

studies. The theoretical material will also be of great interest to environmental scientists, as well as the wider public interested in obtaining auxiliary knowledge about the significant role that polar regions play in the global climate system. I highly recommend this book to anyone interested in building their knowledge capacity on polar regions.

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**BRAVE NEW ARCTIC: THE UNTOLD STORY OF THE MELTING NORTH.** By MARK C. SERREZE. Princeton, New Jersey: Princeton University Press, 2018. ISBN 9780691173993. 264 p., maps, b&w and colour illus., index, endnotes. Hardbound. US\$24.95.

For around a decade it has been a generally accepted scientific fact that the world's climate is changing, and that the cause is man-made carbon dioxide. These effects are magnified in the Arctic (so-called "Arctic amplification"), and steady reductions in the amount of sea ice have been one of the most visible results. In this sparsely populated region, this is a trend of concern not only for polar bears. Without its year-round ice cover, the reduced albedo of the Arctic Ocean has been blamed for changing weather systems throughout the Northern Hemisphere, resulting in more severe winters in the northern United States, earlier forest fires in Canada, and flooding in Europe. The eroding wave action resulting from the absence of sea ice has washed away coastal settlements in Alaska and the Canadian Arctic. The Arctic is at the front line of the global climate crisis.

What makes Mark Serreze's book interesting and different is that it does not merely document the changes we already know about, but tells the story of how the American scientific community came to the realization that Arctic climate change was real and man-made—and happening far quicker than models had predicted. Serreze himself admits to initially being skeptical that there was a link between CO<sub>2</sub> and Arctic warming, so the journey is also a personal one as the mounting evidence gradually persuades him to change his mind.

Climate models had long predicted that the consequence of increasing global CO<sub>2</sub> levels would be raised temperatures and reduced summer sea-ice cover, but for a long time this was simply not observed. Between 1979 and 2000 there were several years when new minima were observed, but these were followed by years in which the sea-ice extent returned to "normal" levels. Separating the anticipated downward trend from natural variability was surprisingly complicated.

For example, the eruption of Mount Pinatubo in the Philippines in June 1991 caused a drop in summer temperatures in the Canadian Arctic the following year, abruptly reversing several years of shrinking summer sea-ice extent and obscuring the expected CO<sub>2</sub>-induced warming. It was not until 2003 that Serreze was finally convinced that a new trend had been established. This trend was confirmed beyond doubt in 2007, when there was a further dramatic drop in summer sea-ice cover. At a press conference the following year, Serreze said that he believed the Arctic cryosystem had probably now reached a tipping point and coined the term "death spiral" to describe the ever-shrinking summer sea-ice cover.

Another interesting example of the pitfalls to befall the scientific community as they tried to determine whether CO<sub>2</sub> levels were actually having an impact on the Arctic climate was what Serreze describes as a "mania" in the 1990s for invoking the Arctic Oscillation (AO), a large-scale atmospheric phenomenon, as a cause for observed changes. In fact, he claims that for a while the joke was that it was impossible to get a paper published or proposal funded unless it had a link to the AO. But ultimately the AO turned out to be a red herring as the underlying cause of Arctic climate change.

The difficulty of determining cause and effect in the Arctic climate was not merely a matter of science though. Perhaps the most remarkable part of the book is his detailed account of how political interference by the U.S. government of the day (the Republicans of the Bush administration) attempted to suppress data and harass and intimidate prominent scientists working in the field, on several occasions successfully shutting down or misdirecting the science programs they were employed on.

My main criticism of the book is that this story is viewed from a purely American perspective. Serreze rarely mentions contributions by non-U.S. scientists or the considerable international progress in unravelling the Arctic climate puzzle. He mentions that the major international Arctic climate research program, MOSAiC (Multidisciplinary drifting Observatory for the Study of Arctic Climate), which is billed as the "largest polar expedition in history" with over 600 participants from 17 countries (<https://www.mosaic-expedition.org/>), is much larger than the U.S. one, but then tantalizingly says nothing about its objectives. Perhaps the biggest future Arctic climate threat of all, the thawing of the vast reserves of frozen methane hydrates offshore Siberia (already observed to be bubbling to the surface), again receives barely a mention. So, one is left wondering how much of "the untold story of the melting north" from the book's title has actually been told.

Overall though, this is an enlightening and often fascinating read and well worth the money. In terms of technical level, since the book necessarily focuses on the subtleties of how the academic debate has evolved over the decades, it does require a good grasp of climate science on behalf of the reader. Despite its often chatty style, the book

is perhaps better suited to students and practitioners than the layperson.

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THE TANANA CHIEFS: NATIVE RIGHTS AND WESTERN LAW. Edited by WILLIAM SCHNEIDER. Fairbanks: University of Alaska Press, 2018. ISBN 97816022-33447. 160 p., b&w illus., bib., notes, appendices, index, ebook. Softbound. US\$35.00.

Alert researchers often unearth an event pivotal to history that has faded from public memory. In this example of attentive research, Schneider and four colleagues reconstruct a July 1915, two-day meeting. The meeting brought together 14 civic leaders from Athabaskan bands living in the Tanana River Valley in Interior Alaska to discuss their future with six representatives of the U.S. federal government and the deacon from an Episcopal mission in rural Alaska. The 21 conferees breached barriers dividing Indigenous North America from Western cultures to explore ways to cope with the impending construction of Alaska's recently authorized federal railroad.

James Wickersham, who was halfway through his fourth two-year term as Alaska's sole federal office holder and delegate to the U.S. House of Representatives, officially convened the meeting. He had won re-election in 1914 in all four judicial subdivisions by the largest combined plurality of his political career (58% of 11 000 ballots cast among three candidates; Atwood, 1979:286). In April 1915, Wickersham returned to his home in Fairbanks, flush with legislative successes in Washington, D.C. One was his bill providing land grants for an Alaska agricultural college and school of mining, and another was President Wilson's route selection of the Seward-Tanana Valley federally-funded and operated railroad.

Delegate Wickersham found his hometown's population in decline, however. Having depleted nearby gold claims of shallow pay dirt, placer miners had moved to unexplored Tanana-tributary creeks farther west of town. Concerned about this shift, he toured new placer claims near Minto and Tolovana. He chanced upon Chief Alexander of the village of Tolovana, where they chatted for many hours over two days about drastic changes to be expected once railroad construction crews arrived.

Wickersham and Chief Alexander joined forces to hold a Tanana Chiefs' Conference (TCC) on 5–6 July 1915 at the public library building in Fairbanks. Eight Chiefs and six other Athabaskan leaders traveled various distances to the meeting, motivated by collective alarm among the region's

Athabascans. Their first concern: had Tolovana's Chief Alexander accurately identified threats to their lifestyle that Delegate Wickersham supposedly told him would come with the railroad? During introductions facilitated by the interpreter Paul Williams of Tanana, Wickersham confirmed Chief Alexander's every word. The TCC then got down to business. Athabaskan invitees listened intently to Wickersham's welcome and recommendation that they seek government help to select and secure land on which they could continue subsistence hunting and fishing without fear of being overrun or disturbed in their pursuits (Will Mayo, *in* Schneider, 2018:49–51).

In the 48 years since purchasing Alaska from Russia, U.S. attention to and concern for Alaska Natives had been uneven. Some of the early explorers, who penetrated the Interior of the new territory on military assignments, expected that warlike Alaska Natives would have to be subdued and confined to reservations in the style of the western states. But Alaska Natives proved hospitable by guiding passage and feeding such adventurers. A dozen years before the 1897 Klondike Stampede, Army Lt. Henry Allen and two companions completed a notably ambitious trip with help from Ahtna Athabascans. In 1904–1905, Navy Lt. George Thornton Emmons alerted Congress to his serious concern regarding starvation among Copper River Natives whose supply of upriver salmon was being denied them by commercial fisheries at the mouth of the river for processing in nearby canneries (Schneider, 2018:28–29).

A decade later, the 1915 TCC broke new ground in cultural relations by encouraging Athabaskan invitees to speak for themselves and by faithfully recording their statements. Even in translation and transcription, their eloquence survives. Chief Joe of Salchaket said, "We are suggesting to you just one thing, that we want to be left alone. As the whole continent was made for you, God made Alaska for the Indian people, and all we hope is to be able to live here all the time. And we wish to ask you to give us written instruction on our matters" (Schneider, 2018:60 and Appendix 2, Transcript: 89).

For his part, Delegate Wickersham's career in Western jurisprudence shaped his expectations for the outcome of the meeting. Although he genuinely respected Athabascans' lifestyles, he had reluctantly come to regard exclusive land ownership and property rights of individuals both as a means to gauge the degree of "civilization" of Indigenous North Americans, and as their main defense against infringement upon the freedoms that Chief Joe espoused.

Therefore, beginning early on the second day (6<sup>th</sup> July 1915), Delegate Wickersham and the two representatives of the Federal Lands Office must have been surprised by the strength of the Athabaskan representatives' eagerness to discuss three objectives other than protecting their lands by reservation or by allotment. Their preferred topics were an industrial school, government-guaranteed medical care, and equitable chances to be awarded contracts for unskilled labour in supplying construction camps with local fish and game. The Episcopal Deacon, Reverend Madara, provided