

Breaking Ice For Arctic Oil The Epic Voyage Of The Ss Manhattan Through The Northwest Passage

A Farewell to Ice Brave New Arctic Sea Ice in the Arctic Arctic Ice Shelves and Ice Islands Frozen Oceans Sea Ice Sea Ice Arctic Sea Ice Decline Ice and Refrigeration Blue Book and Buyers' Guide Ice and Refrigeration The Arctic Climate System Cold Storage and Ice Trades Review Glaciers, Sea Ice, and Ice Formation Refrigerating World Incorporating Cold Storage & Ice Trade Journal The New International Encyclopædia The Mechanical Properties of Sea Ice Ice Cold Storage and Ice Trade Journal Sea Ice Biota After the Ice *P. Wadhams Mark C. Serreze Ola M. Johannessen Luke Copland David Neville Thomas David N. Thomas Mohammed Shokr Eric T. DeWeaver Mark C. Serreze John P. Rafferty Associate Editor, Earth Sciences Frank Moore Colby W. F. Weeks Klaus Dodds Horner Alun Anderson*

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a sobering but important and enlightening book a farewell to ice moves smoothly through explanations ice s role on our planet its history and the current global crisis that is climate change finally offering tangible efforts readers can make as citizens which are particularly relevant in the face of reluctant government powers

an insider account of how researchers unraveled the mystery of the thawing arctic in the 1990s researchers in the arctic noticed that floating summer sea ice had begun receding this was accompanied by shifts in ocean circulation and unexpected changes in weather patterns throughout the world the arctic s perennially frozen ground known as permafrost was warming and treeless tundra was being overtaken by shrubs what was going on brave new arctic is mark serreze s riveting firsthand account of how scientists from around the globe came together to find answers in a sweeping tale of discovery spanning three decades serreze describes how puzzlement turned to concern and astonishment as researchers came to understand that the arctic of old was quickly disappearing with potentially devastating implications for the entire planet serreze is a world renowned arctic geographer and climatologist who has conducted fieldwork on ice caps glaciers sea ice and tundra

in the canadian and alaskan arctic in this must read book he blends invaluable insights from his own career with those of other pioneering scientists who together ushered in an exciting new age of arctic exploration along the way he accessibly describes the cutting edge science that led to the alarming conclusion that the arctic is rapidly thawing due to climate change that humans are to blame and that the global consequences are immense a gripping scientific adventure story brave new arctic shows how the arctic s extraordinary transformation serves as a harbinger of things to come if we fail to meet the challenge posed by a warming earth

this book provides in depth information about the sea ice in the arctic at scales from paleoenvironmental variability to more contemporary changes during the past and present centuries the book is based on several decades of research related to sea ice in the arctic and its variability sea ice process studies as well as implications of the sea ice variability on human activities the chapters provide an extensive overview of the research results related to sea ice in the arctic at paleo scales to more recent scales of variations as well as projections for changes during the 21st century the authors have pioneered the satellite remote sensing monitoring of sea ice and used other monitoring data in order to study monitor and model sea ice and its processes

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

discover and explore worlds containing unexpected life as some scientists search for life on the frozen planet of mars others are discovering life in unexpected places here on earth frozen oceans follows the expeditions of polar scientists in the arctic and antarctic as they investigate the life found in and around the ice caps which cover up to 13 percent of the earth s surface every year during the harsh polar winter the surface of the ocean freezes forming a temporary ice layer called pack ice or sea ice the antarctic is the site of the greatest seasonal event on earth in march the air temperatures drop to as low as 40 f the ocean which turns to ice at 28.7 f starts freezing at the incredible average rate of 2.22 square miles per minute this is the first book to explain in non technical terms and show with color photography the abundance of life on in and under the ice topics include the nature of pack ice pack ice regions of the world life within a block of ice microbiology inside the ice mammals birds and ice scientists are continually being surprised by the abundance of life where no life was expected for many years ice was seen as an obstacle to exploration and a threat to life the ice is now perceived as central to global ocean circulation as well as global climate patterns frozen oceans is a must for anyone with an interest in the polar regions marine biology and the earth s environment

over the past 20 years the study of the frozen arctic and southern oceans and sub arctic seas has progressed at a remarkable pace this third edition of sea ice gives insight into the very latest understanding of the how sea ice is formed how we measure and model its extent the biology that lives within and associated with sea ice and the effect of climate change on its distribution how sea ice influences the oceanography of underlying waters and the influences that sea ice has on humans living in arctic regions are also discussed featuring twelve new chapters this edition follows two previous editions 2001 and 2010 and the need for this latest update exhibits just how rapidly the science of sea ice is developing the 27 chapters are written by a team of more than 50 of the worlds leading experts in their fields these combine to make the book the most comprehensive introduction to the physics chemistry biology and geology of sea ice that there is this third edition of sea ice will be a key resource for all policy makers researchers and students who work with the frozen oceans and seas

sea ice the latest edition of the gold standard in sea ice references in the newly revised second edition of sea ice physics and remote sensing a team of distinguished researchers delivers an in depth review of the features and structural properties of ice as well as the latest advances in geophysical sensors ice parameter retrieval techniques and remote sensing data the book has been updated to reflect the latest scientific developments in macro and micro scale sea ice research for this edition the authors have included high quality photographs of thin sections from cores of various ice types as well as a comprehensive account of all major field expeditions that have systematically surveyed sea ice and its properties readers will also find a thorough introduction to ice physics and physical processes including ice morphology and age based structural features practical discussions of radiometric and radar scattering observations from sea ice including radar backscatter and microwave emission the latest techniques for the retrieval of sea ice parameters from space borne and airborne sensor data new chapters on sea ice thermal microwave emissions and on the impact of climate change on polar sea ice perfect for academic researchers working on sea ice the cryosphere and climatology sea ice physics and remote sensing will also benefit meteorologists marine operators and high latitude construction engineers

published by the american geophysical union as part of the geophysical monograph series volume 180 this volume addresses the rapid decline of arctic sea ice placing recent sea ice decline in the context of past observations climate model simulations and projections and simple models of the climate sensitivity of sea ice highlights of the work presented here include an appraisal of the role played by wind forcing in driving the decline a reconstruction of arctic sea ice conditions prior to human observations based on proxy data from sediments a modeling approach for assessing the impact of sea ice decline on polar bears used as input to the u s fish and wildlife service s decision to list the polar bear as a threatened species under the endangered species act contrasting studies on the existence of a tipping point beyond which arctic sea ice decline will become or has already become irreversible including an examination of the role of the small ice cap instability in global warming simulations a significant summertime atmospheric response to sea ice reduction in an atmospheric general circulation model suggesting a positive feedback and the potential for short term climate prediction the book will be of interest to researchers attempting to understand the recent behavior of arctic sea ice model projections of future sea ice loss and the consequences of sea ice loss for the natural and human systems of the arctic

the arctic can be viewed as an integrated system characterised by intimate couplings between its atmosphere ocean and land linked in turn to the larger global system this comprehensive up to date assessment begins with an outline of early arctic exploration and the growth of modern research using an integrated systems approach subsequent chapters examine the atmospheric heat budget and circulation the surface energy budget the hydrologic cycle and interactions between the ocean atmosphere and sea ice cover reviews of recent directions in numerical modelling and the characteristics of past arctic climates set the stage for detailed discussion of recent climate variability and trends and projected future states throughout satellite remote sensing data and results from recent major field programs are used to illustrate key processes the arctic climate system provides a comprehensive and accessible overview of the subject for researchers and advanced students in a wide range of disciplines

explores the frozen tundra of the arctic and antarctic as the complexities of water are revealed

the review discusses the state of thinking of each of the main national groups investigating sea ice and gives an overall appraisal of the field as a whole emphasis is placed on 1 the physical basis for interpreting sea ice strength phase relations air volume and structural considerations 2 theoretical considerations strength models air bubbles and salt reinforcement and interrelations between growth conditions and strength 3 experimental results tensile flexural shear and compressive strength elastic modulus shear modulus and poisson's ratio time dependent effects and creep and 4 plate characteristics the paper includes a review of problems in sea ice investigations relates the chemical crystallographic mechanical and physical aspects involved and concludes by showing how to utilize this knowledge to solve practical problems author

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

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

new from smithsonian books after the ice is an eye opening look at the winners and losers in the high stakes story of arctic transformation from nations to native peoples to animals and the very landscape itself author alun anderson explores the effects of global warming amid new geopolitical rivalries combining science business politics and adventure to provide a fascinating narrative portrait of this rapidly changing land of unparalleled global significance

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