

What Was The Ice Age

It is not possible to understand the present or future climate unless scientists can account for the enormous and rapid cycles of glaciation that have taken place over the last million years, and which are expected to continue into the future. A great deal has been learned in the last decade, and it is now widely accepted that ice ages are driven by changes in the Earth's orbit. The study of ice ages is very inter-disciplinary, covering geology, physics, glaciology, oceanography, atmospheric science, planetary orbit calculations astrophysics, and more. In *Discovering the Ice Ages* Tobias Krüger explores the discovery of the Ice Ages over the course of the 19th century, how the idea was received, and what further research it stimulated for the first time from an international perspective.

Cundill History Prize Finalist Longman-History Today Prize Finalist "Meticulous environmental-historical detective work." —Times Literary Supplement When Europeans first arrived in North America, they faced a cold new world. The average global temperature was 10 degrees Fahrenheit colder than today. The effects of this climactic upheaval were stark and unpredictable: blizzards and deep freezes, droughts and famines, winters in which everything froze, even the Rio Grande. A Cold Welcome tells the story of this crucial period, taking us from Eurocentric histories of the continent to the landscapes to the perilous first winters in Quebec and Jamestown. As we confront our own uncertain future, it offers a powerful reminder of the unexpected risks of an unpredictable climate. "A remarkable journey through the complex impacts of the Little Ice Age, beautifully written, important book leaves us in no doubt that we ignore the chronicle of past climate change at our peril. I found it hard to put down." —Brian Fagan, author of The Little Ice Age "Deeply researched and exciting...His fresh account of the climate of North America differs significantly from long-standing interpretations of those early calamities." —New York Review of Books

This highly interdisciplinary book studies historical famines as an interface of nature and culture. It will bring together researchers from the natural and social sciences as well as the humanities. With reference to recent interdisciplinary concepts (disaster studies, environmental history) it will examine, how the dominant opposition of natural and cultural factors can be overcome. Such an integrated approach includes the "archives of nature" as well as "archives of man". It challenges deterministic models of human-environment interaction and the historicising approach. As a result it provides a fresh perspective on the entanglement of climate and culture in past societies.

A Geological History & Tour

New Dimensions in Paleoamerican Archaeology

The Archaeology of the Pleistocene—Holocene Transition

Images of the Ice Age

Discovering the Ice Ages

The Origin of America's Clovis Culture

Across Atlantic Ice

Life on Earth will eventually come to an end. This work focuses on the many potential catastrophes facing our planet in the future, from global warming and new Ice Ages to asteroid impact, supervolcanoes and mega-tsunami. It looks at the science behind these events and our chances of survival.

In this engrossing and accessible book, Doug Macdougall explores the causes and effects of ice ages that have gripped our planet throughout its history, from the earliest known glaciation—nearly three billion years ago—to the present. Following the development of scientific ideas about these dramatic events, Macdougall traces the lives of many of the brilliant and intriguing characters who have contributed to the evolving understanding of how ice ages come about. As it explains how the great Pleistocene Ice Age has shaped the earth's landscape and influenced the course of human evolution, Frozen Earth also provides a fascinating look at how science is done, how the excitement of discovery drives scientists to explore and investigate, and how timing and chance play a part in the acceptance of new scientific ideas. Macdougall describes the awesome power of cataclysmic floods that marked the melting of the glaciers of the Pleistocene Ice Age. He probes the chilling evidence for "Snowball Earth," an episode far back in the earth's past that may have seen our planet encased in ice from pole to pole. He discusses the accumulating evidence from deep-sea sediment cores, as well as ice cores from Greenland and the Antarctic, that suggests fast-changing ice age climates may have directly impacted the evolution of our species and the course of human migration and civilization. Frozen Earth also chronicles how the concept of the ice age has gripped the imagination of scientists for almost two centuries. It offers an absorbing consideration of how current studies of Pleistocene climate may help us understand earth's future climate changes, including the question of when the next glacial interval will occur.

Ice Age Earth provides the first detailed review of global environmental change in the Late Quaternary. Significant geological and climatic events are analysed within a review of glacial and periglacial history. The melting history of the last ice sheets reveals that complex, dynamic and catastrophic change occurred, change which affected the circulation of the atmosphere and oceans and the stability of the Earth's crust.

This concise and accessible new text offers original and insightful analysis of the policy paradigm informing international statebuilding interventions. The book covers the theoretical frameworks and practices of international statebuilding, the debates they have triggered, and the way that international statebuilding has developed in the post-Cold War era. Spanning a broad remit of policy practices from post-conflict peacebuilding to sustainable development and EU enlargement, Chandler draws out how these policies have been cohered around the problematization of autonomy or self-government.

Rather than promoting democracy on the basis of the universal capacity of people for self-rule, international statebuilding assumes that people lack capacity to make their own judgements safely and therefore that democracy requires external intervention and the building of civil society and state institutional capacity. Chandler argues that this policy framework inverts traditional liberal "democratic understandings of autonomy and freedom " privileging governance over government " and that the dominance of this policy perspective is a cause of concern for those who live in states involved in statebuilding as much as for those who are subject to these new regulatory frameworks. Encouraging readers to reflect upon the changing understanding of both state "society relations and of the international sphere itself, this work will be of great interest to all scholars of international relations, international security and development.

Canon of Insolation and the Ice-age Problem

The Little Ice Age

Socionatural Entanglements in Premodern Societies

A Geological Field Guide to the Mid-Columbia Basin

Explore The Ice Age!

Ice Ages and Astronomical Causes

Global Catastrophes

The second edition of this book has been completely updated. It studies the history and gives an analysis of extreme climate change on Earth. In order to provide a long-term perspective, the first chapter briefly reviews some of the wild gyrations that occurred in the Earth's climate hundreds of millions of years ago: snowball Earth and hothouse Earth. Coming closer to modern times, the effects of continental drift, particularly the closing of the Isthmus of Panama are believed to have contributed to the advent of ice ages in the past three million years. This first chapter sets the stage for a discussion of ices ages in the geological recent past (i.e. within the last three million years, with an emphasis on the last few hundred thousand years).

A mesmerizing overview of the world as it was when glaciers covered the earth and long-extinct creatures like the woolly mammoths and saber-toothed cats battled to survive. Go back 20,000 years ago to a time of much colder global temperatures when glaciers and extensive sheets of ice covered much of our planet. As these sheets traveled, they caused enormous changes in the Earth's landscape and climate, leading to the evolution of creatures such as giant armadillos, saber-toothed cats, and woolly mammoths as well as club-wielding Neanderthals and later the cleverer modern humans. Nico Medina re-creates this harsh ancient world in a vivid and easy-to-read narrative.

Argues that the Solutrean culture of coastal Spain and the European Atlantic Shelf was the ancestral industry to the North American Clovis industry.

Brrrr...does it feel cold? Get out your gloves and get ready to experience the Ice Age! In Explore the Ice Age! with 25 Projects, readers ages 7-10 discover what an ice age consists of, why we have them, and what effect an ice age has on living organisms and ecosystems, paying particular attention to the most recent Ice Age, which is the only one humans were around to witness. About 12,000 years ago, glaciers up to 2 miles tall covered up to one-third of Earth's land! Explore how these moving mountains of ice changed almost everything on Earth, including shorelines, weather, plants, animals and human activities, migration, and more. Learn the science and techniques of archeological and paleontological digs to understand how we know so much about a time that happened before recorded history. Science-minded activities lead readers to discover what a world covered in ice means for the earth's crust, its atmosphere, and what happens when the planet begins to warm and the ice melts. Projects include creating mini glaciers to move mountains and create beaches and recreating the lifestyles of Paleolithic people to discover what they ate, how they hunted, how they made tools and clothes and their history in art. Don't wait for the next ice age to get started! Cartoon illustrations, fun facts, and a compelling narrative make Explore the Ice Age! an essential part of any STEM library.

Climate Change and the Health of Nations

With 25 Great Projects

The Hudson Valley in the Ice Age

Ancient and Modern

Measurements, Interpretation and Models

The Ice Age

Humans at the End of the Ice Age

The Great Ice Age documents and explains the natural climatic and palaeoecologic changes that have occurred during the past 2.6 million years, outlining the emergence and global impact of our species during this period. Exploring a wide range of records of climate change, the authors demonstrate the interconnectivity of the components of the Earth's climate system, show how the evidence for such change is obtained, and explain some of the problems in collecting and dating proxy climate data. One of the most dramatic aspects of humanity's rise is that it coincided with the beginnings of major environmental changes and a mass extinction that has the pace, and maybe magnitude, of those in the far-off past that stemmed from climate, geological and occasionally extraterrestrial events. This book reveals that anthropogenic effects on the world are not merely modern matters but date back perhaps a million years or more.

What Was the Ice Age?Penguin

Humans at the End of the Ice Age chronicles and explores the significance of the variety of cultural responses to the global environmental changes at the last glacial-interglacial boundary. Contributions address the nature and consequences of the global climate changes accompanying the end of the Pleistocene epoch—detailing the nature, speed, and magnitude of the human adaptations that culminated in the development of food production in many parts of the world. The text is aided by vital maps, chronological tables, and charts.

New York's version of Los Angeles's famous La Brea Tar Pits? Sand Dunes in the city of Albany? Frederic Church's Olana, a gift of the Ice Age? A Niagara Falls in Philmont? Mastodons in Greenville? The Vanderbilt Mansion and Springwood, FDR's home in Hyde Park, at risk? Join Professors Robert and Johanna Titus on a tour of the Hudson Valley and see this familiar region with new eyes the eyes of geologists who see a half-mile-thick sheet of ice grinding its way down the valley and overtopping even the highest mountains. With the Tituses as your guides, "see" an ancient Manhattan high and dry with the Atlantic shoreline 100 miles to the southeast, North/South Lake State Park as a giant and frigid "waterslide park," and the immense expanse of Glacial Lake Albany stretching the entire length of the Hudson Valley with its deltas that would become the sites of some of America's most famous estates. Finally, witness the cataclysmic flood that cascaded through the valley at the end of the Ice Age as a great ice dam broke and a gigantic wall of water swept down the valley. The Tituses take the reader through the Catskills, the Shawangunks, the Taconics, along the banks of the Hudson River, to Bash Bish Falls and Lake Taghkanic to all those unique and beautiful places that make the Hudson Valley "the landscape that defined America" and demonstrate that all this rose phoenix-like from the devastation caused by the slow, inexorable advance of a grinding, half-mile-thick bulldozer of ice and the raging flood that followed its retreat. The result of these devastating events is the landscape that inspired the Hudson River School painters and America's pioneer landscape architects gifts of the Ice Age, and the familiar landscape we enjoy today.

Discovering an Ancient World

Climate Change, the Little Ice Age, and the Dutch Republic, 1560–1720

Ice Age Earth

The Return of Life to Glaciated North America

Fossil and Archaeological Evidence of the Lived Lives of Plio-Pleistocene Children

Data, Spectral Analysis and Mechanisms

How Climate Change Shaped the World

"This volume summarizes new developments in understanding the longest-lived icehouse period in Phanerozoic Earth history, the late Paleozoic ice age. Resolving the Late Paleozoic Ice Age in Time and Space provides summaries of existing and new data from the various Gondwanan continental relics, and also reviews stratigraphic successions from the paleotropical and temperate regions of Laurussia that preserve an indirect record of glaciation. It addresses the extent to which records of glaciation indicate protracted, long-term climatic austerity, as opposed to fluctuating, more dynamic climate, and provides new constraints on the timing of glaciation. Additionally, it tackles questions of synchronicity of glaciation across the various Gondwanan continental relics, and timing relationships between near-field and far-field records at greater levels of resolution than has been possible previously. Results point toward a dynamic icehouse regime that is comparable to the Cenozoic icehouse, and away from traditional interpretations of the late Paleozoic ice age as a single, protracted event that involved stable, long-lived ice centers."—Publisher's website.

An exciting Ice Age animal exploration led by popular adventurer Buddy Davis! Discover elk with antlers over 12 feet long, rhino-like animals that ate plants, “monster birds” that called North & South America home, and more! Learn about glaciers, land bridges, how much of the world was covered in ice! Read about how and why the Ice Age happened, and what the Bible reveals! At the end of the Ice Age, small groups of hunter-gatherers crossed from Siberia to Alaska and began the last chapter in the human settlement of the earth. Many left little or no trace. But one group, the Early Paleo-Indians, exploded onto the archaeological record about 11,500 radiocarbon years ago and expanded rapidly throughout North America, sending splinter groups into Central and perhaps South America as well. Journey to the Ice Age explores the challenges faced by the Early Paleo-Indians of northeastern North America. A revealing, autobiographical account, this is at once a captivating record of Storck's discoveries and an introduction to the practice, challenges, and spirit of archaeology.

John and Mary Gribbin tell the remarkable story of how we came to understand the phenomenon of Ice Ages. They focus on the key personalities obsessed with the quest for answers to tantalizing questions.How frequently do Ice Ages occur? How do astronomical rhythms affect the Earth's climate? Have there always been two polar ice caps? What does the future have in store?With startling new material on how the last major Ice Epoch could have hastened human evolution, Ice Age explains why and how we learned the Earth was once covered in ice—and how that made us human."Best work of science exposition and history that I've read in many years!"—Charles Munger, Vice-Chairman of Berkshire Hathaway Corporation

Famines During the ?Little Ice Age? (1300–1800)

People and Culture in Ice Age Americas

Solving the Mystery

Little Ice Ages

Ice Age

After the Ice Age

Resolving the Late Paleozoic Ice Age in Time and Space

A richly informed and inspired description of our evolution from Australopithecus to the Homo Sapiens we are today.

*Div*Only in the last decade have climatologists developed an accurate picture of yearly climate conditions in historical times. This development confirmed a long-standing suspicion: that the world endured a 500-year cold snap-The Little Ice Age-that lasted roughly from A.D. 1300 until 1850. The Little Ice Age tells the story of the turbulent, unpredictable and often very cold years of modern European history, how climate altered historical events, and what they mean in the context of today's global warming. With its basis in cutting-edge science, The Little Ice Age offers a new perspective on familiar events. Renowned archaeologist Brian Fagan shows how the increasing cold affected Norse exploration; how changing sea temperatures caused English and Basque fishermen to follow vast shoals of cod all the way to the New World; how a generations-long subsistence crisis in France contributed to social disintegration and ultimately revolution; and how English efforts to improve farm productivity in the face of a deteriorating climate helped pave the way for the Industrial Revolution and hence for global warming. This is a fascinating, original book for anyone interested in history, climate, or the new subject of how they interact. *Div*Explores the resilience of the Dutch Republic in the face of preindustrial climate change during the Little Ice Age.

"In an era of warming climate, the study of the ice age past is now more important than ever. This book examines the wonders of the Quaternary ice age - to show how ice age landscapes and ecosystems were repeatedly and rapidly transformed as plants, animals, and humans reorganized their worlds." --Publisher.

The Complete Ice Age

What Was the Ice Age?

The Woolly Mammoth, The Ice Age, and The Bible

International Reception and Consequences for a Historical Understanding of Climate

Buddy Davis' Cool Critters of the Ice Age

Ice Ages and Interglacials

When we think of "climate change," we think of man-made global warming, caused by greenhouse gas emissions. But natural climate change has occurred throughout human history, and populations have had to adapt to the climate's vicissitudes. Anthony J. McMichael, a renowned epidemiologist and a pioneer in the field of how human health relates to climate change, is the ideal person to tell this story. Climate Change and the Health of Nations shows how the natural environment has vast direct and indirect repercussions for human health and welfare. McMichael takes us on a tour of human history through the lens of major transformations in climate. From the very beginning of our species some five million years ago, human biology has evolved in response to cooling temperatures, new food sources, and changing geography. As societies began to form, they too adapted in relation to their environments, most notably with the development of agriculture eleven thousand years ago. Agricultural civilization was a Faustian bargain, however: the prosperity and comfort that an agrarian society provides relies on the assumption that the environment will largely remain stable. Indeed, for agriculture to succeed, environmental conditions must be just right, which McMichael refers to as the "Goldilocks phenomenon." Global warming is disrupting this balance, just as other climate-related upheavals have tested human societies throughout history. As McMichael shows, the break-up of the Roman Empire, the bubonic Plague of Justinian, and the mysterious collapse of Mayan civilization all have roots in climate change. Why devote so much analysis to the past, when the daunting future of climate change is already here? Because the story of mankind's previous survival in the face of an unpredictable and unstable climate, and of the terrible toll that climate change can take, could not be more important as we face the realities of a warming planet.

This sweeping magnum opus is not only a rigorous, innovative, and fascinating exploration of how the climate affects the human condition, but also an urgent call to recognize our species' utter reliance on the earth as it is.

On 24 June 1837, Louis Agassiz stunned the learned members of the Swiss Society of Natural Sciences by addressing them, in his role as President, not with an anticipated lecture on fossil fishes, but with a passionate presentation on the existence of Ice Ages. No one was convinced. He even dragged the reluctant members of the Society up into the mountains to see the evidence for themselves, pointing out the scars on the hard rocks left by glaciation (which some of those present tried to explain away as having been produced by the wheels of passing carriages). Extraordinarily, it would take a further 140 years before the Ice Age theory was fully proved and understood.

This book reviews all information known about ice ages in a scientific format. It explores theories and makes comparisons, providing an independent and complete summary of the latest data on ice ages.

The Ice Age National Scenic Trail meanders across the state of Wisconsin through scenic glacial terrain dotted with lakes, steep hills, and long, narrow ridges. David M. Mickelson, Louis J. Maher Jr., and Susan L. Simpson bring this landscape to life and help readers understand what Ice Age Wisconsin was like. An overview of Wisconsin's geology and key geological concepts helps readers understand geological processes, materials, and landforms. The authors detail geological features along each segment of the Ice Age Trail and at each of the nine National Ice Age Scientific Reserve sites. Readers can experience the Ice Age Trail through more than one hundred full-color photographs, scores of beautiful maps, and helpful diagrams. Science briefs explain glacial features such as eskers, drumlins, and moraines. Geology of the Ice Age National Scenic Trail also includes detailed trail descriptions that are cross referenced with the science briefs to make it easy to find the geological terms used in the trail descriptions. Whatever your level of experience with hiking or knowledge of glaciers, this book will provide lively, informative, and revealing descriptions for a new understanding of the shape of the land beneath our feet.

Journey to the Ice Age

How Climate Made History 1300-1850

Growing Up in the Ice Age

The Frigid Golden Age

Late Quaternary Geology and Climate

Geology of the Ice Age National Scenic Trail

The Little Ice Age and Europe's Encounter with North America

A survey of discoveries in different fields of Ice Age research is enhanced by landscape photography and explanatory diagrams.

Five photographic essays and five chapters on ice ages for the general reader.

It is estimated that in prehistoric societies children comprised at least forty to sixty-five percent of the population, yet by default, our ancestral landscapes are peopled by adults who hunt, gather, fish, knap tools and make art. But these adults were also parents, grandparents, aunts and uncles (however they would have codified these kin relationships) who had to make space physically, emotionally, intellectually, and cognitively for the infants, children and adolescents around them. The economic, social, and political roles of Paleolithic children are often understudied because they are assumed to be unknowable or negligible. Drawing on the most recent data from the cognitive sciences and from the ethnographic, fossil, archaeological, and primate records, *Growing Up in the Ice Age* challenges these assumptions. This volume is a timely and evidence-based look at the lived lives of Paleolithic children and the communities of which they were a part. By rendering the "invisible" children visible, readers will gain a new understanding not only of the contributions that children have made to the biological and cultural entities we are today but also of the Paleolithic period as whole.

Images of the Ice Age, here in its third edition, is the most complete study available of the world's earliest imagery, presenting a fascinating account of the art of our Ice Age ancestors. Authoritative and wide-ranging, it covers not only the magnificent cave art of famous sites such as Lascaux, Altamira, and Chauvet, but also other less well-known sites around the world, and open-air and portable art. Lavishly illustrated and highly accessible, *Images of the Ice Age* provides a visual feast and an absorbing synthesis of this crucial aspect of human history, offering a unique opportunity to appreciate universally important works of art, many of which can never be accessible to the public, and which represent the very earliest evidence of artistic expression.

Ice Ages

The Once and Future Story of Ice Ages

How a Global Catastrophe Allowed Humans to Evolve

(Kanon Der Erdbestrahlung und Seine Anwendung Auf Das Eiszeitenproblem) Belgrade, 1941

On the Trail of the Ice Age Floods

Climate Change and Life

A Cold Welcome

"John and Mary Gribbin tell the remarkable story of how we came to understand the phenomenon of Ice Ages, focusing on the key personalities obsessed with the search for answers. How frequently do Ice Ages occur? How do astronomical rhythms affect the Earth's climate? Have there always been two polar ice caps? Is it true that tiny changes in the heat balance of the Earth could plunge us back into full Ice Age conditions? With startling new material on how the last major Ice Epoch could have hastened human evolution, *Ice Age* explains why the Earth was once covered in ice - and how that made us human."--BOOK JACKET.

Scientists charged with producing a map of the earth during the last ice age ultimately confirmed the theory that the earth's irregular orbital motions account for the bizarre climatic changes which bring on ice ages. This book tells the story of those periods--what they were like, why they occurred, and when the next ice age is due.

The fascinating story of how a harsh terrain that resembled modern Antarctica has been transformed gradually into the forests, grasslands, and wetlands we know today. "One of the best scientific books published in the last ten years."—Ottawa Journal "A valuable new synthesis of facts and ideas about climate, geography, and life during the past 20,000 years. More important, the book conveys an intimate appreciation of the rich variety of nature through time."—S. David Webb, *Science*

Earth's past is littered with the mysterious and unexplained: the pyramids, Easter Island, Stonehenge, dinosaurs, and the list goes on and on as science looks for clues to decipher these puzzles. One such mystery surrounds the now-extinct creature called the woolly mammoth. Author and meteorologist Michael Oard has studied the mammoth and its equally mysterious time period, the Ice Age, for many years and has come to some fascinating conclusions to help lift the fog engulfing the facts. Some of the questions he addresses include: What would cause the summer temperatures of the northern United States and European to plummet more than 50 degrees Fahrenheit? Why did mammoths become extinct across the entire earth at the same time as many other large mammals? Why are the mammoth carcasses found generally in standing positions? How could large lakes exist in what are today very dry, desert-like places? What was the source of the abnormal of moisture necessary for heavy snow? What caused the cold summer temperatures and heavy snowfall to persist for hundreds of years? In logical progression many other Ice Age topics are explained including super Ice Age floods, ice cores, man in the Ice Age, and the number of ice ages. This is one of the most difficult eras in geological history for a uniformitarian scientist (one who believes the earth evolved by slow processes over millions of years) to explain, simply because long ages of evolution cannot explain it. Provided here are plausible explanations of the seemingly unsolvable mysterious about the Ice Age and the woolly mammoths - Frozen in Time.

Children of the Ice Age

Frozen in Time

Frozen Earth

A Very Short Introduction

Measurements, Interpretation, and Models

The Great Ice Age