COMMUN XI
CRISIS COMMITTEE

THE YELLOWSTONE SUPERVOLCANO ERUPTION

Background Guide

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Letter From The Crisis Heads

Dear Delegates,

Welcome to COMMUN XI and to our crisis committee on The Yellowstone Supervolcano Eruption. We, Ineshi Jayasekara and Miykal Samson, will be your crisis committee heads. We are excited to guide you through this scientifically grounded and politically complex simulation. You, the delegates, will be responsible for navigating a world suddenly transformed by climate **catastrophe**, mass displacement, and geopolitical instability.

This committee begins on July 4, 2048, approximately 36 hours after the initial eruption of **Yellowstone Caldera**. All scientific, political, and environmental events described in this background guide prior to that moment are considered canon (pivotal moments) and did occur. Everything that happens from the start of the committee onwards is determined entirely by your decisions, directives, and the diplomatic relationships you forge in real time. You are encouraged to familiarize yourselves thoroughly with the background information provided, but remember that your creativity, adaptability, and strategic thinking will shape the direction of this crisis.

Because this committee is representing a futuristic crisis, you will be writing and passing both public and private directives, many of which will have immediate world-changing effects. Unlike a traditional general assembly, you need to balance long-term diplomatic relationships with disaster response, scientific knowledge, ethics, and the challenges of sustaining global unity under extreme pressure. To ensure delegates fully benefit from COMMUN, preparation is essential. Thus, **position papers are required for award eligibility.**

Above all, we want you to enjoy this committee. This is an opportunity to push your analytical and imaginative abilities and to experiment with bold ideas. If you have any questions about the background guide, or any questions, comments, or concerns, do not hesitate to contact us.

Sincerely,

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INTRODUCTION TO THE CRISIS

Darkness covers the skies of North America in the summer of 2048. The Yellowstone Caldera, an ancient, active supervolcano that for hundreds of thousands of years had shown only a trace of life, has finally erupted, leading to the largest geological event in recorded human history. A towering ash column multiple stories high has punched through the **stratosphere**. Fine **volcanic ashes** are now drifting across the continent, collapsing roofs, poisoning drinking water, and turning the daylight to dim and red. Thousands of flights have been grounded worldwide, and the ripple effects of the eruption are being felt across every corner of human society.

The US government, overwhelmed by the collapse of **infrastructure** in the west and the disruption to the power grid and transportation, has declared a Federal State of Catastrophe. Entire cities in Wyoming, Montana, and Idaho are buried beneath meters of ash. Millions of residents from the Midwest are moving, travelling, walking, and driving outward in search of breathable air, drinking water, and basic food supplies. Governmental agencies attempt to respond as state and federal communication networks go dark. Bringing international aid is complicated due to airspace closures and ash turbulence, rendering traditional supply routes nearly unusable.

North America faces an immediate devastation, and the world is now confronted with the looming threat of a **volcanic winter**. **Stratospheric aerosols** released by the eruption have begun to scatter and reflect back sunlight into space, lowering global temperatures. Early climate models predict a major agricultural disruption, abnormal monsoon cycles, wind patterns, minimal seasonal changes, shortened growing seasons, and heavy winter storms mixed with ashes. Global food production has already begun to collapse and food storages indicate major shortages of food supply within weeks to come. As panic spreads, international tensions rise, and countries debate whether to only think of themselves or cooperate to survive in the rapidly changing planet.

This crisis committee begins 36 hours after the initial eruption. Delegates represent a wide array of countries and scientific institutions, UN agencies, and humanitarian organizations, each with their own interests, capacities, and vulnerabilities. You will be tasked with confronting urgent questions: how should the global community respond to mass migration from North America? What mechanisms are needed to distribute increasingly limited food supplies? Should the world pursue extreme measures such as **geoengineering**, despite their risks and political consequences? How can nations uphold and coordinate a unified response?

As a delegate in this committee, you operate within a world on the verge of environmental and political disruption. Your actions will determine whether global society descends into massive food, drinking water and shelter shortages, a health crisis and conflicts leading into human extinction, or whether cooperation, innovation, and firm leadership can pave a path through the ashes and uncertainty. The Yellowstone eruption marks not only a geological turning point, but a test of humanity's ability to rise above the crisis as a united global community

IMPORTANT NOTES

The Yellowstone Supervolcano Crisis Committee begins in the summer of 2048, following the initial eruption of the Yellowstone Caldera. All geological activity, scientific warnings, and political events described before the start date in this background guide are considered canon events—pivotal moments, and they have already occurred. Any events after July 4, 2048, 07:00 GMT are determined entirely by the decisions made by delegates and the crisis updates communicated by the crisis heads.

Throughout this background guide, **bolded** terms indicate key scientific, political, or procedural concepts. These terms are defined below and are intended to ensure a shared understanding of terminology among delegates.

DEFINITIONS

Agriculture

The science or practice of farming, including cultivation of the soil for the growing of crops to provide food, wool, and other goods.

Caldera

A large, bowl-shaped depression formed when a volcano collapses after a major eruption empties its magma chamber.

Catastrophe

An event causing great and usually sudden damage or suffering; a disaster.

Ecosystem

A community of living organisms interacting with each other and their nonliving environment

Geoengineering

The deliberate, large-scale manipulation of Earth's natural systems to counteract the effects of climate change.

Geopolitical

Relating to politics, especially international relations, as influenced by geographical factors.

Infrastructure

The basic physical and organizational structures and facilities needed for the operation of a society or enterprise.

Magma chamber: A large underground reservoir of molten rock, or magma, located beneath the Earth's surface that can feed volcanic eruptions.

Pyroclastic flows

A dense, destructive mass of very hot ash, lava fragments, and gases ejected explosively from a volcano and typically flowing downslope at great speed.

Stratosphere

The layer of the Earth extending about 32 miles above the earth's surface.

Stratospheric aerosols

Tiny particles or liquid droplets suspended in the stratosphere.

Supervolcano

A volcano capable of producing an eruption of magnitude 8 on the VEI, and ejects more than 1,000 cubic kilometers of material (ash).

Tuff

A type of igneous rock (solidified molten rock) formed from the consolidation of volcanic ash, rock fragments, and crystals ejected during explosive eruptions.

Volcanic ash

Ash that consists of fine-grained particles of rock, glass, and minerals less than 2mm in diameter that are ejected during explosive volcanic eruptions.

Volcanic winter

A period of global cooling caused by a massive volcanic eruption that injects large amounts of ash and sulfur dioxide into the stratosphere.

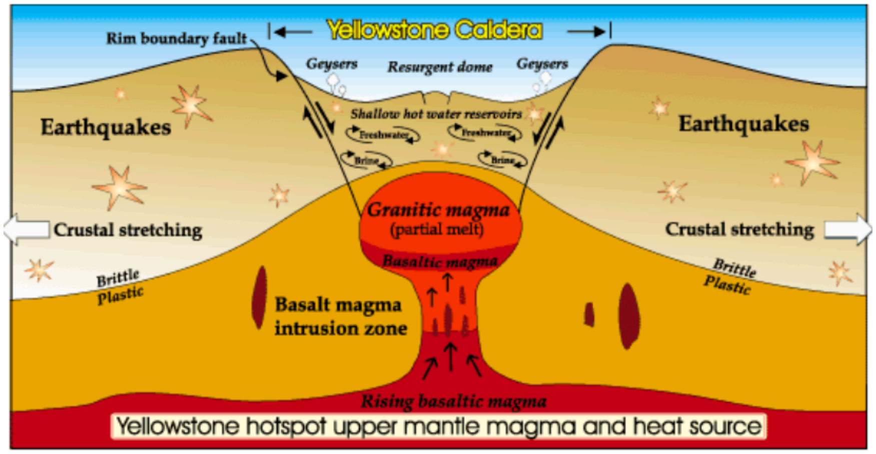
Volcanic Explosivity Index (VEI)

A semi-quantitative scale, ranging from 0 to 8, that measures the size of explosive volcanic eruptions based on the volume of ejected material and the height of the eruption cloud.

HISTORY AND CONTEXT

Geological History of the Yellowstone Caldera

The Yellowstone caldera was formed by a massive eruption that happened about 640,000 years ago; this eruption followed two earlier super eruptions that formed previous calderas. The last eruption created the Lava Creek **Tuff** and caused the ground to collapse, which formed the current, large caldera that we now see at Yellowstone. There have been three large explosive eruptions in the last 2.1 million years: the Huckleberry Ridge Eruption, Mesa Falls Eruption, and Lava Creek Eruption (eruptions in the order they happened in). The Huckleberry Ridge Eruption occurred about 2.1 million years ago and was the largest of the super-eruptions, creating the Island Park Caldera. The Mesa Falls Eruption took place around 1.3 million years ago, forming a smaller caldera and leaving behind the Mesa Falls Tuff. The Lava Creek Eruption was the most recent super-eruption—it expelled over 1,000 cubic kilometers (240 cubic miles) of ash and created the current Yellowstone Caldera.



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What is a superexplosion?

A supereruption is an explosive volcanic eruption that discharges more than 1,000 cubic kilometers of material, ranking it as a magnitude of 8 or higher on the **Volcanic Explosivity Index (VEI)**. These events are catastrophic and eject massive amounts of ash, which create powerful **pyroclastic flows**, and have a possibility of causing long-lasting global climate change, including a volcanic winter. Supereruptions are caused by supervolcanoes. Supereruptions cause the underlying **magma chamber** to empty, causing the ground to collapse and form a large, circular depression called a caldera.

A supereruption is caused by the long-term buildup of a massive body of magma within the Earth's crust over tens of thousands of years. As gas dissolves and the magma accumulates, pressure inside the magma chamber increases, causing the chamber to expand and sometimes lifting the ground above it. When this pressure exceeds the strength of the surrounding crust, the chamber falls catastrophically, releasing enormous amounts of magma and gas. After the

[1] Figure: Cross-sectional diagram of the Yellowstone Caldera showing the mantle plume, magma reservoirs, crustal deformation, and associated surface features such as geysers (Yellowstone Volcano Observatory, *Yellowstone Supervolcano Revealed,* accessed December 2025, https://www.yellowstone.org/yellowstone-supervolcano-revealed/.)

eruption expels most of the magma, the surface above collapses into the emptied chamber, forming a large caldera that can span tens of kilometers across.

Global effects of a supereruption include ashfall across continents, as ash can travel thousands of kilometers, affecting air travel, **agriculture**, and infrastructure. **Ecosystem** disruption also occurs, with reduced sunlight and temperature shifts impacting plant growth and wildlife. In addition, economic and social impacts may follow, including food shortages, transportation disruptions, and long-term climate effects.

Key characteristics include scale, as super volcanoes release a massive amount of material, up to 1000 cubic kilometers, and a single supereruption could bury states in a blanket of ash several feet deep. Explosivity is another defining feature: the eruptions are very explosive, as the gases in the magma cause it to tear apart and shoot up into the atmosphere.

Prehistoric eruptions and scientific evidence

The geological record surrounding Yellowstone's past activity provides good insight into the magnitude and global impact of its eruptions. Over the past 2.1 million years, Yellowstone has produced three caldera-forming events, the earliest of which, the Huckleberry Ridge eruption, ranks among the largest known eruptions in Earth's history. Ash from these prehistoric events is found across the continental US, with deposits from the most recent Lava Creek eruption identified as far away as the Gulf of Mexico. This evidence and these residues confirm not only the explosive character of Yellowstone supervolcano, but also its ability to influence Earth's climate systems.

While Yellowstone is one of the most studied volcanic systems on Earth, it is not unique in its capacity for supereruptions. Geological evidence from around the world demonstrates that similar VEI 7 and VEI 8 events have shaped global ecosystems and climate throughout prehistory. For example, the Mount Toba eruption in Indonesia approximately 74,000 years ago produced an ash layer measurable across the Indian Ocean and is associated with severe climate cooling. Indonesia's Mount Tambora, though smaller at VEI 7, famously triggered the "Year Without a Summer" in 1816, illustrating the climate-altering potential of the supervolcanoes of this nature.

Other significant caldera systems include New Zealand's Taupo Volcanic Zone, responsible for multiple high magnitude eruptions over the last 300,000 years, and Argentina's Cerro Galán caldera. Italy's Campi Flegrei caldera poses an ongoing risk to the densely populated Naples region. Japan's Mount Aso and the Aira Caldera have repeatedly demonstrated explosive potential, producing widespread ash across East Asia in prehistoric eruptions. In North America, Canada's Blake River Megacaldera Complex offers another example of ancient large-scale volcanism preserved in the geological record. Guatemala's Atitlán caldera likewise represents a major Central American supervolcanic system with a history of explosive behavior.

Considering these examples, it becomes clear that Yellowstone is part of a global family of volcanic systems whose eruptions have repeatedly altered Earth's environment. Studying these systems allows scientists to infer potential climatic, ecological, and geological consequences of a modern Yellowstone eruption. Although the recurrence interval for supereruptions is measured in hundreds of thousands of years, and the probability of such an event occurring in any given century is very low, the prehistoric records demonstrate that when they do occur, the effects are continental in scale and often global in consequence.

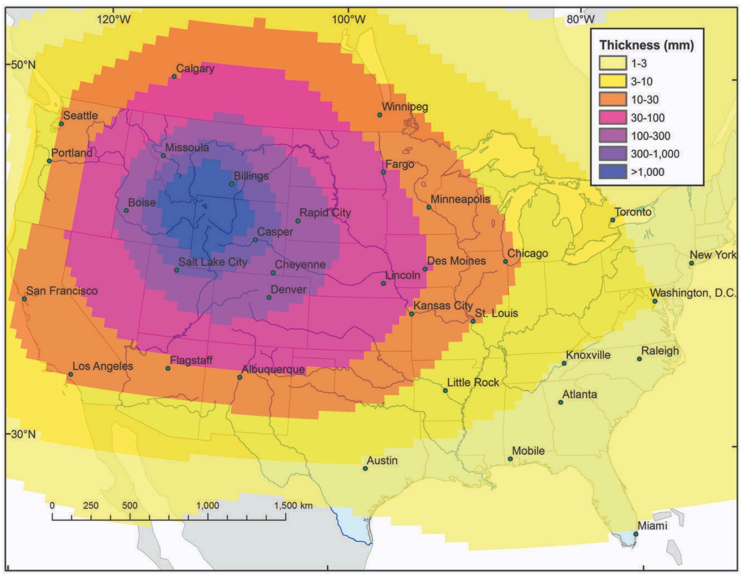
Modern monitoring by the United States Geological Survey (USGS) and the Yellowstone Volcano Observatory (YVO) confirms that Yellowstone remains an active, dynamic system. Periodic earthquake swarms, ground deformation, and hydrothermal disturbances do not individually indicate an imminent eruption; however, together they reflect the ongoing movement of heat and magma beneath the caldera.

The 2048 crisis scenario assumes a combination of these pre-warning signs over several months, combining into a rare but geologically plausible VEI 8 caldera-forming event. Understanding the prehistoric behavior of Yellowstone and its global counterparts is critical for delegates, as the geological patterns of the past foreshadow the environmental, climatic, and political changes that are now unfolding in this crisis.

The 2048 eruption

At 17:42 GMT on July 2nd, 2048, the Yellowstone Caldera experienced a catastrophic explosion. The initial plume reached an altitude of over 25 miles, ejecting stratospheric aerosols. Pyroclastic flows devastated the immediate region, erasing the landscapes of most of Wyoming. Within hours, ashfall extended into Montana, Idaho, Colorado, and the Dakotas.

By the time this committee opens, 36 hours have passed since the eruption, and the following conditions are already present: ashfall across North America, with up to 1 meter of ash in Wyoming and Montana, 10-50 centimeters across the Midwest, and 1-10 millimeters in Toronto, Canada, which is a health alarm and also enough to disrupt air travel. Global air traffic has shut down, as volcanic ash has grounded nearly all flights across the globe. Infrastructure in the West has collapsed, with communication and power grids, water treatment facilities, and transport routes all failing, leaving millions of people suffering without electricity, shelter, and drinking water. Mass migration is underway, as tens of millions of people are evacuating from the west and moving towards the east. Atmospheric disruption is occurring as stratospheric aerosol levels are rising, and initial models predict 0.5–3.0 degrees C of global cooling over the coming year. An agricultural alarm has also been raised, as all nations are highly anticipating a severe agricultural impact, especially within the global grain market.



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REGIONAL IMPACT: NORTH AMERICA

The Yellowstone eruption has transformed the North American continent within hours, producing disruption that extends far beyond the immediate blasting zone. The western region of the US has gone through catastrophic damage. Wyoming, Montana, and Idaho have seen entire communities buried under meters of ash. Ashfall has collapsed roofs, contaminated drinking water, damaged crops, and blocked major highways, communication, and power systems.

[2] Figure: Predicted ashfall map for Yellowstone supereruption (United States Geological Survey, *Ashfall Model Output – Yellowstone Supereruption*, accessed December 2025. https://www.usgs.gov/media/images/ashfall-model-output-yellowstone-supereruption)

Emergency services have been unavailable due to blocked roadways, grounded aircrafts and disrupted communication systems.

(i) **The Midwest:** The central United States faces significant secondary effects. Even thinner layers of ash have interfered with agricultural operations across the Midwest, damaging crops, clogging machinery, contaminating water resources, and threatening livestock health. The disruption of planting and harvesting cycles places long term strain on food production. Major transportation corridors, including highways and railway, are affected by reduced visibility and debris accumulation, slowing the movement of goods and emergency supplies.

(ii) **Canada**: Experienced lighter ashfall, but its effects are nonetheless consequential. Urban centers have reported air quality concerns, disruptions to air travel, and increased strain on healthcare systems, particularly from respiratory illnesses. Border provinces face growing pressure from displaced populations arriving from the US, increasing demand for housing, medical services, and infrastructure support. Agricultural regions must also contend with contamination risks and uncertainty around future growing seasons.

(iii) **Mexico:** Affected primarily through population movement and economic disruption rather than ashfall. Northern border regions face increased demand for food, healthcare, and shelter as displaced individuals seek temporary refuge. Trade disruptions between the US and Mexico further strain supply chains, affecting food availability and employment. These pressures complicate domestic response efforts and contribute to broader regional instability.

Across North America, the combined effects of infrastructure damage, agricultural disruption, population displacement, and trade interruption have transformed the continent's economic and social landscape. The region's capacity to function as a global center of food production, manufacturing, and trade has been significantly reduced, with consequences that continue to unfold as the crisis progresses.

GLOBAL IMPACT ON CLIMATE AND AGRICULTURE

The global impact of the Yellowstone eruption is alarming. A VEI 8 eruption injects massive quantities of sulfur dioxide into the stratosphere, where it reacts with water vapor to form sulfuric acid aerosols. These aerosols scatter incoming solar radiation. This process causes global cooling, alters weather patterns, and disrupts ecosystems.

Models indicate a likely temperature drop of 0.5–3.0 C over the next 12 to 18 months. While seemingly small, such cooling has severe impacts on global agriculture. Even minor changes in temperature shorten growing seasons, inhibit monsoon cycles, and increase the likelihood of early frosts. Tropical regions may experience heavy droughts, while regions in mid-altitudes face unusually harsh winters and shorter day times.

Key agricultural zones around the world are already responding to the early signs of crisis:

South Asia: Agricultural production in South Asia depends heavily on stable monsoon rainfall. Disruption to monsoon cycles could significantly reduce rice and wheat harvests, threatening food security for hundreds of millions of people. Even slight delays or reductions in rainfall can have widespread economic and humanitarian consequences.

Africa: Many regions in Africa are vulnerable to prolonged drought conditions due to limited irrigation infrastructure and reliance on rain fed agriculture. Volcanic induced climate cooling may reduce rainfall across multiple growing seasons, intensifying food insecurity, water scarcity, and pressure on already fragile agricultural systems.

Europe: Cooler temperatures and reduced sunlight threaten agricultural productivity across much of Europe. Wheat and barley yields may decline as shorter growing seasons and early frosts disrupt planting and harvesting schedules, particularly in northern and central regions.

China: As the world's largest grain producer, China faces uncertainty despite its substantial agricultural capacity. Climate variability may reduce crop yields in key producing regions, complicating efforts to maintain stable domestic food supplies while meeting global demand.

Due to the effect of this sudden climate change, the global grain reserves are stressed and generating political tension relating to long-term shortages. Countries with large grain reserves, such as China, India, and Russia face high pressure on remaining supplies, and therefore the prices of wheat, rice, and barley are skyrocketing.

MASS MIGRATIONS

A supervolcano eruption is a natural disaster capable of causing (global) mass migration. When such a volcano erupts, it can eject massive amounts of ash, rocks, and gas-enough to devastate everything within hundreds of miles and change the climate worldwide. Nearby regions would suffer catastrophic destruction from the lava flow, ashfall, and collapsing infrastructure. Water would become contaminated, agriculture would be crippled, and millions of people would be forced to leave their home almost immediately.

Beyond the immediate destruction, the eruption's impact on the atmosphere would create extensive consequences. Ash would be projected high into the stratosphere and can block sunlight for years. Global temperatures would drop several degrees, this would disrupt growing seasons and reduce crop yields worldwide. This would strain food supplies, and could cause economic collapse in vulnerable regions, and fuel additional waves of migration in search for a more stable environment. As conditions deteriorate, pressure on governments would intensify. Governments closest to the eruption would struggle to maintain order and provide emergency relief.

CLIMATE INSTABILITY

The environmental consequences of the eruption go way beyond the destruction. The ejection of volcanic aerosols to the stratosphere entirely changes climate patterns. This phenomenon is called a volcanic winter. Characteristics of a volcanic winter include reduced sunlight and global cooling. This effect completely changes the ecosystems.

Although the temperature drops (0.5–3.0 C over about a year) can be seen as miniscule, slight changes in temperature can completely disrupt climate patterns. The monsoons are extremely important for agricultural production in South Asian countries like India, Bangladesh and Pakistan. A delayed or missed monsoon would jeopardize the rice harvest in this area. Decreased sunlight can reduce evaporation, leading to less precipitation or rain and could cause potential droughts in many areas. In African countries such as Kenya, Somalia and Tanzania, the seasonal rainfall patterns could get disrupted due to this, thereby leading to drought conditions, disrupting access to clean drinking water. Europe anticipates harsh winters and shortened growing seasons. Harsh winters would make it difficult for shipping and transportation in this region. In addition, regional widespread ashfall would cover vast areas, potentially causing immediate destruction of vegetation and infrastructure.

GEOENGINEERING

Types of geoengineering relevant after a supereruption include stratospheric aerosol removal, which involves finding ways to remove sulfur particles from the stratosphere faster than they would naturally fall out. Possible methods include injecting agents that cause aerosols to clump and fall faster or using chemical reactions to convert sulfuric acid droplets into larger particles. The goal of this type of geoengineering would be to shorten the volcanic winter.

Agricultural adaptation geoengineering includes methods such as vertical farms powered by non-solar energy, greenhouses with artificial light, and the use of cold-resistant and low-light crops like potatoes, barley, and certain types of rice. The goal of this type of geoengineering would be to prevent a global famine. Priorities after a supereruption include maintaining the global food supply, which would be the biggest challenge, as even a 2–3 year volcanic winter could ruin global agriculture without preparation. Another priority is stabilizing the temperature of the Earth, where preventing extreme cold temperatures is more important than warming the entire planet. Global coordination is also essential, as a supereruption would require coordinated geoengineering decisions, and any decision affects the entire Earth. Geoengineering after a supervolcano eruption is very different from climate-change geoengineering.

Normal geoengineering goals focus on cooling the planet by increasing albedo, adding aerosols, and creating long-term changes, whereas post-supereruption goals shift toward warming or stabilizing the planet by increasing sunlight reaching the Earth, removing aerosols, and taking emergency, short-term actions.

COLLAPSE OF TRADE, COMMUNICATION, AND POWER NETWORKS

A supereruption releases enormous amounts of ash, gases, and debris into the atmosphere, with globally destructive consequences. Trade networks collapse as ash clouds shut down air travel for months by damaging aircraft engines, ports and shipping routes become blocked by ashfall and debris, and roads and railways become unusable. Agricultural production drops massively, removing most tradeable goods. As a result, international shipping halts, global supply chains break, leading to shortages of food, fuel, and medicine, while import and export systems fail. Countries turn inward, ration supplies, and experience economic collapse. Communication networks also fail, as ash in the air disrupts radio signals and satellite communication, satellites malfunction due to volcanic aerosols, and cell towers collapse under the weight of ash or lose power. This causes regional and global internet outages, GPS disruption, and a loss of international coordination. Power networks collapse as solar energy production plummets under a sun-blocking ash layer, while coal, gas, and nuclear plants shut down due to disrupted supply chains and cooling water access. Workers cannot maintain infrastructure, roads are blocked, and parts cannot be shipped, resulting in months- or even years-long blackouts that disable heating, cooling, water pumps, sewage systems, hospitals, and stores. The combined collapse of trade, communication, and power leads to total economic breakdown, food insecurity, and massive population displacement. A supereruption, therefore, does not just impact the eruption zone but triggers a global system failure.

PUBLIC HEALTH, DISEASES, AND INFRASTRUCTURE COLLAPSE

Respiratory illnesses connected to breathing ash are an immediate threat in North America. Ash contaminates water, shuts down transportation and collapses infrastructure. Crowded refugee camps become breeding grounds for flu and other infectious diseases. Hospitals in affected regions are overwhelmed, and international medical support faces challenges due to grounded aircraft and disrupted roads.

ROLES

United States (US)

The US enters the committee amid widespread domestic disruption following the Yellowstone eruption. Large areas of the west and central regions are covered in ash, millions of residents have been displaced, and transportation, power, drinking water, and infrastructure have suffered severe damage. Federal authority remains intact, but the scale of the disaster has placed extraordinary strain on government at all levels, creating uncertainty. The US controls significant national assets, including federal agencies, military forces, strategic reserves, transportation networks, and diplomatic channels. However, the effectiveness of these tools is limited by damaged infrastructure, internal displacement, and competing domestic priorities. The US delegate must operate under intense internal pressure while navigating international expectations, requests for assistance, and questions about the capacity of the country to engage beyond its borders.

Canada

Canada faces indirect but substantial impacts from the eruption. Ash contamination has disrupted air travel, strained hospitals, and affected agricultural regions, while large numbers of displaced people from the US are entering the country. Federal and provincial governments face internal debate over border policy, emergency services, and resource allocation. Canada controls significant agricultural capacity, transportation infrastructure, and emergency response systems, but these are under high pressure. Canada has the ability to manage border policy, domestic relief efforts, and international coordination, while balancing internal political pressures and external requests for support.

European Union (EU)

Europe faces high agricultural shortages due to expected global cooling and decreased sunlight. Northern member states anticipate harsh winters and reduced crop yields, while southern states fear drought conditions. The EU's internal policies conflict as nations debate on food rationing, refugee quotas, and funding for energy/ communication support. The EU's ability to provide financial aid, coordinate humanitarian efforts, and influence international climate grants highly impacts the global negotiations.

Russia

Russia has extensive agricultural regions and substantial energy reserves. However, projected global cooling poses a serious risk to Russian wheat production, as a colder climate could shorten growing seasons in Russia. Domestic food security concerns may compete with export capacity. Russia controls significant grain supplies, fuel resources, and diplomatic leverage and therefore can negotiate, but must consider domestic constraints and long-term climate uncertainty.

Japan

Japan faces challenges with ash-contaminated air routes, supply chain disruption, and potential global cooling. As a country with fewer resources, Japan depends on food imports. Japan fears food shortages in an event of long term agricultural collapse. Japan stays as a strong, organized government with reliable infrastructure outside of affected trade routes and with a strong technological capacity. Japan also has access to financial resources, industrial infrastructure, and international partnerships,

Morocco

Morocco is highly dependent on imported grain and is vulnerable to food price volatility and climate-driven drought. Reduced availability of global grain supplies places additional strain on domestic food security and water resources. Morocco has networking across Europe, Africa, and the Middle East, as well as authority over national trade policy and emergency food measures.

Norway

Norway has extensive energy resources, significant financial reserves, and a robust welfare system. Although the country is not directly affected by ashfall, global cooling may impact fisheries and agricultural production, particularly in northern and coastal regions. Energy markets and climate conditions introduce uncertainty into both domestic and export sectors. Norway also has established climate research institutions and environmental monitoring capacity, as well as financial and energy infrastructure.

United Kingdom

The United Kingdom faces rising food and energy prices alongside broader disruption to global trade and supply chains. Cooling temperatures may put additional pressure on agriculture, while dependence on imports exposes the UK to volatility in international markets. Economic uncertainty and internal political considerations shape the country's ability to respond to disruption. As a permanent member of the UN Security Council, the UK maintains access to high level diplomatic and security discussions. The UK has access to diplomatic networks, intelligence, and financial resources.

Argentina

Argentina is a major producer of soybeans, wheat, and meat, with agriculture playing a central role in its economy. Global cooling affecting the Pampas region may introduce uncertainty into crop yields and export capacity, particularly over successive growing seasons. Domestic concerns over food availability may influence trade decisions. Argentina has established policies for agricultural, trade, export regulations, and domestic food controls. These policies offer leverage in negotiations but are constrained by yield uncertainty and internal economic pressures.

Brazil

Brazil is one of the world's largest agricultural producers, with extensive grain and livestock reserves and a large internal market. Changes in rainfall patterns and cooling temperatures introduce variability into future production, transportation, and storage systems. Brazil has access to agricultural exports, transportation, infrastructure, and economic leverage.

The use of these resources is shaped by domestic market stability, environmental conditions, and long term production and yield concerns.

Indonesia

Indonesia has a large agricultural sector but is highly sensitive to climate changes, making it particularly vulnerable in the aftermath of a supereruption. The country has experience with supervolcanoes, such as Toba, and is home to many other volcanoes with recent eruptions. The country has limited grain reserves relative to its population size, which increases the urgency of securing external aid and managing domestic food security. Although there are domestic pressures and external supply needs, Indonesia controls trade policy, disaster response frameworks, and the southeast Asian diplomatic engagement.

New Zealand

New Zealand is an agricultural exporter with strong scientific institutions and experience in managing volcanic hazards. Although geographically distant from Yellowstone, cooling temperatures threaten dairy, sheep, and crop production, potentially affecting both domestic supply and export markets. New Zealand has access to food exports, humanitarian organizations, research capacity, and regional partnerships. These resources operate within constraints imposed by production uncertainty and global market volatility.

Nigeria

Nigeria has the highest population among African nations. The supereruption's global effects, including food price spikes, place significant pressure on Nigeria's population, aggravating existing challenges in food security. Rising food insecurity threatens vulnerable communities and creates urgent humanitarian needs, requiring Nigeria to take both domestic and international action. Nigeria has authority over national trade policy, emergency food measures, and engagement through other African nations.

South Africa

South Africa is likely to face significant challenges from rising global food prices, as the nation depends heavily on grain imports to meet domestic demand. The volcanic winter caused by a supereruption threatens not only local food production but also the availability of safe drinking water, putting additional strain on communities already vulnerable to shortages. South Africa has access to international aid, regional coordination through Southern African Development Community (SADC) and the African Union (AU) and can support structures to stabilize food and water supplies. However, it all depends on internal capacity and resource limitations.

Australia

Australia is a major exporter of wheat and barley, with agricultural production playing an important role in both domestic and export markets. Cooling temperatures and increased climate variability introduce risks to crop yields and livestock productivity. These issues threaten both domestic food security and the country’s ability to contribute to global food supplies. Australia has authority over export policy, food reserves, and regional trade relationships.

India

India maintains significant grain reserves and a large, regionally diverse agricultural sector, but faces ongoing challenges related to monsoon variability, uneven rainfall distribution, and high domestic demand. Agriculture supports a substantial portion of the population, making food availability and price stability closely tied to broader economic and social conditions. Post eruption climate changes increase uncertainty around future harvests, particularly for staple crops such as rice and wheat, and may place additional strain on storage, distribution, and subsidy systems. India has authority over strategic grain reserves, agricultural policy, import and export regulation, and national relief mechanisms. These authorities are shaped by population size, regional disparities, logistical constraints, and uncertainty in production outcomes, all of which influence how resources may be managed as the crisis develops.

China

China holds large strategic grain reserves and substantial industrial and logistical capacity, with limited direct impact from ashfall in the immediate aftermath of the eruption. However, long-term food security remains a significant concern given population size, regional disparities in agricultural productivity, and dependence on stable global supply chains for certain commodities. Climate disruption and market instability introduce uncertainty around future harvests, import reliability, and price stability. China has authority over grain reserves, trade and import policies, agricultural planning, and engagement within international institutions. These policies need to operate alongside domestic economic priorities and population demands.

Mexico

Mexico has a large crisis on its northern border. Millions of Americans who are trying to get away from the ashfall, food shortages, and infrastructure collapse are attempting to cross into Mexico. Rural communities in the northern border are overwhelmed by the sudden population increase. Public health systems struggle to provide care for respiratory illnesses, and local governments demand the federal government's assistance to maintain order. The country needs to provide humanitarian accommodation, but at the same time needs to focus on internal law and order due to the increasing food demand. Mexico has authority over border policy, emergency response, public health coordination, and trade regulations.

Food and Agriculture Organization (FAO)

The FAO is a specialized agency of the UN, established to address issues related to global food security, agriculture, fisheries, and nutrition. It works with member states to collect data, provide technical expertise, and develop policy guidance aimed at reducing hunger and supporting sustainable food systems. In the context of the Yellowstone crisis, the FAO monitors global food production, assesses agricultural impacts of climate disruption, and facilitates information sharing among governments and international partners. While the FAO has no enforcement authority or direct control over food supplies, it plays an important role in coordination, analysis, and advisory support. The FAO operates within these institutional limits, relying on member state cooperation and data-driven assessment.

World Health Organization (WHO)

WHO is a specialized agency of the UN responsible for international public health. It works with member states to monitor disease trends, issue health guidance, coordinate medical research, and support national health systems, particularly during emergencies. In the context of the Yellowstone crisis, the WHO focuses on tracking health risks associated with ash exposure, drinking water contamination, population displacement, and the potential spread of infectious disease. While the organization provides technical guidance, data analysis, and coordination of support and advice, it does not have enforcement authority and depends on cooperation from national governments and partner organizations.

World Food Programme (WFP)

WFP is a humanitarian agency of the UN responsible for providing emergency food assistance and logistical support during crises. It works with governments, UN agencies, and non-governmental partners to deliver food, manage supply chains, and assess food insecurity in affected regions. In the context of the Yellowstone crisis, the WFP focuses on monitoring food shortages, coordinating emergency food distribution, and managing logistics under conditions of scarcity and transportation disruption. While the organization has extensive experience in large scale humanitarian operations, it does not control food production or national stockpiles and relies on funding, access, and cooperation from member states. The WFP operates within these constraints, emphasizing coordination, assessment, and logistical planning.

World Bank

The World Bank is an international financial institution created by member states to provide loans, grants, and technical assistance for development, reconstruction, and economic stabilization. It works primarily with governments to support infrastructure, public services, and long-term economic recovery, particularly in low and middle-income countries. In the context of the Yellowstone crisis, the World Bank assesses economic damage, financial risk, and recovery needs across affected regions. While the institution has access to significant financial resources and technical expertise, its operations are shaped by funding availability and lending approval processes. The World Bank does not direct national policy and relies on cooperation with governments and other international organizations.

US Climate Alliance (USCA) – Environmental NGO

The USCA is a voluntary affiliation of US state governors formed to coordinate state level action on climate policy and resilience. The Alliance itself is not a government body and does not possess independent authority, instead, it serves as a forum or a platform through which member states share data, policy frameworks, and technical expertise. All formal powers remain with individual state governments. In the context of the Yellowstone crisis, the USCA provides a mechanism for coordination among participating states, particularly those less directly affected by ashfall. Through its member governors, the Alliance has indirect access to state controlled resources such as emergency management agencies, National Guard units, state energy systems, public health departments, and climate research institutions. The USCA coordinates rather than engaging in centralized decision-making. This organization operates within the limits of voluntary cooperation and differing state priorities.

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