> Georgios Liakopoulos Elias Kolovos MPI SHH Jena University of Crete
10:30-11:00	Coffee break

11:00-11:45	<i>The Late Antique Little Ice Age and the 536 ‘Mystery cloud’</i> Lee Mordechai Dennis Stathakopoulos Tim Newfield HUJI, SESYNC KCL Georgetown University
11:45-12:30	<i>Economy and Society in the Eastern Mediterranean: What can Palynology Tell Us?</i> Adam Izdebski MPI SHH Jena/Jagiellonian University in Krakow
12:30-14:00	Lunch break
14:00-14:45	<i>“Yersinia pestis” and the First Pandemic: History, (Bio)archaeology and aDNA: Current Trends, Risks and Opportunities</i> Chryssa Bourbou Dennis Stathakopoulos Nikos Tsivikis Hellenic Ministry of Culture KCL RGZM, Mainz
14:45-15:30	<i>The Justinianic Plague: Too Much of a Bad Thing?</i> Lee Mordechai HUJI, SESYNC
15:30-16:00	Coffee break
16:00-16:45	<i>Climate and Unmaking a Lethal Pandemic: The Antonine Plague</i> Tim Newfield Georgetown University
16:45-17:30	<i>Where Do We Go From Here? Collaboration, Consilience and Challenges. General Discussion and Conclusion</i> CCHRI Team
17:30	Drinks

Appendix 7: CCHRI colloquium at Princeton, April 2019

Climate, Environment and Migration in Historical Perspective

Thursday April 25th 2019

144 Simpson International Building

09.30-09.35 Welcome and Introduction John Haldon (Princeton)

Session 1: Migration and Climate as Contemporary Challenges

Chair: John Haldon

09.35 – 09.55 Paper 1 Rosina Lozano (Princeton)
Migration along the US-Mexico Border: Language, Race, and Citizenship

09.55 – 10.15 Paper 2 Maia Call (National Center for Socio-Environmental Synthesis, Annapolis, Md)
What drives environmental migration? Longitudinal Evidence from Uganda

10.15 – 10.40 Questions for papers 1 & 2

10.40 – 10.55 Coffee

Session 2: Migration and Climate Change in Historical Perspective 1

Chair: Tim Newfield (Georgetown)

10.55 – 11.15 Paper 3 Emmanuel Kreike (Princeton)
Climate, War, and Migration in Southern Africa

11.15 – 11.35 Paper 4 Sam White (Ohio State University)
Climate and Transatlantic Migration, 1600-1850

11.35 – 12.00 Questions for papers 3 & 4

12.00 – 13.00 Lunch

Session 3: Migration and Climate in Historical Perspective 2

Chair: Lee Mordechai (Hebrew University/SESYNCC)

13.00 – 13.20 Paper 5 Kathryn de Luna (Georgetown)
Climate and (Social) Mobility? Interdisciplinary Micro and Macro Approaches in the Bantu Expansion

13.20 – 13.40 Paper 6 Nicola di Cosmo (IAS, Princeton)
The Climate of the Mongol Conquest

13.40 – 14.05 Questions for papers 5 & 6

14.05 – 14.20 Coffee

Session 4: Migration and Climate in Historical Perspective 3

Chair: Newfield

14.20 – 14.40 Paper 7 Tom McGovern (Hunter College/NJ and the Graduate
Center of CUNY)
Environmental change and Norse Settlement in Greenland

14.40 – 15.00 Paper 8 Sarah Klassen (U British Columbia)
*Environmental Change, Political ‘Collapse,’ and Migration in
Medieval Cambodia*

15.00 – 15.25 Questions for papers 7 & 8

Final Discussion

15.25 – 16.00 Chair: John Haldon

Public Lecture A71 Simpson International Building

16.30 Alex de Sherbinin (Columbia)
*Understanding the Past to Project Future Climate Change-Induced Migration.
Lessons from the Groundswell Project*