Aims and rationale

This project aims to bring together archaeologists, historians and palaeoenvironmental scientists in an endeavour to transcend several disciplinary boundaries and examine the climate history of the eastern Mediterranean basin over the period ca. 300 – 1900 CE. It follows two pilot meetings held at Princeton in May 2013 and May 2015 that launched the current project, from which the team has recently published an important article in the *Journal of Interdisciplinary History*.

The research initiative involves a number of activities that accompany the ongoing research of the individuals who make up the main team. These include specifically:

1. An annual entry-level workshop (September) for junior scholars on issues of data collection, management, access, and interpretation covering key fields (dendrochronology, palynology, lake sediment analysis, climate modeling, landscape modeling etc.). Taught by internationally-recognized experts in the relevant specialist fields.
2. Multiple guest lectures each semester on a theme linking the study of climate and the environment to the history and archaeology of past societies.
3. An annual mini-colloquium (May) to bring together the key themes dealt with in the guest lectures and the workshop within the framework of the project as a whole.

I am pleased to report that our initiative has reached or exceeded all of its goals for the 2015-16 academic year. We convened a three-day introductory workshop on dendroclimatology in September 2015 and held a total of five invited lectures on campus throughout the year. Our final event for the year, a full-day colloquium, took place in late May 2016. These events have driven research by core and affiliated members of our project, which included some high profile publications (see *Publications*, below). We have established an active and updated website (cchri.princeton.edu) and a mailing list through which we communicate with former participants in our events and other interested scholars on and off campus. We have also offered two
specialized courses on topics related to our research (see below: Teaching) and have been integrating our findings into our broader courses.

**Ongoing Project research**

Our main annual research-oriented event, the colloquium, takes place in May. This year we began (May 22) with a meeting of several key project members who have been involved with our initiative for the past couple of years and have been leading the teams writing the contributions to *Human Ecology*. In this meeting we discussed current research trends and planned the shape of the project’s collaboration over 2016-2017. On the following day (May 23) ten scholars – including four Princeton project leaders (Nicola di Cosmo, John Haldon, Tim Newfield and Lee Mordechai) – presented their research, focused on the concept of societal resilience to environmental and climatic pressures (see next paragraph). The program is attached to this report. One of the planned products from this meeting and last year’s meeting is a substantial jointly-authored piece to appear in the journal *Human Ecology* in 2017.

**Colloquium**

Climate and social scientists have demonstrated for several periods and areas a coincidence of substantive climate change with major societal shifts of different scales. The existence of some causal association between the two is hardly in doubt, however a more intensive case-by-case analysis of the societal (cultural/ideological, systemic/institutional) responses and reactions is essential, particularly in respect of the degree of socio-cultural resilience present in the different cultural systems. In order to acquire more comprehensive knowledge of past climate and environment, and an understanding of climatic-environmental-societal dynamics, including the response and adaptation (resilience and sustainability) of human societies, the colloquium addressed the issue of societal resilience and social-structural and economic sustainability through, first, a palaeoclimatic approach that identified the severity, abruptness and duration of climatic events and changes; second, a palaeoenvironmental approach that focused on reconstructing past environmental conditions; and third, an archaeological-historical approach that deployed palaeoclimate and palaeoenvironmental data to address societal linkages to climatic and environmental change and associated episodes of crisis and adaptation. The work thus inaugurated will be pursued in publications already in preparation or planned and will form a central thread of our continuing research effort.

**Workshop**

The main goal of our annual September workshop is to introduce younger scholars from the humanities and social sciences to different aspects of the environmental sciences. This is at the same time an important aspect of our outreach activities. For this purpose, we bring world-renowned experts on a specific topic each year to offer a concentrated three-day workshop to fifteen to twenty junior scholars from Princeton and beyond with little to no experience about the workshop’s subject. In order to allow individuals from less well-funded institutions to participate, our initiative pays for their accommodation and meals during the workshop. These events also aim at creating personal connections among participants and instructors that will eventually develop into scholarly collaborations. We would emphasize that this is an aspect of the initiative unique to Princeton: none of our peer institutions have established such an
introductory workshop. Illustrative of its success is the fact that participants are drawn from over a dozen universities and with varying backgrounds.

Our fall 2015 workshop was entitled: **Paleoclimate-Dendroclimatology Workshop for Pre-Modernists** and took place from Tuesday, Sept. 15, 2015 to Thursday, Sept. 17, 2015. It was led by Dr. Ulf Büntgen (Swiss Federal Research Institute WSL) and Dr. Jürg Luterbacher (Univ. of Giessen), outstanding scholars in their own fields.

The fall 2016 workshop will be led by Prof. Neil Roberts (Portsmouth University) and Dr. Warren Eastwood (University of Birmingham/UK), also leaders in their field, and will introduce participants to the fundamentals of **palynology** and **reconstructing past climate using lake sediment cores**. Some twenty applicants are set to take the course.

**Lectures**

Our invited public lectures introduce Princeton scholars to cutting-edge research and themes in fields related to our project in an interdisciplinary setting. They are aimed at an interdisciplinary audience and were indeed attended by members of Princeton’s Departments of History, Geosciences, and Atmospheric and Oceanic Sciences. Our initial plan called for two invited lectures per semester for our program, and we have increased this number in the spring semester, taking advantage of the fact that both Inga Labuhn (Lund) and Adam Izdebski (Krakow) have been in Princeton for the year and spring semester, respectively. This has strengthened our local community and reduced our expenses. Our speakers this year came from different disciplines, including geography, the life sciences and history. This year’s lectures focused on our core region – the Eastern Mediterranean Basin – although we used Western Europe to provide a comparative view. In addition, project leader John Haldon gave two talks aimed at Princeton’s science community through the Princeton Environmental Institute and the Princeton Energy and Climate Scholars group.

**Our lectures for the 2015/6 year included:**

- **Mihailo Popović (Vienna)**
  Digitizing Patterns of Power in Macedonia (12th-14th C.): What do Nomads, Pasture, Camels and Hydrography Have in Common?  
  4:30 pm Tue, Oct 27, 2015  
  215 Aaron Burr Hall

- **Francis Ludlow (Yale)**
  Violence and Extreme Weather in Medieval Ireland  
  4:30 pm Wed, Dec 9, 2015  
  Dickinson Hall 210

- **Adam Izdebski**  
  **(Krakow and Princeton)**
  Climate and Rural Society in the Eastern Mediterranean, c.300-1000: using vegetation and landscape history to transform our understanding of the past  
  4:30 pm Wed, Feb 17, 2016  
  Dickinson Hall 230
Teaching
Members of our initiative have taught two environmental history courses at Princeton over the 2015/6 academic year. Tim Newfield, a core member of our project, delivered an undergraduate seminar, *Pathogens & Disease in European History to 1800* (HIS 400). Adam Izdebski, a leading environmental historian who is visiting Princeton for the spring semester, taught a junior seminar *Towards an environmental history of the Mediterranean world ca. 300-1900: integrating science and history* (HIS 308). He also instructed a number of graduate students from the History Department, one of whom has submitted an impressive first-year research assignment related to the material presented in the course. Other project leaders (John Haldon and Molly Greene) have been integrating environmental themes within their courses as well.

Resources
We have launched a Princeton-hosted website (cchri.princeton.edu) to provide more information about our initiative, upcoming events and affiliated individuals, and to serve as a central repository of our past events, course offering and resources. Visitors can review a substantial, up to date bibliographic list that covers environmental history and climate science items, and can explore links to other academic projects that combine climate science, history and digital humanities.

1 This was a closed talk for PECS (Princeton Energy and Climate Scholars) group members – graduate students and faculty members.
Project publications
A number of publications by project members appeared in the course of the academic year, including:


3. Adam Izdebski, Karin Holmgren, Erika Weiberg, Sharon R. Stocker, Ulf Büntgen, Assunta Florenzano, Alexandra Gogou, Suzanne A.G. Leroy, Jürg Luterbacher, Belen Martrat, Alessia Masi, Anna Maria Mercuri, Paolo Montagna, Laura Sadori, Adam Schneider, Marie-Alexandrine Sicre, Maria Triantaphyllou and Elena Xoplaki, ‘Realising consilience: How better communication between archaeologists, historians and natural scientists can transform the study of past climate change in the Mediterranean’, *Quaternary Science Reviews* 136 (March 2016), 5-22

4. Adam Izdebski, Jordan Pickett, Neil Roberts and Tomasz Waliszewski, ‘The environmental, archaeological and historical evidence for regional climatic changes and their societal impacts in the Eastern Mediterranean in Late Antiquity’, *Quaternary Science Reviews* 136 (March 2016), 189-208


Outreach
As part of our efforts to create and maintain a wide community of scholars within and beyond Princeton, we have launched a semi-annual concentrated bulletin to inform past and prospective participants in our events and other interested scholars about our activities over the semester and plans for the future. The bulletins for the academic year 2015-2016 are attached to this report and are also available on our website. Together with the workshops, the lecture series and our
publications, we hope thereby to encourage greater public interest and understanding of the historical relationship between environment and society.

**Additional funding/support**
The project benefited greatly from the presence of Dr. Adam Izdebski of the Jagiellonian University in Krakow, who came to Princeton as a guest of the project, generously supported by the Humanities Council. It benefited likewise from the generous support of the Princeton Environmental Institute and the History Department, who were key sponsors of the May colloquium; as well as from financial support from the Seeger Center for Hellenic Studies, the Humanities Council, The Department of Near Eastern Studies M. Munir Ertegun Turkish Studies Foundation, and the Program in the Ancient World.

**The upcoming year**

For the coming academic year we plan to continue our activities along the same lines, with at least one undergraduate and one graduate course, taught by Tim Newfield; the fall workshop and the spring colloquium; and a series of lectures.

The latter include:

10 November 2016, 4:30 -- Alan Mikhail, Department of History, Yale University

30 November 2016, 4:30 -- Hendrik Dey, Department of Art and Art History, Hunter College

15 February 2017, 4:30 -- Dagomar Degroot, Department of History, Georgetown University

15 March 2017, 4:30 -- Nükhet Varlik, Department of History, Rutgers University - Newark

26 April 2017, 4:30 -- Richard Hoffmann, Department of History, York University.

In respect of future research, we are now expanding our coverage geographically to include Western Europe, and are in discussion regarding a further expansion to include the (pre-Columbian) Americas. In particular, ongoing work by several members of the team has encouraged us to pursue the issue of sustainability and resilience in pre-modern societies. This was the subject for the spring colloquium, and it has influenced the direction of our work for the current publication project for *Human Ecology*. It has also impacted in significant ways on our historical work, for example chapter 6 of John F. Haldon, *The empire that would not die: the paradox of eastern Roman survival, 640-740* (Cambridge, Mass. 2016), in which the significant role played by minor shifts in climatic conditions, and the ways in which the late Roman state in the eastern Mediterranean and Anatolia was able to benefit, are highlighted.

Finally, as part of the international collaborative work underpinning the project’s research, several members of the team are involved in three major scientific conferences in the coming months, at which aspects of the project’s ongoing research will be presented:
1. Session on **Food, environment and landscape in Byzantium**, within the 23rd International Congress of Byzantine Studies. Co-convenor of the session is Dr Adam Izdebski, session participants from the CCHRI include Prof. J.F. Haldon and Dr. J. Pickett (August 2016, Belgrade/Serbia)

2. Conference **MedCLIVAR 2016: Learning from the past, perceiving the present, engaging for the future**, at which project team members Haldon, Izdebski, Fleitmann, Laparidou, Roberts and Xoplaki will present papers and co-chair sessions (September 2016, Athens/Greece)

3. Conference **Late Antique Archaeology 2016: Environment and society in the first millennium AD**, co-organized by Izdebski, at which Haldon, Eastwood and Izdebski will present papers.

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Finally, it remains for us to thank PIIRS for its generous support and sponsorship of this initiative. We hope the Institute will feel that its investment has been worthwhile!

**Attachments:**

- Project Bulletin, fall 2015
- Project Bulletin, spring 2016
- Program, Spring Colloquium 2016
- Poster, Spring Colloquium 2016
Session I - Resilience: Theoretical background
9:00 GENERAL INTRODUCTION
John Haldon
9:15 Resilience Theory: an Introduction
Don Nelson (Georgia) and Arlene Rosen (Austin)
9:30 DISCUSSION / Q&A
10:00 Whose Resilience? Contextualizing Environmental Change with the Help of Historical and Scientific Evidence
Adam Izdebski (Jagiellonian University)
10:30 Coffee break

Session II - Resilience in the Eastern Mediterranean: Case Studies
10:40 Socio-cultural Resilience and Environmental Change: some historical examples from the post-Roman and medieval period
John Haldon (Princeton)
11:10 Resilience to Seismic Events in the Byzantine Empire
Lee Mordechai (Princeton)
11:40 Climate change, Peasant Resilience and Imperial Agrarian Reforms in Medieval Islamic Jordan
Sofia Laparidou (Austin)
12:10 Roundtable Discussion
12:45 Lunch

Session III - Resilience in Eurasia
13:45 Resilience and War among the Mongolian Nomads in Historical Times
Nicola Di Cosmo (Institute for Advanced Studies)
14:15 Climate, Collapse, and Resilience: Emergent behavior at Greater Angkor, Cambodia
Kevin Anchukaitis (Arizona)
14:45 ROUNDTABLE DISCUSSION
15:05 Coffee break

Session IV - Resilience in the Western Mediterranean
15:15 New and Old Plants in Early Medieval Italy
Paolo Squatriti (Michigan)
15:45 Charlemagne’s Famines and the Response to Climatic Extremes c. 800
Tim Newfield (Princeton) and Inga Labuhn (Lund)
16:15 ROUNDTABLE DISCUSSION
16:35 Coffee break

Session V - Integrating Resilience
16:45 OBSERVATIONS FROM THE DAY
Nelson and Rosen
17:15 GENERAL DISCUSSION AND CONCLUSION

For more details visit cchri.princeton.edu

SPONSORED BY PRINCETON INSTITUTE FOR INTERNATIONAL AND REGIONAL STUDIES, PRINCETON ENVIRONMENTAL INSTITUTE AND THE CENTER FOR COLLABORATIVE HISTORY
Lecture Series

The 2016 Spring term was a busy and productive one for the Climate Change and History Research Initiative (CCHRI). In February, Dr. Adam Izdebski of Jagiellonian and Princeton Universities delivered the first of three CCHRI lectures. His talk ‘Climate and Rural Society in the Eastern Mediterranean, ca.300-1000’ was a deeply interdisciplinary exploration of landscape change in the early Byzantine Empire. Dr. Inga Labuhn of the University of Lund followed up the palaeoclimatic aspects of Adam’s lecture in March with an exceptionally useful introduction to the uses of tree rings and speleothems for reconstructing past climate. Rounding out the Spring lectures, in April Dr. Johannes Preiser-Kapeller of Austrian Academy of Sciences presented a reassessment of the evidence for the so-called ‘collapse’ of Eastern Mediterranean societies ca.1000-1200. Drawing on a wide range of data, Johannes, like Adam and Inga, emphasized that climatic and environmental histories should ideally be assembled region-by-region and that scholars should pay close attention to what independent lines of data from both written and natural archives, can and cannot tell us. Also in March, Professor John Haldon presented a CCHRI paper to the Princeton Environmental Institute, ‘Goldilocks in Byzantium’, which investigated the role of precipitation in the Eastern Roman survival of the Arab-Islamic conquests. The lecture can be watched here.

Spring Colloquium

The annual CCHRI Colloquium in May on the subject of resilience to climatic and environmental change of pre-modern populations in the Eastern Mediterranean and elsewhere was a great success. The one-day event saw anthropologists, archaeologists, historians, palaeoclimatologists and palynologists from the Princeton community and beyond present a series of case studies addressing the ways in which premodern societies buffered and absorbed changes in the natural world, from agrarian reforms in medieval Islamic Jordan through the rising dominance of rye in postclassical Italy to the vulnerability of the early ninth-century Uygars on the Central Asian Steppe to some weather extremes but not others.

Looking Ahead, the Fall 2016 Workshop

Applications are in and acceptance letters sent out: 20 young scholars (graduate students, postdocs and assistant professors) are set to arrive in Princeton in September for a three-day palaeoclimate-palynology workshop led by Professors Neil Roberts, Plymouth University, and Warren Eastwood, University of Birmingham. Leading palaeoecologists, Neil and Warren will introduce attendees to the art of palynology. Young scholars will examine pollen specimens, do some counting, chronology development (age-depth modeling), and investigate climate changes and vegetation responses visible in the data. Like last year following the palaeoclimate-dendroclimate workshop, attendees will receive good grounding in palaeoenvironmental research, an ability to better appreciate what goes into palynological research and how to incorporate it into their own work.

Looking Ahead, the Fall 2016-17 Lecture Series

We are proud to announce five lectures investigating premodern Mediterranean-European climate change and resilience have been booked for 2016-17 academic year: Alan Mikhail, Yale University, 10 November; Hendrik Dey, Hunter College, 30 November; Dagomar Degroot, Georgetown University, 15 February; Nükhet Varlık, Rutgers University, 15 March; and Richard Hoffmann, York University, 26 April. All lectures will be at 4:30 in Dickinson Hall Room 211. See you there!

The Project

The CCHRI aims to integrate the research of scholars in all relevant social and natural scientific disciplines in order to evaluate and interpret the evidence for societal resilience to environmental stress and change. The focus is premodern with case studies on the Eastern Mediterranean and Eastern Eurasia with plans to provide comparisons with additional regions. The project has already contributed to several publications by its members, while a special issue of Human Ecology is currently in the making. The CCHRI has been funded generously by the Princeton Institute for Interregional and Regional Studies, with additional support from the Center for Collaborative History, the Princeton Environmental Institute, the Program in the Ancient World, The M. Munir Ertegun Foundation for Turkish Studies at Princeton, the Council for the Humanities, and the Seeger Center for Hellenic Studies, with the support of the Stanley J. Seeger Hellenic Fund. For more, visit cchri.princeton.edu.

Have a Wonderful Summer!

John Haldon, Lee Mordechai and Tim Newfield
Fall 2015 Workshop Recap
In September the Climate Change and History Research Initiative (CCHRI) invited renowned palaeoclimate modeler Jürg Luterbacher (Justus Liebig University, Germany) and dendroclimatologist Ulf Büntgen (Swiss Federal Research Institute WSL, Switzerland) to lead our first annual introductory workshop for younger scholars (graduate students, postdocs and junior faculty) interested in incorporating climate sciences in their work. Over 15 participants from Princeton and other universities attended the three-day event focused on dendroclimatology.

Write-ups may be found at:

Fall 2015 Lectures Recap
On 27 October, Byzantinist Mihailo Popovic (Austrian Academy of Sciences, Vienna) delivered the first of five 2015/16 CCHRI lectures, "Digitizing Patterns of Power in Macedonia (12th-14th centuries): What do Nomads, Pasture, Camels and Hydrography Have in Common?", and on 9 December historical climatologist Francis Ludlow (Yale University, Climate and Energy Institute) delivered the second "Violence and Extreme Weather in Medieval Ireland". Both lectures stimulated discussion of how to address climate change within an historical context.

Spring 2016 Colloquium
On 23 May, CCHRI will host a colloquium addressing resilience to climatic change in premodern human societies in the Mediterranean region and the Central Asian Steppe. The event will feature Kevin Anchukaitis, Nicola di Cosmo, John Haldon, Adam Izdebski, Sofia Laparidou, Lee Mordechai, Don Nelson, Tim Newfield, Arlene Rosen and Paolo Squatriti as speakers, while several others will attend as guests. The colloquium is open to the public.

Young Scholar Paper Prize
The CCHRI will award annually a prize of 1,000 USD to a young scholar for best unpublished interdisciplinary essay addressing premodern climate change and resilience. PDF submissions are due 1 June 2016. See the CCHRI website for more information.

Looking Ahead, The Fall 2016 Workshop
Leading palaeoecologists Neil Roberts (Plymouth University, UK) and Warren Eastwood (University of Birmingham, UK) will run the September 2016 workshop which will focus on palynology. A call for applications will be posted on the CCHRI website this Spring.

The Project
The CCHRI’s long-term project aims to integrate the research of scholars in all relevant social and natural scientific disciplines in order to evaluate and interpret the evidence for societal resilience to environmental stress and change. The focus is premodern and comparative with case studies on the Eastern Mediterranean and Eastern Eurasia with plans to expand and cover additional regions in coming years. This multi-year project has been funded generously by the Princeton Institute for Interregional and Regional Studies, with additional support from the Center for Collaborative History, the Princeton Environmental Institute, the Program in the Ancient World, the Department of Near Eastern Studies M. Munir Ertegun Turkish Studies Foundation, the Council for the Humanities, and the Seeger Center for Hellenic Studies, with the support of the Stanley J. Seeger Hellenic Fund.

For more on Project Leaders, Team Members, events, resources and the paper prize please visit:
http://climatechangeandhistory.princeton.edu

Best wishes for the holidays!

John Haldon, Professor of History
Lee Mordechai, Graduate Student
Tim Newfield, Postdoctoral Fellow