The Ecology Of Snow And Ice Environments

The Ecology of Snow and Ice Environments **Ice and Snow in the Cold War The Ecology of Snow and Ice Environments** Diplomacy on Ice *Understanding Present and Past Arctic Environments* Polar Environments and Global Change Glaciers and Ice Sheets in the Climate System *Vanishing Ice* **Glacial Environments** *Arctic Ice Shelves and Ice Islands Ice Age Earth Snow and Ice-Related Hazards, Risks, and Disasters The Cryosphere Sea Ice Biota Scotland After the Ice Age* **The Arctic Ice Age Facts and Information - Environment Books Children's Environment Books The Ice Environment of Eastern Lancaster Sound and Northern Baffin Bay** *Psychology and Human Performance in Space Programs* Modern Glacial Environments **Source-to-Sink Fluxes in Undisturbed Cold Environments Cratering in Marine Environments and on Ice** Ice *Encyclopedia of Paleoclimatology and Ancient Environments* Assessing the Antarctic Environment from a Climate Change Perspective *North Pole / South Pole* **Drift, Deformation, and Fracture of Sea Ice** *Antarctic Climate Change and the Environment* **Ice Physics and the Natural Environment** Ice Composition and Glacier Dynamics Thin Ice *Microbial Ecosystems of Antarctica* **Drift, Deformation, and Fracture of Sea Ice** Glaciers **The Meaning of Ice** The

Library of Ice Changing Cold Environments **Ice Sheets and Late Quaternary Environmental Change Glaciers and Environmental Change Meltdown**

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Meltdown Jun 25 2019 We hear about pieces of ice the size of continents breaking off of Antarctica, rapidly melting glaciers in the Himalayas, and ice sheets in the Arctic crumbling to the sea, but does it really matter? Will melting glaciers change our lives? Absolutely.The ice ages and the

interglacial periods like we live in now are built and destroyed by glaciers. Glaciers hold three quarters of our freshwater, yet we don't have laws to protection them from climate change. Melting glaciers raise the seas, alter global ecosystems, warm our climate and bring onfloods that swamp millions of acres of land destroying coastal ecosystems and leaving hundreds of millions homeless. Healthy glaciers help keep our planet cool by reflecting solar heat away from the Earth and provide critical freshwater supply to billions that live within their meltwater runoffbasins. But melting glaciers alter ocean temperature, warm the atmosphere and cause havoc to the ocean currents and to the global jet stream, causing inclement weather, prolonged and recurrent droughts, heavy rains and intense, frequent and unpredictable storms. As glaciers melt away, their criticalenvironmental functions and services will wither. And as climate change warms their core, their weakening internal structure will cause a growing number of glacier tsunamis that can send deadly massive ice blocks, rocks, earth and billions of liters of water rushing down mountain valleys that takeout anything in their path. It has happened before in the Himalayas, in the Central Andes, in the Rockies and Western Cascades, and in the European Alps and it will happen again. As glaciers melt so do the vast swaths of permafrost environments that thrive in their surroundings, where thawingmillenary terrain rich in ice but also in methane gas captured hundreds of thousands of years ago, is now released into the atmosphere intensifying climate change even further.In his new book Meltdown, Jorge Daniel Taillant takes readers deeper into the cryosphere and

connects the dots between climate change, glacier melt and the impacts that receding glacier ice brings to livability on Earth, to our environments and to our neighborhoods. He walks us through thelittle-known realm of the periglacial environment, a world where invisible subsurface rock glaciers with solid ice cores that will outlive exposed glaciers in our warming climate, but will they suffice to maintain our cryosphere and climate ecology in balance? In two closing chapters Taillant looksat actions that can help stop climate change and save glaciers and also contrasts how society, politics and our leaders have responded to address the COVID-19 pandemic and yet largely failed to address the even larger looming and escalating crisis of climate change.Meltdown is about glaciers and their unfolding demise during one of the most critical moments of our climate crisis. We may still be in time to save the cryosphere, if we can reconsider glaciers in a whole new light and understand the critical role they play in our own sustainability and if we canawaken to see how through glacier melt, geological ages are changing right before our eyes.

Assessing the Antarctic Environment from a Climate Change Perspective Oct 10 2020 The present book covers diversified contributions addressing the impact of climate change on the Antarctic environment. It covers the reconstruction of environmental changes using different proxies. The chapters focus on the glacial history, glacial geomorphology, sedimentology, and geochemistry of Antarctic region. Furthermore, the Cenozoic evolution of the Antarctic ice sheet is discussed along with a Scientometrics analysis of

climate change research. The book serves as a useful reference for researchers who are fascinated by the polar region and environmental research.

The Cryosphere Oct 22 2021 The cryosphere encompasses the Earth's snow and ice masses. It is a critical part of our planet's climate system, one that is especially at risk from climate change and global warming. The Cryosphere provides an essential introduction to the subject, written by one of the world's leading experts in Earth-system science. In this primer, glaciologist Shawn Marshall introduces readers to the cryosphere and the broader role it plays in our global climate system. After giving a concise overview, he fully explains each component of the cryosphere and how it works--seasonal snow, permafrost, river and lake ice, sea ice, glaciers, ice sheets, and ice shelves. Marshall describes how snow and ice interact with our atmosphere and oceans and how they influence climate, sea level, and ocean circulation. He looks at the cryosphere's role in past ice ages and considers the changing cryosphere's future impact on our landscape, oceans, and climate. Accessible and authoritative, this primer also features a glossary of key terms, suggestions for further reading, explanations of equations, and a discussion of open research questions in the field.

Sea Ice Biota Sep 20 2021 Investigators from a number of countries have been studying the ice community and experimental information is now available from a number of geographic areas. This includes ecological data as well as community and species specific physiological information. The literature on ice biota is scattered, being found in scientific journals, research and technical reports, symposia

proceedings, M. S. theses and Ph.D. dissertations, meeting abstracts, and books on topics ranging from algal ecology to regional oceanography. Much of the material has not been published and some is available only in proprietry or difficult to obtain reports. The purpose of this book is to bring the data and references together in one place and to provide state of the art information on these little known, but ecologically important, polar communities.

Ice and Snow in the Cold War Oct 02 2022 The history of the Cold War has focused overwhelmingly on statecraft and military power, an approach that has naturally placed Moscow and Washington center stage. Meanwhile, regions such as Alaska, the polar landscapes, and the cold areas of the Soviet periphery have received little attention. However, such environments were of no small importance during the Cold War: in addition to their symbolic significance, they also had direct implications for everything from military strategy to natural resource management. Through histories of these extremely cold environments, this volume makes a novel intervention in Cold War historiography, one whose global and transnational approach undermines the simple opposition of “East” and “West.”

The Meaning of Ice Nov 30 2019 The Meaning of Ice is about the Inuit relationship with sea ice. Focusing on three communities, the book presents the annual cycle of ice and associated activity, discusses the meaning of sea ice for each location, and compares the ways in which each group of people has adapted to their environment and is now adjusting as that environment changes. The Meaning of Ice was written by a team of researchers, including local residents, who spent

time together in Barrow, Alaska; Clyde River, Nunavut, Canada; and Qaanaaq, Greenland. In each place they traveled on the ice, learned about local ice terminology and dynamics, and shared stories and ideas. The format of the book reflects the various ways the team members know sea ice, through the words and images of local residents organized around themes such as "home," "food," and "freedom." Maps, calendars, and the rich Inuit vocabulary for sea ice provide additional insights into the Inuit relationship with sea ice.

The Ecology of Snow and Ice Environments Sep 01 2022 The majority of extremophiles in ice and snow are microorganisms.

Scotland After the Ice Age Aug 20 2021 This book charts the environmental transformation of Scotland from the end of the ice age in an empty land 10,000 years ago to the Viking invasions of an established society 9,000 years later.

Microbial Ecosystems of Antarctica Mar 03 2020 This book provides a structured account of the full range of environments in Antarctica and of the microbial communities that live within them. Environments examined include: snow and ice; benthic marine; sea ice; lakes and streams; marginal ice; soil; the open ocean; rock. In the more extreme habitats of this region microscopic life forms constitute the entire biology of the habitat, but in all antarctic environments the microbial communities play a major and often dominant role in the transfer of carbon, nutrients and energy throughout the ecosystem. The book examines the major features of the chemical and physical environment in each habitat, and the influence of these features on the population structure and dynamics of their microbiota.

The Library of Ice Oct 29 2019 ‘A wonderful book: Nancy Campbell is a fine storyteller with a rare physical intelligence. The extraordinary brilliance of her eye confers the reader a total immersion in the rimy realms she explores. Glaciers, Arctic floe, verglas, frost and snow — I can think of no better or warmer guide to the icy ends of the Earth’ Dan Richards, author of Climbing Days A vivid and perceptive book combining memoir, scientific and cultural history with a bewitching account of landscape and place, which will appeal to readers of Robert Macfarlane, Roger Deakin and Olivia Laing. Long captivated by the solid yet impermanent nature of ice, by its stark, rugged beauty, acclaimed poet and writer Nancy Campbell sets out from the world’s northernmost museum – at Upernavik in Greenland – to explore it in all its facets. From the Bodleian Library archives to the traces left by the great polar expeditions, from remote Arctic settlements to the ice houses of Calcutta, she examines the impact of ice on our lives at a time when it is itself under threat from climate change. The Library of Ice is a fascinating and beautifully rendered evocation of the interplay of people and their environment on a fragile planet, and of a writer’s quest to define the value of her work in a disappearing landscape. ‘The Library of Ice instantly transported me elsewhere... This luminous book is both beautifully written and astute in its observations, turning the pages of time backwards and revealing, like the archive of the earth’s climate stored in layers of solidified water, the embedded meanings of the world’s icy realms. It is a book as urgently relevant as it is wondrous’ Julian Hoffman, author of The Heart of Small Things ‘An extraordinary work not

only for the perspicacity and innate experience of the author who leads the reader carefully across intertwined icy tracks of crystallised geographics, melting myths and frozen exploration histories, but through her own tender diagnostics of what reading ice can show us in these times … Perilous in its scope, exacting in its observation, wild in intellect, The Library of Ice captures the reader's attention almost as if caught in ice itself' MacGillivray, author of The Nine of Diamonds: Sorroial Mordantless 'This is travel writing to be treasured. A biography of ice, the element that has another life, with hard facts thawed and warmed by a poet's voice. Campbell's writing is companionable, curious, deeply researched and with no bragging about the intrepidity that has taken her between winter-dark Greenland, Polar libaries, Scottish curling rinks, Alpine glaciers and Henry Thoreau's pond at Walden' Jasper Winn, author of Paddle

Modern Glacial Environments Mar 15 2021 Modern Glacial Environments provides a current and comprehensive survey of the glaciology, geomorphology and sedimentology of modern glaciers and ice sheets through an appreciation of the processes, dynamics and sediments found in these environments. The book presents university students with a comprehensive review of modern research and ideas on glacial environments incorporating glaciology, glacial geomorphology and geology and sedimentology. This text considers the cause of glaciation, ice sheet modelling, glacial physics, hydrology, processes of erosion, transportation, deposition and glaciotectonism. Other chapters cover modern proglacial, supraglacial, glaciolacustrine and glaciomarine environments. A companion volume: Past Glacial

Environments: Sediments, forms and techniques, also edited by John Menzies, covers both Pleistocene and Pre-Pleistocene environments. This companion text includes chapters on past subglacial, supraglacial, glaciolacustrine and glaciomarine environments. Themes in this book consider glacial stratigraphy, lithofacies associations, paleosols, glacio-isostasy and eustasy as well as chapters on drift prospecting, placer mining, SEM, micromorphology and radiometric dating techniques.

Polar Environments and Global Change May 29 2022 Surveys atmospheric, oceanic and cryospheric processes, present and past conditions, and changes in polar environments.

Glaciers Jan 01 2020 Though not traditionally thought of as key natural resource, glaciers are a crucial part of both our global ecosystem and the sustaining of life around the world. Comprising three quarters of the world's fresh water, they freeze in the winter and melt in the summer, supplying water that is plentiful enough for agriculture and clean enough to drink. Without them, many of the planet's rivers would run dry shortly after the winter snow-melt. In fact, a single mid-sized glacier in regions like California, Argentina, India, Kyrgyzstan, or Chile can provide an entire community with drinking water for generations. On the other hand, when global temperatures rise not only does glacier ice wither away into the oceans, but these massive ice bodies can become unstable and cause severe natural events like glacier tsunamis. But glaciers often exist well outside our environmental consciousness, and they are mostly unprotected from atmospheric impacts from transportation

emissions, or from industrial threats such as the mining industry, which seeks the precious metals that lie beneath them. Glaciers: The Politics of Ice is a scientific, cultural, and political examination of the cryosphere -- the earth's ice -- and the environmental policies that aim to protect it. Jorge Daniel Taillant discusses the debates and negotiations behind the passing of the world's first glacier-protection law in the mid-2000s, and reveals the tension between the industry experts, politicians, and glacier conservationists. The book provides the basic environmental science behind glaciers, outlines current and future risks to their preservation, and reveals the intriguing politics behind the debate over glacier policies and laws. Taillant also makes suggestions on what can be done to preserve these crucial sources of fresh water, from both a scientific and policymaking standpoint. Glaciers is a new window into one of the earth's most crucial natural resources, and a call to reawaken our interest in the world's changing climate.

Diplomacy on Ice Jul 31 2022 As the race for resources in distant parts of the planet gathers momentum, most discussion has centered on the potential for conflict, environmental destruction, and upheaval from climate change. This important book shifts the conversation about the Arctic and Antarctic from conflict to cooperation. A multidisciplinary roster of experts provides fresh views of the polar regions, focusing on diplomacy and the potential for cooperative international decision-making. Collectively the contributors illustrate the breadth of issues that complicate governance in the Arctic and Antarctic, as well as parallels and differences between the politics of the two poles.

Glacial Environments Feb 23 2022 Enhanced by photographic illustrations of extraordinary quality, this text should provide students with a complete introduction to the scientific study of environments dominated by snow and ice. Emphasizing the range of erosional and depositional landforms, drawing on the older geological record, according due attention to the marine environment, and covering all relevant parts of the world - this book should find a wide readership among students of geography, geology and environmental science.; The author has published many research papers and has also been joint-author, co-author or co-editor of six book-length publications.; This book is intended for undergraduate students of glacial environments geomorphology, glaciology/hydrology in departments of geography, environmental sciences and geology.
Encyclopedia of Paleoclimatology and Ancient Environments Nov 10 2020 One of Springer's Major Reference Works, this book gives the reader a truly global perspective. It is the first major reference work in its field. Paleoclimate topics covered in the encyclopedia give the reader the capability to place the observations of recent global warming in the context of longer-term natural climate fluctuations. Significant elements of the encyclopedia include recent developments in paleoclimate modeling, paleo-ocean circulation, as well as the influence of geological processes and biological feedbacks on global climate change. The encyclopedia gives the reader an entry point into the literature on these and many other groundbreaking topics.
The Ecology of Snow and Ice Environments Nov 03 2022 The majority of extremophiles in ice and snow are

microorganisms.
Vanishing Ice Mar 27 2022 Discusses the consequences of melting icecaps.
Ice Physics and the Natural Environment Jun 05 2020 The Advanced Study Institute Ice Physics in the Natural and Endangered Environ ment was held at Acquafredda di Maratea, Italy, from September 7 to 19, 1997. The ASI was designed to study the broad range of ice science and technology, and it brought together an appropriately interdisciplinary group of lecturers and students to study the many facets of the subject. The talks and poster presentations explored how basic molecular physics of ice have important environmental consequences, and, con versely, how natural phenomena present new questions for fundamental study. The of lectures discusses these linkages, in order that overall unity of following sunimary the subject and this volume can be perceived. Not all of the lecturers and participants were able to contribute a written piece, but their active involvement was crucial to the success of the Institute and thereby influenced the content of the volume. We began the Institute by retracing the history of the search for a microscopic un derstanding of melting. Our motivation was straightforward. Nearly every phenome non involving ice in the environment is influenced by the change of phase from solid to liquid or vice-versa. Hence, a sufficiently deep physical picture of the melting tran sition enriches our appreciation of a vast array of geophysical and technical problems.
Glaciers and Environmental Change Jul 27 2019 This authoritative new text provides a thorough, updated account

of glaciers and ice sheets as monitors and indicators of environmental change. It examines the record of environmental change within glaciers and ice sheets, and that of past environments left by retreating glaciers. These themes are examined within the context of environmental change in general and global climate change in particular. Methods of using palaeoenvironmental records are assessed and the implications for future environmental change are discussed. Evidence from glacier ice left in the landscape or within the geological record, provides one of the most important sources of information on environmental change. 'Glaciers and Environmental Change' is a comprehensive account of glaciers andice sheets as monitors and indictaors of environmental change. Based on the latest research, this book consolidates a diverse range of data and explains their applications. it also assesses methods of using palaeoenvironmental records. This authoritative new text examines not only the records of environmental change within glaciers but also that of past environments left by retreating glaciers. These themes are examined within the context of contemporary debates in environmental change and the volume also seeks to draw conclusions concernign past, present and future climatic change in relation to glaciers.

Thin Ice Apr 03 2020 An exploration of the human dimensions of climate change

Antarctic Climate Change and the Environment Jul 07 2020

Ice Composition and Glacier Dynamics May 05 2020 Ice composition has until now been mostly used for reconstructing the environment of the past. A great research

effort is made today to model the climate system in which the ice cover at the earth sur face plays a prominent role. To obtain a correct model of the ice sheets, due attention must be paid to the physical processes operating at the interfaces, i. e. the boundary conditions. The idea behind the title of this book is that the study of ice composition can shed some light on the various processes operating at the ice bedrock and ice-ocean interfaces and more generally on glacier dy namics. The book is not intended as a treatise on some specialized topic of glaciology. It is mainly the product of the experience of the two authors gained over several years research on the subject. The two authors are both members of the same university department and personal friends. The book was prepared in the following way. After a first draft of the complete book had been written by the first author, it was put in the hands of the second. The final version sent to the publishers is therefore the result of ex tended discussion, while at the same time preserving the unity of style that would have been lost had the two authors written selected chapters of the book individually. The book is organized into two distinct parts.

North Pole / South Pole Sep 08 2020 Fully-illustrated and with a fun and innovative flip-book format, the book provides the perfect way to explore and compare the extreme environments of the two Poles. Take a trip to the ends of the earth and discover the extreme environments of the North and South Poles. Find out which animals live where, what the weather and climate is like and the effect global warming is having. Beginning with the North Pole, the book introduces the geography and climate of the Arctic. Readers

will discover how climate change is affecting sea ice and why multi-year ice is so important to walruses and polar bears. Find out what ice floes are and what lives under the ice. The many uses of the Arctic are explained, from the home it provides to whale hunters to the rocket and missile test sites it houses. And then flip the book over and you arrive in the South Pole... The famous race to reach the pole in 1911 is retold and readers will discover why the orca is the ultimate polar predator. The huge tabular icebergs, sub-glacial lakes, and ice chimneys of the Antarctic are brought to life in all their impressive glory, not to mention the sea spiders, 'death star' starfish and other undersea giants!

Ice Sheets and Late Quaternary Environmental Change

Aug 27 2019 Ice Sheets and Late Quaternary Environmental Change provides a detailed account of the temporal and spatial distribution of ice sheets during the last ice age, and how these ice masses interacted with the environment. This is the first book in 20 years to detail the sizes of ice sheets during the last glaciation and the first to discuss their role in past climate change. Arranged in two parts, the first part provides the tools required for evaluating past ice sheets while the second part uses these tools to establish the size, extent and dynamics of late Quaternary ice sheets. Assuming no prior knowledge of Quaternary Science, the discussion progresses from the basic principles of how and why ices ages occur, to the interpretation of proxy records of past climate and ocean change. Instructive accounts of how the geological record can be used as evidence of former ice sheet behaviour and a discussion on the role of numerical models in understanding interaction between ice sheets, oceans and

the atmosphere are included in this book. Details of former ice sheets are presented by geographical region along with a number of critical new theories on their size and behaviour. This book would appeal to 2nd/3rd year students of Quaternary Science, most University Geography, Earth Science or Geology departments, as well as researchers and academics in Quaternary Science.

Drift, Deformation, and Fracture of Sea Ice Jan 31 2020 Sea ice is a major component of polar environments, especially in the Arctic where it covers the entire Arctic Ocean throughout most of the year. However, in the context of climate change, the Arctic sea ice cover has been declining significantly over the last decades, either in terms of its concentration or thickness. The sea ice cover evolution and climate change are strongly coupled through the albedo positive feedback, thus possibly explaining the Arctic amplification of climate warming. In addition to thermodynamics, sea ice kinematics (drift, deformation) appears as an essential factor in the evolution of the ice cover through a reduction of the average ice age (and consequently of the cover's thickness), or ice export out of the Arctic. This is a first motivation for a better understanding of the kinematical and mechanical processes of sea ice. A more upstream, theoretical motivation is a better understanding of the brittle deformation of geophysical objects across a wide range of scales. Indeed, owing to its very strong kinematics, compared e.g. to the Earth’s crust, an unrivaled kinematical data set is available for sea ice from in situ (e.g. drifting buoys) or satellite observations. Here, we review the recent advances in the understanding of sea ice drift, deformation

and fracturing obtained from these data. We focus particularly on the scaling properties in time and scale that characterize these processes, and we emphasize the analogies that can be drawn from the deformation of the Earth's crust. These scaling properties, which are the signature of long-range elastic interactions within the cover, constrain future developments in the modeling of sea ice mechanics. We also show that kinematical and rheological variables such as average velocity, average strain-rate or strength have significantly changed over the last decades, accompanying and actually accelerating the Arctic sea ice decline.

Arctic Ice Shelves and Ice Islands Jan 25 2022 This book provides an overview of the current state of knowledge of Arctic ice shelves, ice islands and related features. Ice shelves are permanent areas of ice which float on the ocean surface while attached to the coast, and typically occur in very cold environments where perennial sea ice builds up to great thickness, and/or where glaciers flow off the land and are preserved on the ocean surface. These landscape features are relatively poorly studied in the Arctic, yet they are potentially highly sensitive indicators of climate change because they respond to changes in atmospheric, oceanic and glaciological conditions. Recent fracturing and breakup events of ice shelves in the Canadian High Arctic have attracted significant scientific and public attention, and produced large ice islands which may pose a risk to Arctic shipping and offshore infrastructure. Much has been published about Antarctic ice shelves, but to date there has not been a dedicated book about Arctic ice shelves or ice islands. This book fills that gap.

Understanding Present and Past Arctic Environments Jun 29 2022 Understanding Present and Past Arctic Environments: An Integrated Approach from Climate Change Perspectives provides a fully comprehensive overview of the past, present and future outlook for this incredibly diverse and important region. Through a series of contributed chapters, the book explores changes to this environment that are attributed to the effects of climate change. The book explores the current effects climate change has had on Arctic environments and ecosystems, our current understanding of the effects climate change is having, the effects climate change is having on the atmospheric and ocean processes in this region. The Arctic region is predicted to experience the earliest and most pronounced global warming response to human-induced climatic change, thus a better understanding is vital. Presents a thorough understanding of the Arctic, it's past, present and future Provides an integrated assessment of the Arctic climate system, recognizing that a true understanding of its functions lies in appreciating the interactions and linkages among its various components Brings together many of the world's leading Arctic researchers to describe this diverse environment and its ecology

Psychology and Human Performance in Space Programs Apr 15 2021 In Psychology and Human Performance in Space Programs: Research at the Frontier, leading space researchers from multiple fields of expertise summarize the recent growth of knowledge, the resulting tools and techniques, and the research still needed to protect humans in space. Making use of cutting-edge research and development related to composing, training, and supporting astronaut

crews who will live and work together for future missions to Mars, this book examines the current practices of leaders in the field both at NASA and in academia. Presenting astronaut data alongside data from analogous extreme environments such as mission simulation habitats, this volume helpfully contrasts and compares to examine the lessons that can be learned from other approaches. Using the context of current International Space Station missions, the book discusses the influence of human factors and physiological health on individual and team job performance and social cohesion. With an overview of the physical and psychological hazards of space, and the challenges posed by conducting space-related applied psychology research, this volume uses the context of a long-duration Mars mission as a lens through which to discuss adaptation and resilience, technical and team training, technological advances related to working and living in space, and human interaction with onboard systems. Additionally, the book includes an essay from retired astronaut Clay Anderson on his experiences in space and thoughts on future missions to the moon and Mars. This first of two volumes will be of interest to professionals in the field of human factors and psychology at work, as well as academics examining human performance in extreme environments and aerospace.

Cratering in Marine Environments and on Ice Jan 13 2021 Despite their global importance, little is known about the few existing examples of impacts into marine environments and icy targets. They are among the least understood and studied parts of impact crater geology. The icy impacts are also of great importance in understanding the

developments of the outer planets and their satellites such as Mars or Europa. Furthermore, the impact mechanisms, crater formation and collapse, melt production and the ejecta distribution are scarcely known for impact on targets other than the "classical" solid silicates of the continental crust. The reaction of water and ice to impacts clearly deserves a more thorough study. The understanding of impact effects and consequences in the case of aqueous hits, soft sediments and icy targets has not been thoroughly explored and comprises the main focus of this book. A number of papers in the field of hypervelocity impacts on ice are included. These cover a review of available literature in the field of laboratory studies of such impacts, large impact structures on Titan, predicting impact cratering on a comet nucleus, and a novel report on the survival of bacteria fired at hypervelocity into icy surfaces. This latter paper is concerned with astrobiology and in particular Panspermia (natural migration of life through space).

Changing Cold Environments Sep 28 2019 Changing Cold Environments; Implications for Global Climate Change is a comprehensive overview of the changing nature of the physical attributes of Canada's cold environments and the implications of these changes to cold environments on a global scale. The book places particular emphasis on the broader environmental science and sustainability issues that are of increasing concern to all cold regions if present global climate trends continue. Clearly structured throughout, the book focuses on those elements of Canada's cold environments that will be most affected by global climate change – namely, the tundra, sub-arctic and boreal forest

regions of northern Canada, and the high mid-latitude mountains of western Canada. Implications are considered for similar environments around the world resulting in a timely text suitable for second and third year undergraduates in the environmental or earth sciences courses.

Ice Age Facts and Information - Environment Books

Children's Environment Books Jun 17 2021 Did you know that a long time ago, the world was covered with ice? The Ice Age was a time when dinosaurs still ruled the Earth. Learn more about the Ice Age in this edutaining book for young readers. Do you think you can survive if Ice Age were to happen again? Reading, thinking and imagining sound very exciting!

Drift, Deformation, and Fracture of Sea Ice Aug 08 2020 Sea ice is a major component of polar environments, especially in the Arctic where it covers the entire Arctic Ocean throughout most of the year. However, in the context of climate change, the Arctic sea ice cover has been declining significantly over the last decades, either in terms of its concentration or thickness. The sea ice cover evolution and climate change are strongly coupled through the albedo positive feedback, thus possibly explaining the Arctic amplification of climate warming. In addition to thermodynamics, sea ice kinematics (drift, deformation) appears as an essential factor in the evolution of the ice cover through a reduction of the average ice age (and consequently of the cover's thickness), or ice export out of the Arctic. This is a first motivation for a better understanding of the kinematical and mechanical processes of sea ice. A more upstream, theoretical motivation is a better understanding of

the brittle deformation of geophysical objects across a wide range of scales. Indeed, owing to its very strong kinematics, compared e.g. to the Earth's crust, an unrivaled kinematical data set is available for sea ice from in situ (e.g. drifting buoys) or satellite observations. Here, we review the recent advances in the understanding of sea ice drift, deformation and fracturing obtained from these data. We focus particularly on the scaling properties in time and scale that characterize these processes, and we emphasize the analogies that can be drawn from the deformation of the Earth's crust. These scaling properties, which are the signature of long-range elastic interactions within the cover, constrain future developments in the modeling of sea ice mechanics. We also show that kinematical and rheological variables such as average velocity, average strain-rate or strength have significantly changed over the last decades, accompanying and actually accelerating the Arctic sea ice decline.

The Arctic Jul 19 2021 The Arctic: A Barometer of Global Climate Variability provides a comprehensive source of information on all aspects of the Arctic region. Through thorough research, first-hand accounts and case studies, the book details international arctic research initiatives and native environments, including flora and fauna. Sections explore the impact of climate change, the effect of the Arctic on climate change, the environmental issues facing the region and how it is adapting. It is also a must-read source of information for polar scientists, applicable PhD students, early researchers, environmental scholars, and anyone searching for information on any aspect of the Arctic region. Users will find a great resource that brings together all

aspects of Arctic research into one concise book. Provides comprehensive coverage of numerous aspects of Arctic science, including polar light, Arctic resources and environment, climate change effects, the Arctic ocean, Arctic history and research initiatives, and environmental risks, among others Explores the Arctic region from a comparative global perspective, likening it to other regions and detailing the Artic environment Uses computer modeling to investigate the effect of climate change on the Artic and the Arctic's effect on global climate change

Glaciers and Ice Sheets in the Climate System Apr 27 2022 Our realisation of how profoundly glaciers and ice sheets respond to climate change and impact sea level and the environment has propelled their study to the forefront of Earth system science. Aspects of this multidisciplinary endeavour now constitute major areas of research. This book is named after the international summer school held annually in the beautiful alpine village of Karthaus, Northern Italy, and consists of twenty chapters based on lectures from the school. They cover theory, methods, and observations, and introduce readers to essential glaciological topics such as ice-flow dynamics, polar meteorology, mass balance, ice-core analysis, paleoclimatology, remote sensing and geophysical methods, glacial isostatic adjustment, modern and past glacial fluctuations, and ice sheet reconstruction. The chapters were written by thirty-four contributing authors who are leading international authorities in their fields. The book can be used as a graduate-level textbook for a university course, and as a valuable reference guide for practising glaciologists and climate scientists.

The Ice Environment of Eastern Lancaster Sound and Northern Baffin Bay May 17 2021 This report integrates recent data on sea ice and icebergs in Lancaster Sound and western Baffin Bay, with data collected in the 1978-1979 Petro-Canada-EAMES studies (Eastern Arctic Marine Environmental Studies), as a basis for assessing sea ice, icebergs and ice cover in relation to offshore drilling activities and possible oil spills.

Ice Dec 12 2020 In Ice, Klaus Dodds provides a wide-ranging exploration of the cultural, natural, and geopolitical history of this most slippery of subjects. Beyond Earth, ice has been found on other planets, moons, and meteors—and scientists even think that ice-rich asteroids played a pivotal role in bringing water to our blue home. But our outlook need not be cosmic to see ice's importance. Here today and gone tomorrow in many parts of the temperate world, ice is a perennial feature of polar and mountainous regions, where it has long shaped human culture. But as climates change, ice caps and glaciers melt, and waters rise, more than ever this frozen force touches at the core of who we are. As Dodds reveals, ice has played a prominent role in shaping both the earth's living communities and its geology. Throughout history, humans have had fun with it, battled over it, struggled with it, and made money from it—and every time we open our refrigerator doors, we're reminded how ice has transformed our relationship with food. Our connection to ice has been captured in art, literature, movies, and television, as well as made manifest in sport and leisure. In our landscapes and seascapes, too, we find myriad reminders of ice's chilly power, clues as to how our lakes, mountains, and coastlines

have been indelibly shaped by the advance and retreat of ice and snow. Beautifully illustrated throughout, Ice is an informative, thought-provoking guide to a substance both cold and compelling.

Ice Age Earth Dec 24 2021 Essential reading for all students interested in quaternary environments, this book focuses on changes in the Earth's geology and climate between the last interglacial period and the final melting of the last great ice sheets.

Snow and Ice-Related Hazards, Risks, and Disasters Nov 22 2021 Snow and Ice-Related Hazards, Risks, and Disasters provides you with the latest scientific developments in glacier surges and melting, ice shelf collapses, paleo-climate reconstruction, sea level rise, climate change implications, causality, impacts, preparedness, and mitigation. It takes a geo-scientific approach to the topic while also covering current thinking about directly related social scientific issues that can adversely affect ecosystems and global economies. Puts the contributions from expert oceanographers, geologists, geophysicists, environmental scientists, and climatologists selected by a world-renowned editorial board in your hands Presents the latest research on causality, glacial surges, ice-shelf collapses, sea level rise, climate change implications, and more Numerous tables, maps, diagrams, illustrations and photographs of hazardous processes will be included Features new insights into the implications of climate change on increased melting, collapsing, flooding, methane emissions, and sea level rise

Source-to-Sink Fluxes in Undisturbed Cold Environments Feb 11 2021 Provides the first quantitative

overview of global source-to-sink fluxes in cold climate environments for graduate students and researchers.