

# The Last Climate Crisis: Histories of the “Little Ice Age”, c.1300-1850 (01:510:248)

Fall 2021: DRAFT SYLLABUS

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*Climate is a function of time...; it has a history*  
Emmanuel Le Roy Ladurie

*You don't need a weatherman to know which way the wind blows*  
Bob Dylan



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**01:510:248 Fall 2021**  
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**Course Description:** We stand at the precipice of a climate crisis; perhaps we have already taken one step out into the void. As we peer anxiously out into an uncertain future, we also need to look back. For climate has a history that predates the man-made climate change of the present day; and climatic change has played a role in human history at many of the key inflection points in the development and crises of civilizations and cultures. This course gets us to think about our current crisis by exploring in detail an earlier climate crisis, exploring the environmental, social, political, and cultural impact of a centuries-long phase of fluctuating climatic cooling usually known as the “Little Ice Age” (LIA), c.1300-1850.

Focusing primarily on the northern hemisphere (where the data for the LIA is most secure) and on European, Chinese, and early American colonial history, the course consists of eight interlocking parts or modules.

The first, introductory, part of the course explores the intellectual, ethical, and political stakes of studying climate history: How do the basic assumptions of historical analysis shift when we consider non-human nature or natural forces as agents of historical change? What can the historical study of past climate-influenced crises teach us about the unfolding contemporary crisis triggered by anthropogenic climate change? And how might our current concerns shape the questions we ask about the role of climate in pre-industrial history?

Part two introduces students to the archives—the source material and evidence—for writing the history of climate, not only the traditional documentary sources and the proxy records that implicitly reveal changing climate patterns, but also the natural archives, whether ice cores or tree rings, from which paleoclimatic scientists are able to reconstruct past climates at increasingly refined levels of detail.

Part three steps back to explore what we know about broad patterns of “naturally-forced” climate change since the end of the last great ice age, and will analyze the role that eras of warming, cooling, or climatic disturbance have played in the evolution of human populations, societies, polities, and economies.

Part four of the course introduces us to the Little Ice Age itself, and explores the current understanding of the nature, extent, periodicity, and causes of climatic cooling and disturbance in the period c.1300-1850.

Part five begins our exploration of the role played by phases of dramatic LIA cooling (and associated climatic turbulence) in the often traumatic but ultimately transformative history of late medieval and early modern Europe. We begin with the crisis of the fourteenth century, exploring the role of climate change and climatic turbulence in the “Great Famine” and the livestock pandemics of the 1310s, and analyzing the relationship among climate, ecology, and disease during the “Black Death” pandemic of bubonic plague in the late 1340s.

Part six turns to the question of culture, to human perceptions of normal and disturbed weather, and to how late medieval and early modern Europeans understood and explained the

natural world and its fluctuations using classical modes of knowledge, religious understanding of divine providence, and astrological modes of prediction.

Part seven explores the connections between the LIA's coldest periods and the various crises of the early modern age (c.1500-1700). We will explore climate impacts (or possible impacts) on a variety of early modern crisis events or trends: the harvest failures, dearth, and famine that strained early modern social structures across the globe; the rise of witch persecution and other forms of scapegoating; the major political upheavals and revolutions of the mid-seventeenth century (the so-called "general crisis of the seventeenth century"); and European encounters with the strange new climates of the Americas. But we will also explore the role of human and societal "resilience" in navigating and containing the pressures of an unusually harsh early modern environment, as well as the role of art and literature in documenting and re-presenting violent or unusual weather.

The eighth and final part of the course takes an alternative approach to the early modern age, exploring how some of the transformative events and developments of the Little Ice Age played a key role in the origins of the Anthropocene—the new geological epoch characterized by humans' fundamental reshaping of the earth system. We will explore the permanent ecological consequences of European encounters with the Americas; the birth of the new natural philosophy (modern science), its attitudes towards human "dominion" over nature, and its development of a new meteorology; the first theorizing of the possibility that humans could alter climates, and the political exploitation of the idea that different climates shaped different types of human; the first systematic use of fossil fuels; and the first sustained "green" critiques of the negative human impact on environments.

As a final assignment, students will work on a project—in whatever media form they choose (traditional essay, podcast, online presentation, etc.)—on one of the most traumatic, and best-documented, short-term climate-induced crises of the (late) Little Ice Age: the infamous "year without summer" and other cascading calamities that followed the eruption of the Indonesian volcano Mt. Tambora in 1815.

The course is explicitly designed to encourage students to think about the interrelationship of past, present, and future, and to assess how historical and paleoclimatic research can help us understand and respond to contemporary challenges. The course also explicitly explores and encourages interdisciplinarity and multi-disciplinarity, blending methods and source materials from several different historical subfields, while engaging with the methodology and discoveries of contemporary climate science.

**SAS Core Requirements:** The course meets the Historical Analysis (HST) requirement of the SAS Core.

**STEM in History Minor/Certificate:** The course counts towards the new minor/certificate "STEM in History".

**Environmental Studies Major/Minor:** The course also counts towards the environmental humanities component of the Environmental Studies major and minor. Please consult with the Dept. of Geography for more information.

**Assessment** incorporates a variety of modes that will test different aspects of students' learning and mastery of course materials:

\*Two interactive collaborative annotations of scholarly articles, using the Hypothesis annotation app on the course Canvas site.

\*Two interactive collaborative annotations of primary documents, using the Hypothesis annotation app on the course Canvas site

\*Course anthology, an annotated weekly scrapbook of images, slides, documents, and extracts drawn from course lectures and readings

\*Final assignment on the Tambora eruption of 1815 and the climate-driven crises that followed: This can take the form of either a traditional essay (6 pp.); a visual or video presentation (in PowerPoint or other medium); a podcast; or another form of presentation

\*Participation in class discussions, either in our weekly Zoom meetings, through the online discussion platforms on Canvas, or in office hours, etc. [worth 10% of final grade].

**Deadlines and Extensions:** All extensions of the deadlines for assignments can and must be negotiated *in advance*. Work handed in late without an extension will be penalized, and all assignments must be completed to pass the course. Especially in these unsettled times, please feel free to contact with me with worries about assignments and deadlines.

**Academic Integrity:** Rutgers takes very seriously any and all violations of its academic integrity policy, and acts of cheating or plagiarism will be handled according to the university's procedures and punished accordingly. The university's updated policy can be consulted at <http://academicintegrity.rutgers.edu>. Please feel free to ask me if you have any questions or concerns.

**Readings:** All the assigned readings for this course will be available on Canvas as PDFs and are organized into modules corresponding with the eight parts of the class. The exceptions to this are TWO books available from RU Bookstore and other retailers of the printed word.

--Valerie Trouet, *Tree Story: The History of the World Written in Rings* (Johns Hopkins UP: Baltimore, 2020): ISBN 978-1421437774 [required for Week Four]

--Gillen D'Arcy Wood, *Tambora: The Eruption that Changed the World* (Princeton UP: Princeton and Oxford, 2014): ISBN 978-0691168623 [required for Final Assignment]

**Climate History Resources:** [historicalclimatology.com](http://historicalclimatology.com), founded and curated by the leading climate historian Dagomar Degroot (Dept. of History, Georgetown University), is a terrific site, with feature articles, links, resources and podcast interviews on many aspects of climate history.

# THE GREAT FROST.

Cold doings in London, except it be at the  
L O T T E R I E.

With Newes out of the Country.

*A familiar talke betwene a Country-man and  
a Citizen touching this terrible Frost and the great Lotterie,  
and the effects of them.*

The Description of the Thames frozen over.



Printed at London for Henry Gosson, and are to be sold at the signe of the

# SYLLABUS: HISTORIES OF THE LITTLE ICE AGE

## PART ONE: INTRODUCTION

### Week One

Session 1      Introductory session: Overview and Introductions

### Week Two

Session 2      Lecture 1: What is Climate History?

Session 3      Discussion 1: Debating Environmental and Climate History

#### Reading for Discussion:

William Cronon, “The Uses of Environmental History”, *Environmental History Review* 17:3 (1993) [Canvas]

Mark Carey, “Beyond Weather: The Culture and Politics of Climate History”, in Andrew Isenberg (ed.) *Oxford Handbook of Environmental History* (2014) [Canvas]

## PART TWO: THE PALEOCLIMATIC ARCHIVE

### Week Three

Session 4      Lecture 2: Narratives & Proxies: Climate in the “Traditional” Archive

Session 5      Discussion 2: Climate History and the *Annales* School [Zoom]

#### Reading for Discussion:

Fernand Braudel, “The Mediterranean as a Physical Unit: Climate and History”, in *The Mediterranean and the Mediterranean World in the Age of Philip II* (London, 1972: translation of 1966 French second edition of an original first published in 1949), vol. 1, pp.231-75 [Canvas]

### Week Four

Session 6      Lecture 3: Song of Ice and Wood: Climate History in the Natural Archive

Session 7      Discussion 3: Dendrochronology: Tree Rings and Climate History

#### Reading for Discussion:

Valerie Trouet, *Tree Story: The History of the World Written in Rings* (Baltimore, 2020), chs.1-9 [book for purchase]

### **PART THREE: CLIMATE CHANGE AND THE HOLOCENE: THE BIG PICTURE**

#### Week Five

Session 8                      Lecture 4: Climate Change in the Holocene: Patterns and Motors

Session 9                      Discussion 4: How Volcanoes Make History

#### Reading for Discussion:

Michael Sigl et al., “Timing and climate forcing of volcanic eruptions for the past 2,500 years”, *Nature* 523 (30 July, 2015), pp.543-562 [Canvas]

Joseph R. McConnell et al., “Extreme climate after massive eruption of Alaska’s Okmok volcano in 43 BCE and effects on the late Roman Republic and Ptolemaic Kingdom”, *PNAS* June 2020 [Canvas].

### **PART FOUR: RECONSTRUCTING CLIMATE CHANGE IN THE LITTLE ICE AGE**

#### Week Six

Session 10                      Lecture 5: Mapping Climatic Change in the Little Ice Age, c.1250-1850

Session 11                      Discussion 5: Making Sense of the LIA Paleoclimatic Data

Reading for Discussion: slides and data from Lecture 5 [Canvas]

### **PART FIVE: CLIMATE AND THE LATE MEDIEVAL CRISIS**

#### Week Seven

Session 12                      Lecture 6: Climate, Famine and Disease in Fourteenth-Century Europe

Session 13                      Discussion 6: Climate, Disease and The Late Medieval Crisis

#### Reading for Discussion:

Bruce M. S. Campbell, *The Great Transition: Climate, Disease and Society in the Late-Medieval World*, (Cambridge, 2016), chap. 1,

“Interactions between nature and society in the late-medieval world”  
[Canvas]

Johannes Trokelowe, *Annales*, extracts on the Great Famine in England  
[Canvas].

## **PART SIX: METEO-MENTALITIES: CULTURE, PERCEPTION AND WEATHER**

### Week Eight

Session 14                      Lecture 7: Prognostication and Providence: Meteo-Mentalities in the LIA

Session 15                      Discussion 7: Religion and Astrology / Providence and Prediction

#### Reading for Discussion:

Church of England, *A Forme of Prayer to be publikely used in Churches, during this unseasonable Weather, and aboundance of Raine* (London, 1613) (selections from Morning Service) [Canvas]

Anon, *The last terrible Tempestious windes and weather* (London, 1613)  
[Canvas]

Anon., *Perpetuall and Naturall Prognostications of the change of weather* (London, 1591) (selections) [Canvas]

John Booker’s almanac for 1631, extracts [Canvas]

## **PART SEVEN: CLIMATE CHANGE AND THE EARLY MODERN CRISIS**

### Week Nine

Session 16                      Lecture 8: Early Modern Climate & Crisis: Famine and Witchcraft

Session 17                      Discussion 8: Climate and Witch-hunting

#### Reading for Discussion:

Wolfgang Behringer, “Climatic Change and Witch-Hunting: The Impact of the Little Ice Age on Mentalities”, *Climatic Change* 43 (1999), pp.335-51 [Canvas]



Heinrich Sprenger and Jakob Kramer, *Malleus Maleficarum (The Hammer of the Witches)*, 1486 (trans. Christopher Mackay, 2009), Part 2, chap. 15, “The method by which they stir up hailstorms and rainstorms” [Canvas]

Images for Discussion:

Hans Baldung Grien, “Weather Witches”, painting (1523) [Canvas]  
Albrecht Dürer, “Witch Riding Backward”, engraving (c.1500) [Canvas]  
Pieter Bruegel, “St. James and the Magician”, engraving (1565) [Canvas]

Week Ten

Session 18 Lecture 9: The LIA and the General Crisis of the Seventeenth Century

Session 19 Discussion 9: Climate and the Mid-Seventeenth Century Revolts

Reading for Discussion:

Geoffrey Parker, “Crisis and Catastrophe: The Global Crisis of the Seventeenth Century Reconsidered”, *American Historical Review* 113:4 (2008), pp.1053-79 [Canvas]

Ralph Josselin’s diary entries for 1648, in Alan Macfarlane (ed.), *The Diary of Ralph Josselin 1616-1683* (Oxford, 1991) [Canvas]

Week Eleven

Session 20 Lecture 10: European Encounters with American Climate in the LIA

Session 21 Discussion 10: Climate, Colonization and the New World [Zoom]

Reading for Discussion:

John Mason, *A Briefe Discourse of the Newfound-land* (Edinburgh, 1620) [Canvas].

Week Twelve

Session 22 Lecture 11: Resilience and Culture in the Little Ice Age

Session 23 Discussion 11: Looking at the Little Ice Age

Reading for Discussion: Paintings by Pieter Bruegel and Hendrik Avercamp; images of the frozen River Thames in the seventeenth century

## **PART EIGHT: THE LITTLE ICE AGE & THE ANTHROPOCENE**

### Week Thirteen

Session 24                      Lecture 12: The Anthropocene and the Little Ice Age

#### Reading for Thanksgiving Meditation:

Paul J. Crutzen, “Geology of Mankind”, *Nature* 415 (3 January, 2002)  
[Canvas]

Simon L. Lewis and Mark A. Maslin, “Defining the Anthropocene”,  
*Nature* 519 (12 March, 2015) [Canvas]

THANKSGIVING BREAK: NO CLASS

### Week Fourteen

Session 25                      Lecture 13: A New “History of the Weather”: The Aspirations and Failings of Natural Philosophy

Session 26                      Discussion 12: London Smoke

#### Reading for Discussion:

John Evelyn, *Fumifugium: Or, The Inconvenience of the Aer and Smoak of London Dissipated* (1661) [Canvas]

### Week Fifteen

Session 27                      Lecture 14: The Climate of Enlightenment, c.1690-1800

Session 28                      Discussion 13: The Little Ice Age, History and the Climate Emergency

Reading for Discussion: OPEN DISCUSSION