



ODUMUNC 2014
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The Perils of Climate Change: The 2043 Flash Freeze

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In 2014, the problem is global warming. But climate change is about rapid and unpredictable effects. What if global temperatures suddenly decline? This simulation examines ten effects of rapid and catastrophic global temperature change, examining how major countries are affected and how the UN Security Council can address the worst consequences. These include the effects of:

- expansion of the Arctic and Antarctic regions;
- declining sea levels, isolating previous port cities;
- forced migration from northern and southern regions of the globe;
- disruption of international industry and trade; and
- increased energy demands world-wide.

Beginning with the industrial revolution of 1830-70, use of fossil fuels exploded, powering entire civilizations, extending life and health, and pushing humanity forward into the modern era. However, overuse of fossil fuels led to exponentially increased releasing of greenhouse gases into the Earth's atmosphere, causing a process known as Global Warming or Climate Change (natural processes contribute to global warming as well, a few examples being volcanic activity and plant and animal respiration). This process involves the atmospheric ozone layer, which is vital to the Earth's survival as a habitable planet because it traps heat in the atmosphere, but now traps extra heat in the atmosphere. As a result the average temperature of areas around world goes up, worsening melting of polar ice and global glaciers. The condition of today's world is eerily similar to that of an earlier period, the *Younger Dryas*.

The Younger Dryas is one of the best known examples of rapid climate change. It was a period of rapid cooling from 13,000 to 11,500 years ago, abruptly followed by a period of extreme global warming (much like our world now). While a definite cause of this cooling has yet to be discovered, several theories persist about how this ice age came about. One of the theories for cause of the Younger Dryas line up frighteningly with current world conditions. In a path breaking article published in 1999, W. S. Broecker argued the Younger Dryas was caused by the *melting* of glacier ice.¹ Broecker hypothesized that the melting of the Lake Agassiz Glacier (in modern day Canada) released massive amounts of cool freshwater that caused a shutdown of the warm water currents that cause the temperate climate of much of the North Atlantic. This then would have lowered the average temperature of the North Atlantic by several degrees.

¹ W. S. Broecker, "What If the Conveyor Were to Shut Down? Reflections on a Possible Outcome of the Great Global Experiment," *GSA Today*, Vol. 9, No. 1 (January 1999), <http://aces.ens-lyon.fr/aces/terre/paleo/systemclim/gulf-stream/images-gulf-stream/fichiers-telechargement/Broecker1999.pdf>

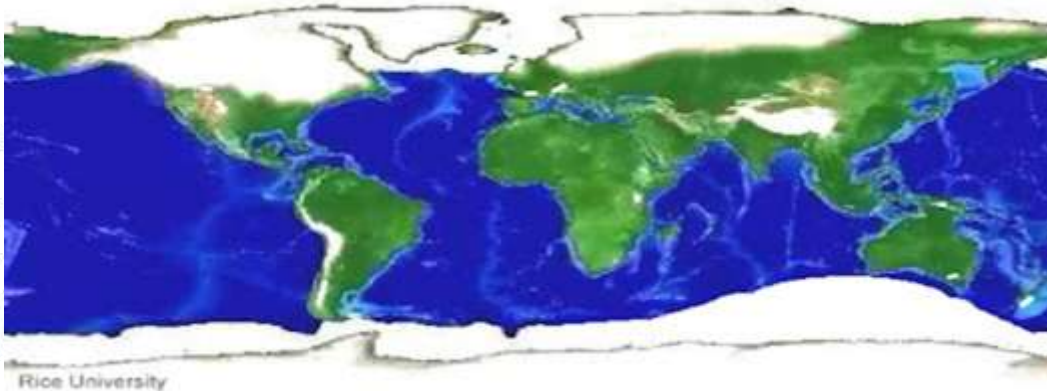


Figure 1. A picture of the estimated range of the Younger Dryas

This simulation starts with the postulate that in 2043, Broecker's theory has become reality. The northern ice pack has driven its way to about the 55th parallel; any area north of the 55th latitude north (during the winter) or south of the 55th latitude south (during the winter) is covered in pack ice and uninhabitable. The highly developed regions in the north such as Canada, Denmark, Finland, Norway, Sweden, the United Kingdom, parts of the United States and much of the enormous expanse of Russia are now either completely or partly frozen, as are parts of Argentina and Chile.

Migrants and refugees have come spilling out of the north; millions of people fled the ice pack to warmer countries that opened their borders to people escaping the ice. Australia was the first to open its borders to refugees, setting a goal only a few generous countries would also reach. Soon to follow was Argentina, Brazil, France, Thailand, the United States, and several African countries, including Democratic Republic of Congo and Kenya. Several countries took the opposite stance, saying that not only do they not have enough food for the refugees to even survive but they do not have the energy or the space. Some the chief countries behind this stance are China, India, Mexico, Nigeria and Uruguay. The refugees exploding out of the north have caused serious overcrowding in a majority of the countries who had opened their borders, especially the African states.

The amount of energy use worldwide spiked as a result of the freezing. Now many major centers of population require more and more energy for its inhabitants to survive. The generation of heat is a major user of the power, with much of Argentina, Canada, Chile, the Nordic countries (especially Norway and Sweden), South Africa, the United Kingdom, and the northern United States becoming uninhabitable and the rest of their territory requiring massive support. Only major energy generation allows continued human habitation in those regions. While the demand for power has gone up, many of the world's largest deposits of fossil fuels are now deep within the ice pack and increasingly expensive to exploit. Investments in Arctic oil and gas—popular in the 2010s—have been lost due to worsening conditions.

Expansion of the polar ice caps has had an extreme effect on the world's coastlines, because more of the world's water is trapped as ice in the north, there is much less worldwide.

ODUMUNC 2014 Issue Brief for FSC

Sea levels dropped an average of 100 meters globally, exposing new land, drying up major shipping lanes, land locking shipping ports and fishing communities, and erasing entire lakes from the map. New port facilities are required, worsening the isolation of many regions of the world until such investment is possible. One beneficiary is much of Africa and South America regions where shipping lanes are less affected by the drop in sea levels. But major shipping lanes such as the Indonesian, Singaporean, and Malaysian straits have been affected, causing additional problems.

Border issues also have become commonplace because of newly exposed land all over the world. In places like Indochina and Indonesia huge tracts of previously submerged land have become available and disputes over land are common. The large areas invite settlement and exploitation, but also raise the possibility of armed conflict.

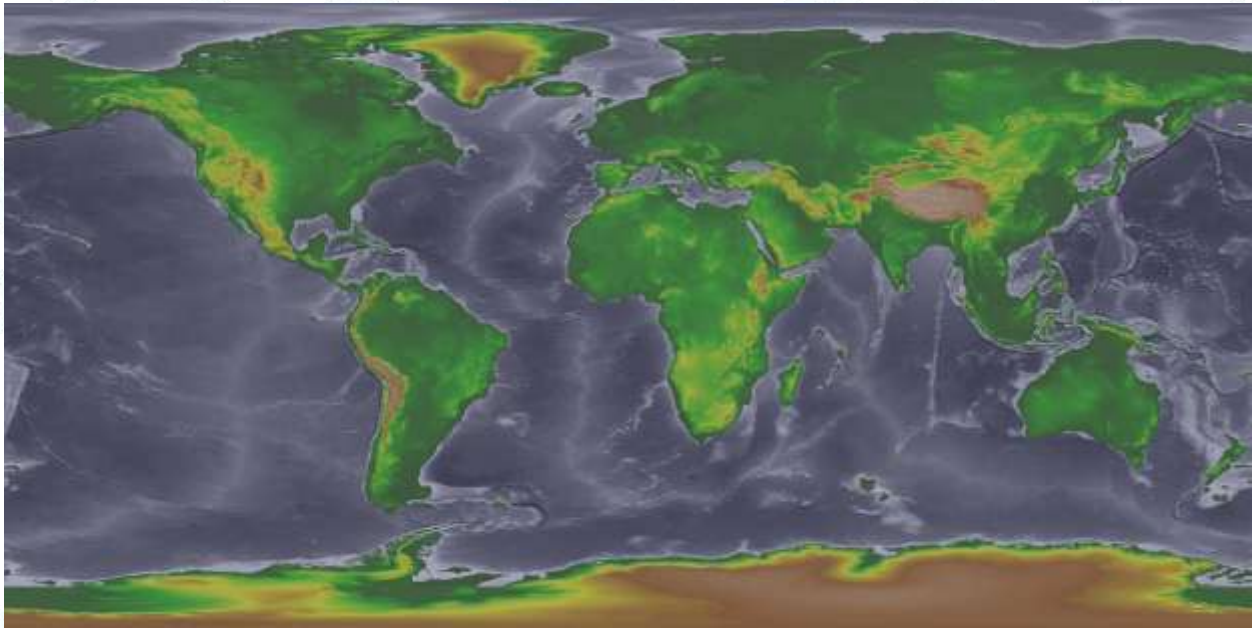


Figure 2. The world after a -100 meter change in sea

Huge demand for energy, declining availability of energy resources, masses of international migrants and refugees, the transformation of global shipping and border disputes are among the world's key issues in 2043. These must be engaged in the United Nations by delegations of its member states. These delegations still work through previously set domestic politics and regional agendas. The political climate of the member states of the Security Council in 2043 greatly affects their perspectives and capabilities in the United Nations. The members of the UN Security Council in 2043 should be prepared for situations where aggrieve action is needed to respond to international crises and prevent future ones.

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THE DELEGATIONS:

The Security Council is the UN's most powerful body, where the world's most serious crises are brought for resolution. However the body is not without constitutional flaws and problems of adaptation to recent change in the international system.

In the year 2043, the UN Security Council has been modestly reformed. It still has 5 permanent members (the P5, veto powers) with rotating membership expanded to seventeen other states elected to two year terms. But the veto power of two P5 countries--the Russian Federation and the United Kingdom--has been questioned now that northern pack ice covers over half of each country's land, forcing much of their population to emigrate and leaving them with less influence. Another flaw with the Security Council is the lacking of African and Latin American representation; after the migrant and refugee influx, many states in those regions now have unprecedented populations, yet they still have limited representation in the Security Council. Nonetheless the Security Council must cooperate closely and together take on the global crises of 2043.

All delegates should be familiar with their country's political system, major parties and their positions on related issues. Major intelligence reports--listed in the bibliography--are an ideal place to start country research, identifying major trends before the new ice age. Also keep in mind specific national trends since then:

Australia: Australia was the first major country to open its borders to migrants and refugees fleeing the north. Because of the relatively low population numbers compared to its habitable land, Australia was the perfect place for a refugee to end up. The country also has extensive coal deposits that it has only begun to tap into. But with the destruction of the Indonesian and Singaporean shipping lanes Australia took a huge financial hit. Over the past several decades Australia had become closer with its Asian neighbors both financially and militarily, so Australia had a huge stake in the now dry shipping lanes to its north.

Brazil: With its population well over 300 million, Brazil is firmly in the position of a world population super power. After Brazil's extraordinary economic growth of the 2020s and '30s, as one of the countries to open its borders to refugees, the country is experiencing widespread poverty now intensified by overcrowding issues. Much of the Amazon basin also has dried up, leaving much of the state's ports useless.

Canada: Most of Canada is now ice pack, but most centers of Canadian population--the major cities closest to the American border--are intact. A huge demand for energy comes from Canada however, because most of its crude oil extracting areas is now completely frozen over. What Canada does have in way of energy is natural gas, but not very much of it is economically exploitable under the new conditions. Hydroelectric power from its massive northern rivers is unreliable at best. Nuclear installations have assumed new importance. Canada's priority should be obtaining energy for its remaining people. Canada lost nearly one-quarter of its pre-crisis population of 45 million who have become migrants and international refugees.

ODUMUNC 2014

Issue Brief for FSC

China: As one of the faces of the closed door policy, China tries to prevent refugees from the north into its territory. With overcrowding already an issue for major centers of Chinese population letting more poor into the country was not something the government could let happen. China's efforts to curb population growth have seemed to work, as the population has actually decreased since 2017 from 1.38 billion to 1.31 billion in 2043. China has in the past few decades has built up its natural gas and coal production, and is now able to almost sustain itself energy wise. China is the world's largest exporter of goods, but the drying of the major shipping lanes through Indonesia and beneath Indochina has crushed worldwide shipping, putting serious strain on Chinese exports. Like all coastal countries, China has to move its ports to accommodate dropping sea levels.

Cuba: Cuba forged strong ties with the countries of China and Vietnam, making it close with two powerful states. With its lucky geographic situation, Cuba is a new hub for global migration and investment. Its major ports remain functional with modest adaptation. Relations with the United States, normalized in the 2020s following the slow transition to democratic rule, facilitated rapid economic growth. Historic ties with Venezuela insured ready access to petroleum and natural gas, and massive investment in solar power (with Chinese and German assistance) keep demand for fossil fuels from rising too much.

Democratic Republic of the Congo (DRC): Once the most chaotic countries on the planet, DRC emerged in the 2020s and '30s as a center for African regional investment and development. With migrants arriving from South Africa and elsewhere, the country's limited infrastructure and torturous ethnic tensions have deteriorated. Although its vast territory has lots of physical scale, it lacks critical infrastructure. The already unsustainable population is now unbearable for this central African country. In 2011 the DRC was the hungriest state in the world, growing in the Global Hunger Index (GHI) by 63 percent from 1990 to 2011. Despite a 2003 peace deal between Congolese rebels and the government, civil wars have raged for decades now in the region of Kivu within the DRC. Now with the influx of new refugees many of these rebel groups have grown in power and now pose a serious threat to not only the current Government, but also the overall stability of the region.

Egypt: Following the instability of the early 2010s the Egyptian military seized control of the country, and has been running the country as a police state. This has allowed the country to stabilize and begin economic regrowth, although overcrowding along the Nile basin remains unsolvable. Water disputes with up-river neighbors, especially Ethiopia and Sudan, raise tensions, including the risk of armed conflict.

France: France is in a peculiar position in 2043. While global cooling changed its climate drastically, most of the country is still habitable with temperatures much like those enjoyed in the 2010s in southern Norway or Sweden. France, like Spain, is the go-to spot for people fleeing the British Isles and Nordic countries. With the English Channel dry due to lowering sea levels, migration over land is possible (people who can afford diesel fuel drive back-and-forth, others use the plentiful bus services). The northern European refugees in France and Spain are mostly wealthier than those who fleeing from the south, leading to a steady growth of southern

ODUMUNC 2014 Issue Brief for FSC

European economies. Political ties with much of Europe are still as strong as ever, with France rejoining Germany as the powerhouse of the region. A major source of complication for France is sea level rise. Its various islands territories (in the Caribbean, Mediterranean, Pacific and Reunion in the Indian Ocean) have grown in size as a result of the lowered sea levels, and have made perfect places for wealthier refugees to colonize. This creates a major problems for the French Navy.

India: Along with China, Nigeria, Mexico, and Uruguay, India decided not to admit refugees from the north or south. The main reasons cited being that India already has serious overcrowding problems, a starving public, lack of energy, and widespread poverty, which allowing thousands of refugees into India would only make the problems worse. As a result of holding this stance from very early on in the global cooling, China and India have become closer and closer friends, working together in attempts to curb population growth and lower poverty rates in their respective countries. As India continues to industrialize and modernize, its energy needs are growing and will soon surpass what the country is bringing in now to support its enormous population. Like China, India relies more on nuclear energy as its preferred choice, as well as massive investments in natural gas for electrical generation.

Indonesia: The dropping of the sea levels has devastated Indonesian shipping, and now Indonesia is completely connected to mainland Asia. The new land connecting the various Indonesian islands is being settled by the crowded population, squatter settlements and even the beginnings of minor cities emerged on this now dry land. Decent sized natural gas reserves sustain Indonesia's energy needs, and fossil fuel exploration has expanded into the newly exposed land. Indonesia has been able to maintain close ties with its regional partners, but border disputes with Malaysia has destroyed the relationship the two countries held. This border dispute is one of the fiercest worldwide, and war is a very real possibility between the neighbors.

Iraq: After the 2010s and into the 2020s Iraq began a transition to stability, as previous sectarian disputes (especially between Shi'ites and Sunnis) were emolliated by oil wealth. Iraq sits atop one of the largest oil reserves available to be drilled, and the country takes full advantage of that. Along with Venezuela, Iraq has some of the richest rich in the world, much like many other Middle Eastern countries at the beginning of the 21st century, like Qatar or the United Arab Emirates (UAE). Sea level decline has caused serious problems, though, leaving its sole shallow port at Um Qasr hundreds of miles from greatly retreated Persian Gulf. Landlocked Iraq depends on cooperation with neighbors for all exports and imports.

Japan: The Japanese have an uneasy presence in the world of 2043, with the great population aging and decline of the previous fifty years leaving the country smaller, but social attitudes making no less willing to compensate by admitting migrants. The emergence of a land bridge to China and Korea as a result of the Sea of Japan's water levels dropping have left Japan with identity issues never before thought possible, as the island country is effectively part of the Asian mainland. Perpetuating the endless quarrels over islands from the 2010s and 2020s, the land bridge sparked fierce disputes with Korea and especially with China over control of newly revealed territories.

ODUMUNC 2014

Issue Brief for FSC

Mexico: Mexican politics for 70 years was essentially a one party state, which was broken in 2000. But the succeeding president brought with him the return of the one party state, which has continued into the Earth of 2043. Mexico has had a serious issue with illegal emigration throughout its modern history, with still remains in 2043. Mexican drug cartels have gained in strength over the past few years, and violent crimes (namely kidnapping) are still extremely serious problems with the Mexican economy, driving away tourists and keeping business from opening throughout the country. While Mexico does not welcome refugees as the US would like, a majority of Mexican oil is sent to the United States, making the friendship between the two countries still very much alive.

New Zealand: Located between 47 and 35 degrees latitude south, New Zealand has been spared the worst ice accumulation, but like other southern hemispheric countries it is not immune to global trends, with serve winters and loss of all its high-altitude regions. In 2008 New Zealand became the first Western country to sign a free trade deal with China, creating an economic alliance that has spurred growth in both countries, opened China much more to the west, and continues to keep the region very much interconnected economically. Significant amounts of New Zealand are powered using hydroelectric power, but this has become more seasonal.

Nigeria: Increasingly overpopulated with over 500 million people in its 2040 census, Nigeria has not admitted migrants or refugees. Although land scarcity has turned subsistence agriculture into a nation of literal turf-battles between small land owners, Nigeria is much richer as a whole due to oil from the south and offshore. As has been true for over thirty years, exploiting oil is made difficult by ethnic, religious and low land strife. Separatist groups in the Muslim north and several other rebel groups in the Christian south make Nigeria a dangerous place and an extremely unstable environment to try to begin business with something as internationally important as oil. But even without the business fully developed oil accounts for much of the Nigerian economy.

Philippines: Population growth—now over 200 million—made Philippines a major global market. The country also faces serious security woes. Disputes with China over the Sprately Islands of the South China Sea, always serious, became much more so after dropping sea levels turned the small atolls into large inhabitable regions. This is very appealing to crowded Philippines and China both. Philippines also faces continuing ethnic strife, led by New People's Army (NPA), a large guerilla group challenging the government. After the peace treaty between the NPA and the Philippiian government collapsed in 2015, the NPA grew in numbers and in power, eventually posing an extremely serious threat to the current government's hold on the country. While the political climate of the Philippines is hostile, the economy has continued to grow into an industrialized model of development, shifting its exports from predominantly agricultural crops to technology and fossil fuels. The population of the Philippines has doubled since 2010, increasing unemployment rates, leaving more and more in poverty, and driving a more aggressive Philippiian foreign policy.

Russian Federation: Russia was devastated by the global cooling. Many of Russia's largest cities—Murmansk, Yekaterinburg and Irkutsk-- are uninhabitable. Millions have been forced

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into either refugee camps in the southern Russian cities like Sochi or Derbent, to neighboring Kazakhstan and China. The tiny Russian enclave of Kaliningrad—on the Baltic Sea—is an overpopulated community, closely watched by border guards from neighboring Lithuania and Poland. But Kaliningrad, close to the new Arctic Circle, has ceased to be an ice free port. With Siberia—which previously produced two-thirds of Russia’s oil and gas—covered in thick ice, Russia ceased to be an oil and gas exporter, casting Russia into the crowd of the desperate countries starving for energy, and greatly affected European countries who previously relied on Russian energy exports.

Saudi Arabia: Saudi Arabia was rich before the cooling, but with the wealth of oil the country sits atop, extreme amounts of both power and money are available to Arabia. The energy crises throughout the world has benefited the Arabian oil trade, the demand increased therefore so did the price. Saudi economy boomed, ushering in two decades of the country enjoying the highest average income in the world, diluted somewhat by massive population growth, with the population now estimated at 120 million, almost all crowded into coast strips.

South Africa: As a member of the BRICS (Brazil, Russia, India, China, and South Africa) economic powerhouse club, South Africa, already Africa’s largest economy, maintain close ties with the BRICS countries, for better or worse. South Africa is far enough south to be affected by the same cooling problem felt in Argentina, Chile, new Zealand and other southern hemisphere countries. Due to the decline of the Asian shipping markets, South African also benefits from climate change. Its role in global shipping has grown, replacing some of the vital shipping lanes to Southeast Asia.

Korea: The re-united country Korea is increasingly wealthy and well-educated. The reunification traumas of the 2020s have been largely resolved, although serious disparities in income and development continue to fester north-south relations. The unification government in Seoul won global favor by eliminating the former Northern nuclear stockpile of 290 nuclear weapons and thousands of missiles. The north of the country also is gravely affected by ice accumulation, eliminating much of the region’s sparse farm land, worsening poverty and pushing migrants into the overcrowded south. What also affected Korea in recent years is drying of the Yellow Sea, connecting Korea to China and Japan by land. The ensuing land dispute has been intense in the world, as settlers challenge government authority to claim new regions, bringing back memories of cold war conflicts that have a very real chance to repeat themselves.

Thailand: The opening of Thai borders to migrants and refugees from North America, Europe and other regions was a natural response of the hospitality of the Thai people, appreciated by the world. But investigations have been launched in Thailand based on popular rumors that poorly documented refugees joining the flood surreptitiously, feeding a new human trafficking network in Southeast Asia. Thailand has led pressure on other countries in the region to relieve the pressure by admitting more migrants and refugees themselves.

United Kingdom: The UK, along with several Northern European countries, was hit hard by the closer ice pack. While nowhere in the UK is a part of the ice pack, the country is close enough

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to the pack that the climates of the northern sections of the country, such as Scotland, are extremely hard to live in. Millions of its people have migrated further south in the European Union and further abroad. France, Spain and Australia are popular destinations. Reserves of coal and major investment in nuclear power sustain the country energy wise, but depopulation has affected British influence worldwide. Some have called for it to abandon its permanent seat on the UN Security Council.

United States of America: The US is a superpower, and that stood the test for 30 more years and global climate crises. With the welcoming of Canadian refugees brought internal turmoil in the US, with several states, especially in the south, hostile to Canadian migration and cultural influences, while others (mostly northern states) accepting them quickly. Greater cold and energy demands brought to an end the period of good fortune (2010 -2030) associated with gas from fracking and other techniques. Like all Arctic and Antarctic countries, America has become a desperate energy importer, willing to take risks to assure supplies.

Venezuela: With its vast reserves of fossil fuels, Venezuela has emerged as a world power on the back of the oil crisis. In the late 90s and into the 2000s Venezuela built up its energy producing industry into one that can support not only Venezuela, but also entire continents. This has made Venezuela a new regional power. Venezuela further developed its global prominence by welcoming migrants and refugees from the north and south. This causes domestic social tensions, including intermittent violence between indigenous, Hispanic and immigrant communities. Growing petroleum wealth makes the problems manageable, but chronic political instability—the unresolved legacy of earlier years—also casts its shadow.

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Bibliography

Scientific Foundation:

As ice sheets build up sea level drops, exposing continental shelves (Boulder, Colorado: NOAA, 1993), http://earth.rice.edu/mtpe/cryo/cryosphere/topics/ice_age/ice_sea.html

W. S. Broecker, "What If the Conveyor Were to Shut Down?" *GSA Today*, Vol. 9, No. 1 (January 1999), <http://aces.ens-lyon.fr/aces/terre/paleo/systemclim/gulf-stream/images-gulf-stream/fichiers-telechargement/Broecker1999.pdf>

Wallace S. Broecker, "Chaotic Climate: Global Temperatures have been known to change substantially. Could another jump be in the offing?" *Scientific American*, November 1995, http://web.vims.edu/sms/Courses/ms501_2000/Broecker1995.pdf

Wallace S. Broecker and George H. Denton, "What drives glacial cycles?" *Scientific American*, January 1990, <http://www3.amherst.edu/~jwhagadorn/courses/09/readings/YoungerDryas.pdf>

A Chilling Possibility: By disturbing a massive ocean current, melting Arctic sea ice might trigger colder weather in Europe and North America (Washington D.C.: NASA, 2004). http://science1.nasa.gov/science-news/science-at-nasa/2004/05mar_arctic/

Scott Mandia, *The Little Ice Age in Europe* (Selden, New York: SUNY Suffolk, n.d.). http://www2.sunysuffolk.edu/mandias/lia/little_ice_age.html

Gerald Marsh, *The Coming of a New Ice Age* (Chicago: Winingreen, n.d.). http://www.winninggreen.com/site/epage/59549_621.htm

Paul Ward, *Cool Antarctica, How humans deal with and survive extreme cold* (2001), http://www.coolantarctica.com/Antarctica%20fact%20file/science/cold_humans.htm

Political Foundation:

Global Trends 2030: Alternative Worlds. (Washington, D.C.: U.S. National Intelligence Council, November 2012). <http://www.dni.gov/index.php/about/organization/global-trends-2030>

Commentary by an author of *Global Trends 2030*, Joseph S. Nye, <http://www.project-syndicate.org/commentary/the-international-order-in-20-years-by-joseph-s--nye>

The World in 2050. London: Price Waterhouse Coopers, January 2011. http://www.pwc.com/en_GX/gx/world-2050/assets/pwc-world-in-2050-report-january-2013.pdf

Summary and introduction to *The World in 2050*. <http://www.republicofmining.com/2011/01/10/pwc-news-release-global-financial-crisis-accelerates-shift-in-economic-power-to-emerging-economies/>