



The Big Melt

Curbing Arctic Climate Change Aligns with U.S. Economic and National Security Goals

By Cathleen Kelly and Howard Marano May 8, 2017

The United States has long been a leader in advancing diplomatic cooperation, peace, stability, and environmental stewardship in the Arctic—from the purchase of Alaska from Russia in 1867, to the creation of the Arctic Council in 1996, and the beginning of the U.S. chairmanship of the Arctic Council in 2015.¹ A new scientific assessment of rapid changes in the Arctic reveals that U.S. economic prosperity and national security may well hinge on continued U.S. leadership and cooperation in the region. The Arctic assessment by the Arctic Monitoring and Assessment Program, or AMAP, concludes with even higher confidence than in the past that rapid and persistent Arctic climate change is transforming the region with global economic, security, and environmental repercussions that will be more serious than previously predicted.²

The more than 90 authors of the “Snow, Water, Ice, Permafrost in the Arctic,” or SWIPA2, report concluded that Arctic warming will drive global sea levels to rise faster and higher than earlier estimates and that the region will see ice-free summers sooner than expected.³ The AMAP report also concludes that the global costs of Arctic climate change—including damages to infrastructure, homes, communities, and businesses from global sea level rise and more extreme weather—will be astronomical, reaching \$7 trillion to \$90 trillion between 2010 and 2100.⁴ Arctic warming will also have significant U.S. national security consequences, including flooding of U.S. coastal communities and military bases; increased instability in vulnerable regions; and strained U.S. humanitarian and disaster response resources.⁵

So far, the Trump administration’s Arctic policy has ignored these rapidly unfolding threats and focused entirely on easing offshore oil and gas drilling in the region, despite extreme risks.⁶ This includes rescinding Obama administration accomplishments such as marine protected areas established to prevent oil spills in areas critical for subsistence hunting and fishing; terminating a new formal consultation mechanism with coastal Alaska Native tribes along the Bering Sea; and ordering Secretary of the Interior Ryan Zinke to review several drilling safety standards for potential cancellation.⁷ Meanwhile, perennially perilous conditions in the Arctic Ocean—including drifting sea ice, hurricane force winds, and extended periods of darkness—and a lack of emergency response infrastructure would mean any oil spill would be extremely difficult, if not impossible, to respond to and clean up.⁸

Secretary of State Rex Tillerson has an opportunity to reaffirm the United States' long-standing commitment to safeguarding the Arctic when he chairs the May 11 Arctic Council Ministerial Meeting in Fairbanks, Alaska. This meeting is the 10th gathering of foreign ministers and indigenous leaders from the eight Arctic nations: Canada, Norway, Russia, the United States, Finland, Iceland, Sweden, and the Kingdom of Denmark, via its dominion over Greenland and the Faroe Islands. These countries make up the Arctic Council, the international body designed to address emerging challenges in the region.⁹ With costly and rapid Arctic climate change already underway, strong diplomatic partnerships are more essential than ever to prepare for warming effects and avert the most costly and dangerous repercussions down the road.¹⁰

At the May ministerial—which marks the end of the two-year U.S. Arctic Council Chairmanship—Secretary Tillerson is expected to reach a binding agreement with Arctic nations; Arctic Council observer countries; and indigenous leaders to strengthen international science cooperation in order to deepen the world's understanding of rapid Arctic warming and its consequences.¹¹ Past binding agreements adopted by the council secured commitments to strengthen oil spill response as well as search and rescue in the region.¹² The eight countries are also expected to agree to meet a regional target to reduce black carbon pollution—a potent driver of Arctic warming. By locking in these agreements and working with other nations to curb global climate change, Secretary Tillerson can strengthen diplomatic ties with key allies while advancing U.S. economic, security, and environmental interests at home and at the top of the world.

The big melt

Secretary Tillerson's Arctic Council debut comes on the heels of AMAP's release of its second assessment of rapid Arctic climate change: SWIPA2.¹³ According to Lars-Otto Reiersen, executive secretary of AMAP, the SWIPA2 report, “[O]ffers a complete picture of the latest data and trends on Arctic climate changes.”¹⁴ The report concludes that substantial Arctic warming is already “locked into the climate system” and will drive a dramatic transformation in the region that will last through at least the midcentury. The report also warns, “The near-future Arctic will be a substantially different environment from that of today, and by the end of this century Arctic warming may exceed thresholds for the stability of sea ice, the Greenland ice sheet, and possibly boreal forests.”¹⁵ Dr. James Overland, a research oceanographer at the National Oceanic and Atmospheric Administration, described ongoing Arctic climate change as “the big melt” and “well outside the envelope of previous experience.”¹⁶

The Arctic is experiencing warming at twice the rate of the rest of the world.¹⁷ Before 2050, average Arctic temperatures in the fall and winter are expected to spike by 4 degrees to 5 degrees Celsius above preindustrial temperature levels. In 2016 alone, the region already recorded January temperatures that were 5 degrees Celsius above the average recorded between 1981 and 2010. This blew the previous 2008 record away by a full 2 degrees Celsius.¹⁸

New observations also indicate that the Arctic could be ice-free during the summer by the end of the 2030s, a date earlier than previously projected.¹⁹ Even today, much of the Arctic's sea-ice cover is made up of thinner ice than in past decades.²⁰

The Arctic's land ice is also melting at an alarming rate. Between 2004 and 2010, melting of Arctic glaciers and the Greenland ice sheet caused one-third of the recorded global sea level rise to date and is expected to accelerate this rise in the future. The authors of SWIPA2 found that Greenland has, "on average lost 375 gigatons of ice per year—equivalent to a block of ice measuring 7.5 kilometers or 4.6 miles on all sides—from 2011 to 2014."

Without rapid and significant greenhouse gas emission reductions, the SWIPA2 authors expect the global sea level to rise, at a minimum, 74 centimeters, or 2.4 feet, by 2100.²¹ AMAP's new minimum sea level rise projection is roughly twice as high as the minimum level previously estimated by the Intergovernmental Panel on Climate Change in 2013.²² The U.S. National Climate Assessment estimates that the global sea level could rise by as much as 6.6 feet by 2100.²³ This could put millions of Americans at risk of flooding, inundation, and damage to homes, businesses, and infrastructure.²⁴

Arctic warming may also affect weather patterns in the United States and Europe as well as Southeast Asian monsoons.²⁵ For example, scientists have observed that melting ice and loss of snow cover in the Arctic impact storm tracks in the Northern Hemisphere and cause more extreme weather and temperature variations.²⁶

Arctic warming is also decimating both snow and permafrost in the region. If global emissions continue their current path, the SWIPA2 report's authors expect snow cover to drop by 10 percent to 20 percent by midcentury, reducing the planet's reflectivity and accelerating warming. The authors also estimate that 20 percent of Arctic permafrost's upper level will be lost by 2040, pumping more carbon into the atmosphere that will further heat the planet.²⁷ Together, with the loss of both Arctic land and sea ice, this trend is already exposing many communities in the region to coastal erosion and flooding.²⁸

Even though some dramatic changes to the Arctic cannot be stopped, the SWIPA2 authors conclude that if nations curb global greenhouse gas emissions in line with scenarios that are roughly consistent with the full implementation of the 2015 Paris Agreement, some Arctic changes can be stabilized after 2050 at levels that are safer, although still higher, than today's trends. For example, the AMAP report concludes that an "[emissions] scenario roughly consistent with the Paris Agreement would reduce end-of-century sea level rise by 43% [by more than 7 inches, or 20 centimeters] compared with business-as-usual emissions." Recognizing that nations have only a handful of years to avoid the worst effects of Arctic warming, Dr. Overland emphasized that world leaders will need to embrace "an early, and ambitious implementation of the Paris Agreement to slow these changes down."²⁹

The high cost of Arctic climate change

The consequences of Arctic warming are global and costly. The AMAP report authors estimate that damages to infrastructure, homes, communities, and businesses from global sea level rise and more extreme weather could climb to \$7 trillion to \$90 trillion between 2010 and 2100.³⁰ These impacts are already affecting U.S. communities in the Alaskan Arctic. Temperature increases and thawing permafrost in Alaska have added between \$3.6 billion and \$6.1 billion, or 10 percent to 20 percent, to the cost of maintaining public infrastructure such as roads, pipelines, and airports.³¹ In 2015, warming temperatures and increased precipitation closed the only road connecting people and commerce to Alaska's North Slope oil field.³² This disruption caused \$15 million in damages.³³

Other communities are being completely uprooted by the changing climate. A U.S. Government Accountability Office, or GAO, study found that flooding and erosion affected 86 percent of Alaska Native villages.³⁴ As sea ice shrinks, villages such as Shishmaref are losing the protective shield that traditionally has helped deflect extreme storms and punishing waves. In August 2016, these changes, together with rising seas and permafrost thaw, prompted Shishmaref residents to vote in favor of relocating, at a cost of \$180 million, to an area less threatened by rising seas and erosion.³⁵ The plight of Shishmaref is not unlike that of other Alaska Native communities, many of which are also in low-lying coastal areas affected by climate change.³⁶ In early 2017, the village of Newtok asked the Obama administration for a disaster declaration to help fund its relocation. This request was ultimately denied.³⁷ The Army Corp of Engineers has estimated that moving Newtok to safer ground nine miles from its current location could cost up to \$130 million.³⁸

Rising sea levels, accelerated by a melting Arctic, also have economic repercussions at lower latitudes, including in the United States. By midcentury, experts estimate that property worth \$66 billion to \$106 billion will be below sea level in the United States under current global emissions projections. This could reach \$238 billion to \$507 billion by the end of the century.³⁹ As one of the most vulnerable states, it is estimated that Florida alone could see \$15 billion to \$23 billion of property underwater by midcentury.⁴⁰ Zillow recently overlaid projected sea level rise onto U.S. real estate maps and concluded that, if sea levels climb 6 feet by 2100, "almost 300 U.S. cities would lose at least half their homes, and 36 U.S. cities would be completely lost."⁴¹

While a warming Arctic may create new economic opportunities in the region, it also brings high costs and consequences that cannot be ignored without putting the U.S. economy and people around the globe in peril. Companies and communities need better data to understand the risks of Arctic and global climate change so that they can design and invest in infrastructure that will last in the face of more extreme weather and sea level rise. As the Center for Climate and Energy Solutions' Michael Tubman, director of outreach, stated at an April Arctic event hosted by the Norwegian embassy, "The biggest risk is that we don't take the risks and costs of a rapidly changing Arctic seriously, and focus only on the economic upsides."⁴²

The national security risks of a rapidly melting Arctic

The new normal of unparalleled climate change at the top of the world is on track to set off an accelerating chain reaction of warming with serious implications for U.S. national security both in the region and around the globe.⁴³ The rising global sea level, as well as more intense and frequent extreme weather, not only threaten U.S. coastal populations but also military assets and strain military resources needed for disaster relief and humanitarian assistance.⁴⁴

A 2016 National Intelligence Council, or NIC, report concluded that climate change will pose “significant national security challenges for the United States over the next two decades.”⁴⁵ The report also warned that, while a warming Arctic may see increased economic activity, it could also be the sight of increased maritime boundary disputes and military posturing. Russia, for example, has continued to build up its military presence and is looking to exploit Arctic resources as the region continues to warm.⁴⁶ The NIC report also illustrates numerous examples of how more frequent and severe extreme weather events are driving food and water shortages, exacerbating poverty, and escalating conflict in areas including India, Pakistan, Mali, Mauritania, Mexico, Nigeria, Somalia, Syria, and Yemen.

Secretary of Defense James Mattis has said that “the effects of a changing climate — such as increased maritime access to the Arctic, rising sea levels, desertification, among others — impact our security situation.”⁴⁷ Mattis has also said that climate change “is impacting stability in areas of the world where our troops are operating today” and that the military should “incorporate drivers of instability that impact the security environment in their areas into their planning.”⁴⁸ For these reasons, strengthening international cooperation to better understand, monitor, and prepare for Arctic climate change—and to curb rapid Arctic warming and its ramifications for the world—is in the interest of U.S. national security.

A changing Arctic requires greater diplomacy

Although the new U.S. presidential administration has created uncertainty about the future shape of U.S. Arctic policy, the diplomatic benefits of continued U.S. leadership in the region have never been clearer. The United States has served as a steady anchor of diplomacy and cooperation among the eight Arctic nations. Last year, the United States forged important bilateral agreements with Arctic countries, including joint U.S.-Canada and U.S.-Nordic presidential statements on safeguarding the Arctic, curbing climate change, and promoting sustainable development in the region.⁴⁹ The United States has also played an important role in encouraging Russia to refrain from hostile and irresponsible resource competition and aggression in the Arctic and support sustainable development and peace in the region.⁵⁰

According to foreign policy and security experts, U.S. diplomatic leadership and engagement is needed now more than ever in the Arctic as the region rapidly warms. An independent Task Force at the Council on Foreign Relations released a report this past March that concluded that a “collective approach” is critical “to adapt to changing realities” in the Arctic and that “no one country can manage the coming challenges alone.”⁵¹ For example, a warming Arctic may lead to additional border disputes as economic opportunities in the region increase.⁵² Historically, the United States has had a strong interest in supporting a peaceful diplomatic resolution to these types of disputes. With rapid changes in the region underway, continued U.S. Arctic Council engagement and leadership to find peaceful solutions to conflicts in the region as they arise will become more crucial to maintaining stability at the top of the world.⁵³

Advancing U.S. economic, national security, and environmental interests via the Arctic Council

The Arctic Ocean is one of the most volatile climates on the planet and a dangerous place to operate. Despite these conditions, there are still substantial knowledge gaps on the ongoing and rapid climate changes as well as their consequences for companies who operate there, local communities, the marine environment, and natural resources. By working with Arctic nations and other countries to improve Arctic science by strengthening monitoring and assessment of the region, the United States can increase access to the data that businesses, military leaders, communities, and policymakers need to design and build infrastructure and facilities that can withstand climate changes while reducing repair and rebuilding costs.

For example, about 10 percent of the global fish catch occurs in Arctic and sub-Arctic waters, and overfishing is already affecting parts of the Arctic region.⁵⁴ Yet there is a lot that Arctic nations do not know about the Arctic Ocean and the marine mammals and fish species living there.⁵⁵ Without an accurate understanding of Arctic Ocean biodiversity—and ongoing changes and their effects—sustainable Arctic resource management, including commercially valuable fish species, will continue to be a challenge.

Many companies rely on accurate data on Arctic and other climate changes gathered by the United States and other governments in order to operate. For example, more than 400 companies already work together with public agencies—such as the National Oceanic and Atmospheric Administration—and count on the data they gather to support economic activity in the world’s oceans.⁵⁶

With declining sea ice increasing the prospects for commercial shipping in the region, the United States must work with other nations to improve forecasting for sea ice, weather, and other hazards for ships to operate safely without putting people and the Arctic environment in jeopardy.⁵⁷ In addition, strengthened Arctic measurement,

monitoring, and observation systems are needed to help companies and insurance providers better quantify and manage operating risks in the region.⁵⁸ Lastly, an improved understanding of changing ecosystems in the Arctic can ensure that onshore economic activity in the region, including mining, oil and gas, and other infrastructure development, is pursued more sustainably.⁵⁹

At the May Arctic Council Ministerial Meeting, Secretary Tillerson and other world leaders must adopt a new Arctic Council agreement to strengthen Arctic science cooperation in order to respond to ongoing and future changes.⁶⁰ According to Dr. Overland, “We need a strong measurement program to continue to monitor the surprises we’ve seen” and to improve the certainty of predicted changes and their consequences in the region and globally.⁶¹

It is also in the economic, environmental, and public health interest of the United States and other nations to cut black carbon and methane pollution in the region. While emissions of CO₂ are the primary driver of global climate change, short-lived climate pollutants such as black carbon and methane threaten public health and accelerate Arctic and global warming.⁶² Diesel cars and trucks; woodstoves; wildfires and agricultural burning; oil and gas production; transportation; and shipping all emit black carbon, or soot.⁶³ When emitted in or near the Arctic and other icy regions, black carbon pollution warms and blackens the surfaces of snow and ice, which reduces its ability to reflect the sun’s heat and warms the atmosphere.⁶⁴ According to AMAP, reducing short-lived climate pollutants globally could reduce Arctic warming by roughly 0.5 degrees Celsius by 2050.⁶⁵ This can help the world avoid triggering irreversible loss of the Greenland ice sheet and the catastrophic sea level rise and coastal property damage that would accompany it.

In 2015, Arctic leaders committed to adopt a regional target to curb black carbon pollution to slow Arctic warming and protect public health at the May 2017 Arctic Council Ministerial Meeting.⁶⁶ Adopting a strong black carbon pollution target is in the economic and security interests of the United States since black carbon accelerates melting of the Greenland ice sheet and sea level rise, threatening U.S. coastal properties with flooding.

AMAP recommends that Arctic Council members and observers should “individually and collectively lead global efforts for an early, ambitious and full implementation of the Paris COP21 Agreement, including efforts to reduce emissions of short-lived climate forcers.”⁶⁷ For these reason, Secretary Tillerson and other Arctic leaders should deliver on their 2015 Arctic Council commitment and adopt a regional black carbon target at the May ministerial meeting while continuing to curb global greenhouse gas emissions.

Conclusion

As described above, it is in the clear diplomatic, economic, environmental, and national security interest of the United States for Secretary Tillerson and the Trump administration to continue to play a leadership role in the Arctic Council; strengthen Arctic science cooperation; and work closely with Arctic and other nations to curb climate change. By taking the actions described above at the May Arctic Council Ministerial Meeting, Secretary Tillerson and other leaders can improve the world's understanding of ongoing and future Arctic climate changes and how they will affect commercial operations, infrastructure, and communities in the region and globally. By adopting an Arctic Council agreement on science cooperation, and committing to cut black carbon pollution to meet a regionally agreed upon target, Secretary Tillerson can support environmental stewardship and lasting peace and stability in both the High North and the world at large.

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