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The amount of snow that fell across the Eurasian Arctic was actually above normal this year, said Lawrence Mudryk, a researcher with Environment and Climate Change Canada and lead author of the ...

Arctic's Shift to a Warmer Climate Is 'Well Underway ...
In a matter of decades, human-caused global warming has pushed the Arctic towards a new, much warmer and less frozen climate state, according to NOAA's new Arctic Report Card.

The Arctic is getting hotter, greener and less icy much ...
In the first two chapters, they show that multi-year changes of the sea-ice extent in the Arctic Seas were formed by linear trends and long-term (climatic) cycles lasting about 10, 20 and 60 years. The structure

of temporal variability of the western region (Greenland – Kara) differs significantly from the eastern region seas (Laptev and Chukchi).

Climate Change in Eurasian Arctic Shelf Seas: Centennial ...

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Climate Change in Eurasian Arctic Shelf Seas - Centennial ...

The cause of the rapid warming is straightforward and well understood: It is human-caused climate change. But in the Arctic, the pace of warming is 2 to 3 times the global average — a phenomenon...

"Alarming" and "extraordinary" rate of change as the ...

Climate Change Will Make Arctic Waters More Turbulent, Study Says. Arctic waters found to be very quiet in winter, and whirling in summer. By Chris Young. December 17, 2020. westphalia/iStock.

Climate Change Will Make Arctic Waters More Turbulent | IE

The recent wildfires were exacerbated by elevated air temperatures and decreased snow cover on the ground in the Arctic region, the report found. The past year — from October 2019 to September 2020 — was the second warmest on record in the Arctic, the report said.

Vast wildfires in Siberia linked to warming Arctic

New climate change report says Arctic is changing so quickly that nothing will be the same in 30 years.

The Arctic is heating up more than twice as quickly as other parts of the planet. By .

New climate change report says Arctic is changing so ...

The Arctic plays a fundamental role in the climate system and has shown significant climate change in recent decades, including the Arctic warming and decline of Arctic sea-ice extent and thickness. In contrast to the Arctic warming and reduction of Arctic sea ice, Europe, East Asia and North America have experienced anomalously cold conditions, with record snowfall during recent years.

Arctic sea ice and Eurasian climate: A review | SpringerLink

The Arctic is warming two to three times faster than any other place on Earth, ushering in far-reaching changes to the Arctic Ocean, its ecosystems and the 4 million people who live in the Arctic.

Arctic ocean: Climate change is flooding the remote north ...

December 8, 2020 NOAA ' s 15th Arctic Report Card catalogs for 2020 the numerous ways that climate change continues to disrupt the polar region, with second-highest air temperatures and second-lowest summer sea ice driving a cascade of impacts, including the loss of snow and extraordinary wildfires in northern Russia.

Sea ice loss and extreme wildfires mark another year of ...

Sea ice loss, and extreme wildfires mark another year of Arctic change Fifteen years of observations document impact of changing polar climate The Arctic Report Card is an annual compilation of original, peer-reviewed environmental observations and analyses of a region undergoing rapid and

dramatic alterations to weather, climate, oceanic, and land conditions.

2020 Arctic Report Card: Climate.gov visual highlights ...

Despite year-to-year variation, however, all nine regions continue to exhibit positive trends over the 2003 – 2020 period, with the strongest trends in the Eurasian Arctic, Barents Sea, and Greenland Sea. Although a useful indicator of primary productivity in the Arctic, satellite-observed chlorophyll is an imperfect measurement.

Sea ice withers while phytoplankton blooms in the Arctic ...

" Changes in the Arctic climate are important because the Arctic acts as a refrigerator for the rest of the world — it helps cool the planet, " said Lawrence Mudryk, a report contributor and a climate scientist at Environment and Climate Change Canada, a governmental research group.

Vast wildfires in Siberia linked to warming Arctic - ABC News

This dramatic drop in Arctic ice is the main driver for rapid Arctic changes. Large expanses of sea-ice, and to a lesser degree snow, stabilize the Arctic climate by regulating air and ocean...

'Alarming' and 'extraordinary' rate of change as the ...

In the first two chapters, they show that multi-year changes of the sea-ice extent in the Arctic Seas were formed by linear trends and long-term (climatic) cycles lasting about 10, 20 and 60 years.

Climate Change in Eurasian Arctic Shelf Seas: Centennial ...

Extreme wildfires, unparalleled warm air temperatures and record snow loss combined in 2020 to cement a “ sustained transformation ” of the Arctic to a “ warmer, less frozen and biologically changed ” ...

Climate crisis driving ‘ rapid ’ transformation of Arctic ...

The Arctic is often called the frontline of the climate crisis, and because of its rapid rate of warming, the region is beset by invasions of all kinds, from new species to new shipping routes. These forces could entirely remake the ocean basin within the lifetimes of people alive today, from frozen, star-lit vistas, populated by unique ...

Climate Change Is Flooding The Arctic With Light – And

Eurasian continent has experienced cold winters over the past two decades in contrast with Arctic warming. Previous studies have suggested that the cold Eurasian winters are associated with Arctic...

(PDF) Arctic – Eurasian climate linkage induced by tropical ...

Covid-19 is not the first crisis response by Arctic Indigenous Stewardship Network members. Inuit and Dene communities have already been grappling with another crisis for years: the changing climate. Climate change impacts in the Arctic include unpredictable ice conditions limiting social interaction and travelling to hunt, among others.

In this book the eminent authors analyse the ice cover variability in the Arctic Seas during the 20th and early 21st centuries. In the first two chapters, they show that multi-year changes of the sea-ice extent in the Arctic Seas were formed by linear trends and long-term (climatic) cycles lasting about 10, 20 and 60 years. The structure of temporal variability of the western region (Greenland – Kara) differs significantly from the eastern region seas (Laptev and Chukchi). In the latter region, unlike the former area, relatively short-period cycles (up to 10 years) predominate. The linear trends can be related to a super-secular cycle of climatic changes over about 200 years. The most significant of these cycles, lasting 60 years, is most pronounced in the western region seas.

This volume is a compilation of studies on interactions of land-cover/land-use change with climate in a region where the climate warming is most pronounced compared to other areas of the globe. The climate warming in the far North, and in the Arctic region of Northern Eurasia in particular, affects both the landscape and human activities, and hence human dimensions are an important aspect of the topic. Environmental pollution together with climate warming may produce irreversible damages to the current Arctic ecosystems. Regional land-atmosphere feedbacks may have large global importance. Remote sensing is a primary tool in studying vast northern territories where in situ observations are sporadic. State-of-the-art methods of satellite remote sensing combined with GIS and models are used to tackle science questions and provide an outlook of current land-cover changes and potential scenarios for the future. Audience: The book is a truly international effort involving U.S. and European scientists. It is directed at the broad science community including graduate students, academics and other professionals

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Viewed in satellite images as a jagged white coat draped over the top of the globe, the high Arctic appears distant and isolated. But even if you don't live there, don't do business there, and will never travel there, you are closer to the Arctic than you think. Arctic Matters: The Global Connection to Changes in the Arctic is a new educational resource produced by the Polar Research Board of the National Research Council (NRC). It draws upon a large collection of peer-reviewed NRC reports and other national and international reports to provide a brief, reader-friendly primer on the complex ways in which the changes currently affecting the Arctic and its diverse people, resources, and environment

can, in turn, affect the entire globe. Topics in the booklet include how climate changes currently underway in the Arctic are a driver for global sea-level rise, offer new prospects for natural resource extraction, and have rippling effects through the world's weather, climate, food supply and economy.

Once ice-bound, difficult to access, and largely ignored by the rest of the world, the Arctic is now front and center in the midst of many important questions facing the world today. Our daily weather, what we eat, and coastal flooding are all interconnected with the future of the Arctic. The year 2012 was an astounding year for Arctic change. The summer sea ice volume smashed previous records, losing approximately 75 percent of its value since 1980 and half of its areal coverage. Multiple records were also broken when 97 percent of Greenland's surface experienced melt conditions in 2012, the largest melt extent in the satellite era. Receding ice caps in Arctic Canada are now exposing land surfaces that have been continuously ice covered for more than 40,000 years. What happens in the Arctic has far-reaching implications around the world. Loss of snow and ice exacerbates climate change and is the largest contributor to expected global sea level rise during the next century. Ten percent of the world's fish catches comes from Arctic and sub-Arctic waters. The U.S. Geological Survey estimated that up to 13 percent of the world's remaining oil reserves are in the Arctic. The geologic history of the Arctic may hold vital clues about massive volcanic eruptions and the consequent release of massive amount of coal fly ash that is thought to have caused mass extinctions in the distant past. How will these changes affect the rest of Earth? What research should we invest in to best understand this previously hidden land, manage impacts of change on Arctic communities, and cooperate with researchers from other nations? The Arctic in the Anthropocene reviews research questions previously identified by Arctic researchers, and then highlights the new questions that have emerged in the wake of and expectation of further rapid

Arctic change, as well as new capabilities to address them. This report is meant to guide future directions in U.S. Arctic research so that research is targeted on critical scientific and societal questions and conducted as effectively as possible. The Arctic in the Anthropocene identifies both a disciplinary and a cross-cutting research strategy for the next 10 to 20 years, and evaluates infrastructure needs and collaboration opportunities. The climate, biology, and society in the Arctic are changing in rapid, complex, and interactive ways. Understanding the Arctic system has never been more critical; thus, Arctic research has never been more important. This report will be a resource for institutions, funders, policy makers, and students. Written in an engaging style, The Arctic in the Anthropocene paints a picture of one of the last unknown places on this planet, and communicates the excitement and importance of the discoveries and challenges that lie ahead.

The current warming trends in the Arctic may shove the Arctic system into a seasonally ice-free state not seen for more than one million years. The melting is accelerating, and researchers were unable to identify natural processes that might slow the deicing of the Arctic. Such substantial additional melting of Arctic and Antarctic glaciers and ice sheets would raise the sea level worldwide, flooding the coastal areas where many of the world's population lives. Studies, led by scientists at the National Center for Atmospheric Research (NCAR) and the University of Arizona, show that greenhouse gas increases over the next century could warm the Arctic by 3-5 ° C in summertime. Thus, Arctic summers by 2100 may be as warm as they were nearly 130,000 years ago, when sea levels eventually rose up to 6 m higher than today.

This book examines Arctic defense policy and military security from the perspective of all eight Arctic

states. In light of climate change and melting ice in the Arctic Ocean, Canada, Russia, Denmark (Greenland), Norway and the United States, as well as Iceland, Sweden and Finland, are grappling with an emerging Arctic security paradigm. This volume brings together the world's most seasoned Arctic political-military experts from Europe and North America to analyze how Arctic nations are adapting their security postures to accommodate increased shipping, expanding naval presence, and energy and mineral development in the polar region. The book analyzes the ascent of Russia as the first 'Arctic superpower', the growing importance of polar security for NATO and the Nordic states, and the increasing role of Canada and the United States in the region.

Rapid variations in climate through glacial periods have been associated with changes in ocean conditions. Modelling iceberg flow and melt is critical to evaluating their role in perturbing the state of oceans during glacial periods and subsequent deglaciation. This thesis aims to quantify the spatial and temporal history of icebergs flow, melt and sedimentation after release from the Eurasian Ice Sheet during the last deglaciation. The research structure required to meet this aim is in three steps. First, results from a numerical ice sheet model were processed in order to use them as input to an iceberg flow model. Other model inputs, such as topography and ocean and climate forcing fields, were also collated and input. Second, an iceberg model was compiled so that iceberg melt and sedimentation could be evaluated in the late glacial Nordic seas. Third, knowledge of the marine sedimentation record was built in order to compare with model results. This comparison allowed a number of literature-based hypotheses to be tested. This thesis has revealed the following results. The model showed that Eurasian icebergs may only be delivered to the North Atlantic under glacial ocean and atmospheric conditions. Under conditions similar to today, icebergs are restricted to the northern waters of the Nordic seas. The

model also revealed that iceberg meltwater does not have a simple-distance-decay relationship. Instead, the pattern of meltwater release was found to be influenced by iceberg convergence zones; a consequence of the iceberg response to atmospheric and oceanic forcing. The model results also demonstrated that the locations of iceberg meltwater did not always coincide with modelled IRD. Consequently, the absence of IRD in the marine sedimentary record should not necessarily be interpreted as an indicator of absence of former icebergs. Models of the ice-ocean-atmosphere currently treat iceberg meltwater input in a simple way. The results presented here may be used in further numerical investigations of the processes responsible for rapid climate change in the last deglaciation.

The common view of indigenous Arctic cultures, even among scholarly observers, has long been one of communities continually in ecological harmony with their natural environment. In Arctic Adaptations, Igor Krupnik dismisses the textbook notion of traditional societies as static. Using information from years of field research, interviews with native Siberians, and archaeological site visits, Krupnik demonstrates that these societies are characterized not by stability but by dynamism and significant evolutionary breaks. Their apparent state of ecological harmony is, in fact, a conscious survival strategy resulting from "a prolonged and therefore successful process of human adaptation in one of the most extreme inhabited environments in the world." As their physical and cultural environment has changed--fluctuating reindeer and caribou herds, unpredictable weather patterns, introduction of firearms and better seacraft--Arctic communities have adapted by developing distinctive subsistence practices, social structures, and ethics regarding utilization of natural resources. Krupnik's pioneering work represents a dynamic marriage of ethnography and ecology, and makes accessible to Western scholars crucial findings and archival data previously unavailable because of political and language barriers.