

Annexes

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Annex 1: Simulation set-ups

Simulation 1

Pre-text:

While SRM research and development has been a topic of discussion at the United Nations Environment Assembly and other international forums, actors have failed to agree on how to govern SRM research ([McLaren 2024](#)). UNEA has requested that we convene a summit with key states, expert advisors, and non-state stakeholders in an attempt to formulate 'rules of the road' for SRM research that could be brought to the next UNEA meeting.

All attendees are asked to prepare a 60-90 second opening statement for the summit at the beginning of the workshop. We will have a chair who will keep a speaker's list and keep time. There will be a mix of structured and unstructured debate.

Participants can send requests via notes to technical experts; they can also send notes to each other. If they would like to action something (i.e., commit a certain amount of funding to a project or ask their intelligence agencies to do something or make a public statement/media release), they can send a note to Danielle & Joanne and we will respond.

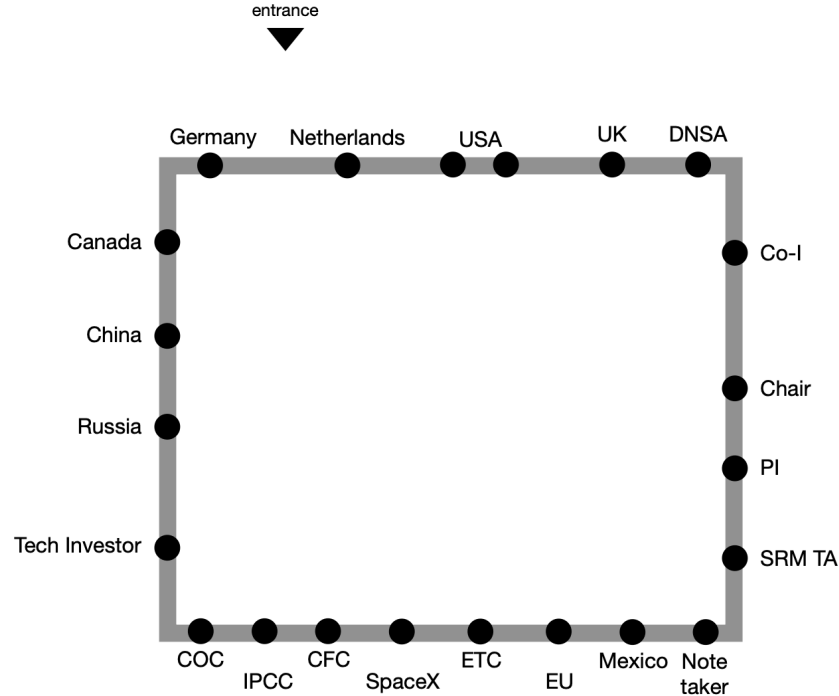
Rules:

- Speaker's list - participants raise their placards to be added to the speaker's list; no limit to speaking time (as a start, we will monitor and might change if necessary)
- Procedural votes - simple majority
- Substantive votes - $\frac{2}{3}$ majority but preference for a consensus
- Standard structure - 45 minutes of structured debate and 15 minutes of unstructured discussion per hour, but participants can motion to have unmoderated caucuses outside of the allotted time and at the discretion of the chair
- If participants would like to do something (for example, commit a certain amount of funding for SRM research or for the international fund; ask intelligence agencies to investigate something or for an assessment; ask political advisors for assessment), they can submit to us and we can approve or respond in some way.
 - State participants can also send requests via notes to the technical advisors.

Seating diagram:

Simulation 1

Project SAFEGEOGOV



Simulation 2

Pre-text:

It is September 2027; Arctic Sea Ice is at its lowest point ever recorded.

The Arctic Council invites you to attend a two-day special consultative forum to discuss the future of international cooperation and global governance given the dramatic climatic changes taking place in the High North.

Since January 2026...

Donald Trump is still the President of the United States. The 2026 midterm elections handed the Republican Party a defeat, and the Democrats have taken over Congress by a narrow margin. To distract from the sluggish economy, Trump has concentrated on his quest for a Nobel Prize. He and other global leaders have managed to broker a precarious ceasefire in Ukraine.

COP31 was held in Antalya, Turkey in November 2026. The US did not attend, and like previous years, proponents lauded the event as necessary to preserve multilateralism in global climate governance. Critics were disappointed that more robust measures have still not been agreed. There is increasing concern that deep divisions that have

developed within the UNFCCC are slowing or derailing collective ambition on emissions reductions in this critical decade for the goal of keeping temperature rises to 1.5 degrees.

In August 2027, two Chinese research vessels were discovered off the coast of Alaska in the Barents Sea. They had again strayed into US territorial waters and sparked a diplomatic incident. When asked, Trump told reporters, 'tell them to stay out of my back yard'.

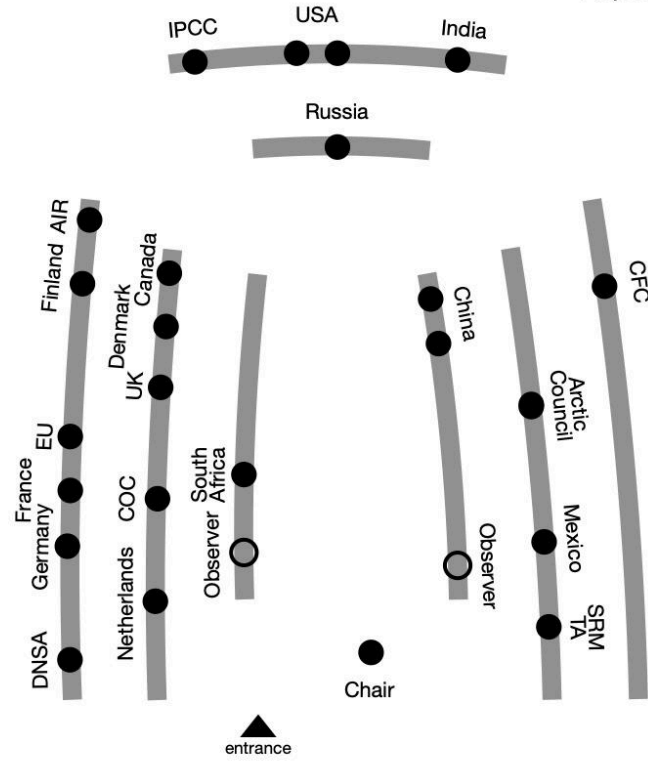
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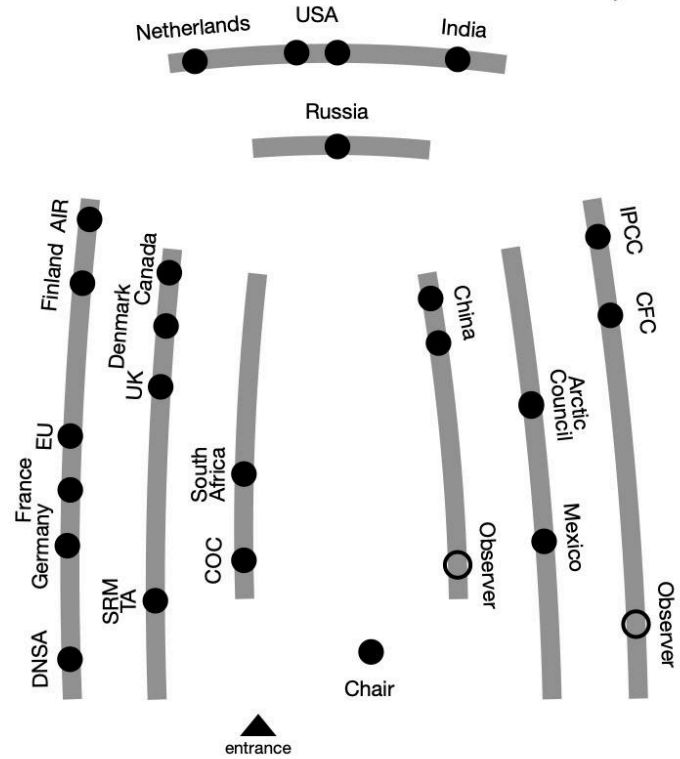
**January Simulation
Day 1**

Project SAFEGEOGOV



**January Simulation
Day 2**

Project SAFEGEOGOV



Simulation 3

Pre-text:

It is now mid-September 2028... **(21 and 22 September 2028)**

The United States is embroiled in a hotly contested presidential election between JD Vance and JB Pritzker. With the elections less than two months away, the competition has been fierce.

Since September 2027 (simulation 2), Greenland has existed in a state of de facto partition with the US holding influence over the northern sector. Greenlanders continue to resist.

Outdoor SRM tests have been confirmed in the Canadian and American Arctic. China and India are also reportedly conducting small-scale outdoor tests. There are some unconfirmed reports that Russia is conducting tests, but details are limited.

Due to the damage to SvalSat, there continues to be difficulties downloading satellite data which has impacted our ability to measure changes in atmospheric composition.

Ongoing conflicts have raised significant questions about emissions implications but there has been no change in official commitments on emissions trajectories.

Ongoing disputes about passage through the Strait of Hormuz have contributed to wider tensions regarding freedom of navigation globally and implications for supply chains.

UNEA has once again organized a consultative committee (with all of you) to advise it regarding a workable international framework to govern solar geoengineering. We were unable to reach an agreement governing research on SRM (simulation 1, September 2025), and in the past three years, actors have proceeded with SRM research without effective international guidelines in place. Now, the looming question is deployment and whether the international community can agree to a cooperative framework to govern the use of SRM. In particular, there are questions around the ability to monitor and detect SRM deployment, particularly given the damage to the SvalSat ground station (simulation 2, September 2027) and the 2026 breakup of NCAR (the National Center for Atmospheric Research) in the US which was a key source of earth observation data. With the geopolitical complexities and global inequalities shaping climate research and governance (simulation 2, September 2027) in mind, UNEA would like to try again to reach a framework agreement and hopes this consultative committee can provide some suggestions that could be tabled at its next meeting.

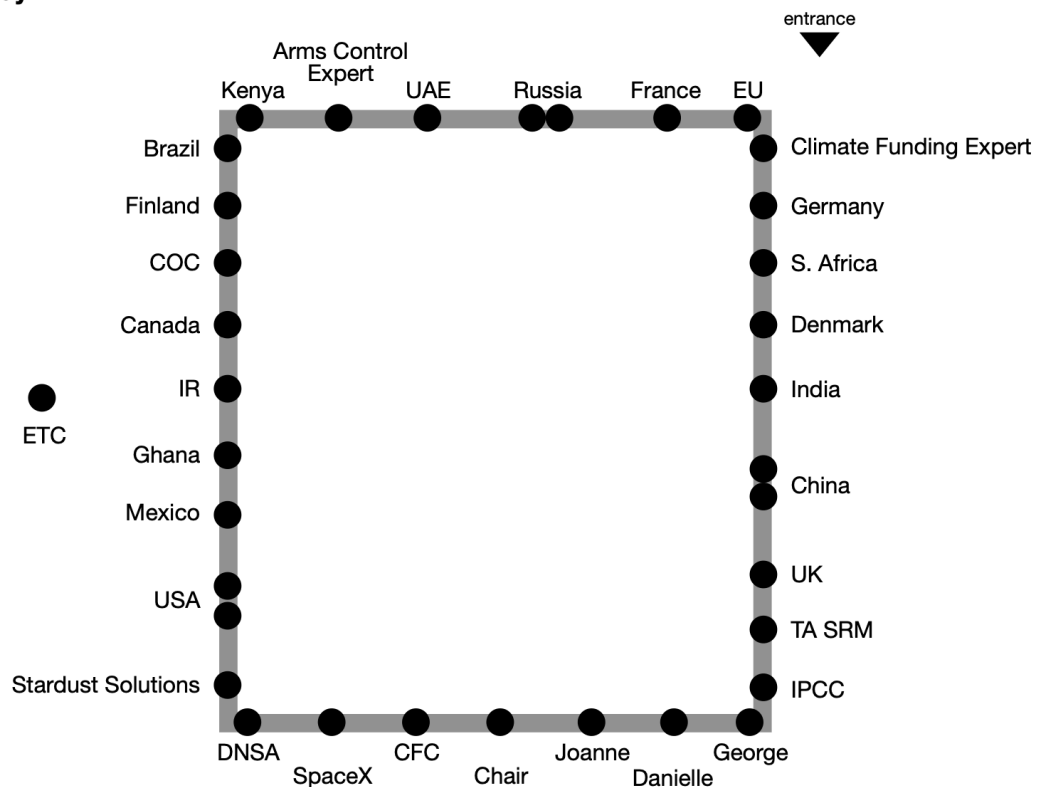
For this simulation, we have changed the voting procedures to be as follows:

- **Change of voting procedures:** 1) only states can vote; 2) one state one vote; 3) consensus decision making in place - no agreements will be passed if any state votes against the agreement (states can abstain).
- **Procedural motions** (anything not substantive *such as* a move to a Q&A with the scientific expert; a move to vote on something; a move to take a straw poll on something; a focused moderated discussion with time limit; or an unmoderated discussion with time limit) can be proposed at any time and will need a simple majority. You can even propose these with a note to the chair.
- **If you would like to change these procedures** (for example, who can vote), you will need to propose changes to the body that would then need to be agreed upon by consensus.
- **All actors aside from the experts**, please prepare a 60 second opening statement. Experts will have other instructions in their profiles.

Seating diagram:

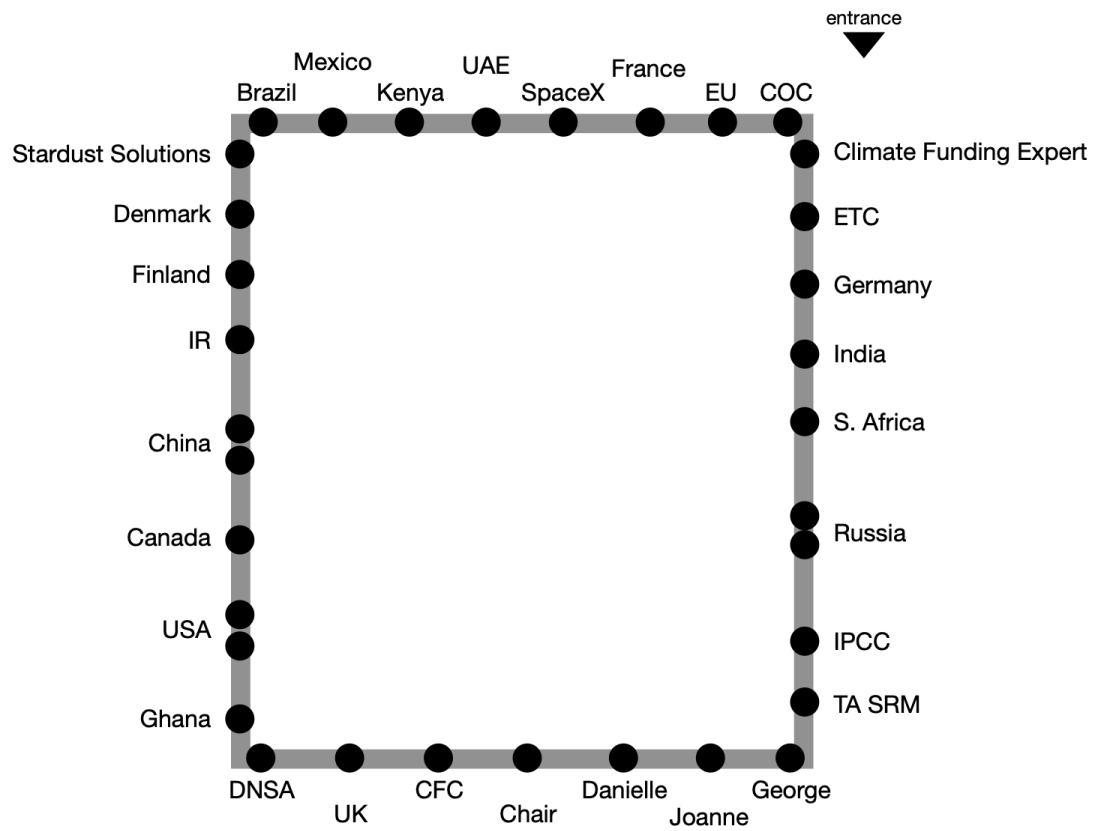
**April Simulation
Day 1**

Project SAFEGEOGOV



**April Simulation
Day 2**

Project SAFEGEOGOV



Annex 2: Emulator Primer and climate model uncertainty assessment

Climate Emulators: A Primer

1. What is a climate emulator?

A climate emulator is a simplified mathematical model trained to replicate the output of a full-complexity climate model (called a General Circulation Model, or GCM) — but at a tiny fraction of the computational cost. Where a full GCM might take days or weeks of supercomputer time to simulate one scenario, an emulator can produce results in seconds or minutes.

The core idea is that many relationships in climate physics are smooth and structured enough that a cheaper surrogate model — often a statistical or machine-learning model — can approximate the GCM's outputs without rerunning all the physics from scratch. This means, that when an emulator is capable of interpolating within or between available training data, in general an emulator will perform very well. **However**, when considering scenarios outside of the training data, including novel forcing combinations or forcing at scales outside of training, interpreting their output requires skepticism, as an emulator is unlikely to capture hysteresis (dependence of the state of a system on its history), nonlinearity or regime shifts which lie outside of the training data.

2. What emulator will we be using in this simulation?

This simulation will leverage an emulator trained on existing sets of simulations from two Earth System Models which has been validated against novel climate model simulated scenario of an example multi-actor uncoordinated SAI deployment (<https://doi.org/10.5194/egusphere-2025-1830>). At present, this emulator is trained on the outputs of two Earth System Models (ESMs), the user dashboard of the online emulator tool and a user guide can be found:

i. User Dashboard:
https://simulator.reflective.org/?var=tas&spatial_agg=WGI+Reference&decade_visualization=2091-2100&ssp_scenario=SSP2-4.5&temp_target=1.5&start_year=2035&ramp_up=10

ii. User Guide:
<https://www.reflective.org/simulator-guide>

3. What can an emulator do?

With reduced time and computational cost, emulators can explore thousands of scenarios. This reduced overhead enables emulators to be embedded in interactive tools that let non-specialists explore "what if" questions. Well-known examples include MAGICC, FaIR, and RCMIP-protocol emulators — these are widely used in IPCC assessment reports.

4. What can an emulator NOT do?

- a. They cannot produce regional detail
 - i. Most emulators work at the global or large-regional scale. If you need to know how summer rainfall will change in northern Scotland or the Mekong Delta specifically, you still need a full GCM — or a regional downscaling model on top of one.
- b. They cannot simulate novel dynamics.
 - i. Emulators are trained on GCM outputs, which means they can only reproduce patterns the GCM has already exhibited. Abrupt tipping points, bifurcations, or genuinely unprecedented dynamics may fall outside the training distribution.
- c. They do not model physical processes.
 - i. A GCM simulates fluid dynamics, radiation, cloud microphysics, ocean circulation. An emulator has none of this — it pattern-matches. **If the climate system behaves in a fundamentally new way (e.g. a major ice sheet collapse), the emulator has no physical basis to adapt.**
- d. They inherit GCM biases:
 - i. Whatever systematic errors the underlying GCM has, the emulator absorbs. Garbage in, garbage out — but faster.

5. What are the major limitations related to modelling stratospheric Aerosol Injection?

(Direction of influence Tier 1->Tier2->Tier 3)

Tier 1: Model Limitations		
These uncertainties are related to persistent uncertainties or biases in our modeling tools, and apply not only to SRM but also to our understanding of the earth system response to other climate perturbations including increases in greenhouse gas concentrations		
Uncertainty	Why are we uncertain?	Why does it matter to our understanding of SRM?

Stratospheric transport	The Brewer-Dobson Circulation (BDC) is the overturning circulation in the stratosphere-transporting mass and heat from the equator to the poles. To date, there exists a well-known inconsistency in the sign of BDC trends between observations and models in the middle and upper stratosphere. ³	This indicates mean state biases in the models suggested missing or misrepresented physical processes. Because SAI would perturb this portion of the atmosphere, it is important to note vital model shortcomings in representing the historical observations in this region. Representation of transport processes impacts how aerosols and other trace gases, such as water vapor and ozone, would be spatio-temporally distributed, impacting the pattern of stratospheric heating, surface cooling and the cascading climate impacts therein.
Stratospheric water vapor feedback	At present climate models display substantial intermodel spread in estimations of the radiative impact of stratospheric water vapor changes in response future emissions pathways. Termed the stratospheric water vapor feedback, this impacts how much the surface may warm in response to increases in lower-stratospheric water vapor ^{1,2}	Stratospheric aerosol injection, performed with sulfate aerosol, would likely increase temperatures in the lower stratosphere and increase the amount of lower stratospheric water vapor. Constraining estimates of the radiative forcing driven by stratospheric water vapor would be crucial to improving our understanding of SAI
Aerosol Microphysics	Climate models have a relatively large spatial grid size; much too large to directly capture the behavior of material injected from a payload (e.g. balloon, plane, etc.). This means models cannot directly resolve the transformation of sulfur dioxide gas into sulfate aerosol particles, nor can they directly resolve the processes of coagulation, condensation and nucleation happening below the resolution of the spatial grid itself. Some portions of the physical processes are also relatively understudied, for example nucleation in an aircraft exhaust, and require additional in situ measurement.	This uncertainty means that climate models either (a) require explicit assumptions about size distribution of resulting aerosol particles when initializing simulations or (b) are capable of resolving aerosol formation and growth but are likely not accurately capturing behavior of material in subgrid scale plume. This is a source of uncertainty in the forcing efficiency of aerosol for SAI (e.g. estimations of the total cooling per Tg injected SO ₂). ⁴
Aerosol – cloud interactions	The effective radiative forcing from (tropospheric) anthropogenic aerosols over the historical period remains largely uncertain in part due to process level uncertainty around the role of aerosol as cloud condensing nuclei, cloud albedo, and lifetime modification. ^{5,7}	While SAI would inject material nominally into the stratosphere, it is possible that some sulfate aerosol can sediment into the troposphere, modifying local aerosol composition and modifying cirrus clouds. ⁶

Climate sensitivity	The global surface response to CO ₂ doubling, termed the equilibrium climate sensitivity, has been persistently uncertain; with CMIP6 models predicting values ranging from 1.8-5.6K. ⁷	Both the magnitude and pattern of GHG driven surface temperature change result in differences in the regional climate response, and will impact model estimates of (a) the total aerosol forcing required to meet a given climate objective and (b) the regional climate response to SAI (discussed below)
Tier 2: Injection Strategy and Material Uncertainty Some portion of uncertainty is derived from the material type and injection strategy employed to pursue SAI		
Uncertainty	Why are we uncertain?	Why does it matter to our understanding of SRM?
Material interaction with stratospheric chemistry	While the chemistry of sulfate aerosol is largely understood via the volcanic analogues, the behavior of other proposed materials remains poorly constrained. These include titania, calcite or alumina particles and are often proposed as alternative materials to reduce the stratospheric heating or ozone depletion expected from sulfate SAI.	To date, laboratory testing of material properties remains relatively limited and in situ testing in the stratosphere has yet to occur. In particular, it is difficult to create stratospheric conditions in a laboratory owing to the low pressure, low temperature environment. Recent literature highlights calcite chemistry may in fact lead to ozone depletion, rather than restoration as originally hypothesized and is an example of the importance of additional experimental work. ⁸
Total Radiative Forcing Perturbation	Using the same injection strategy (e.g. the spatio-temporal injection of SO ₂), models differ in their projections of the resulting surface radiative forcing due to (a) differences in aerosol size distributions, (b) differences in the resulting spatial distribution of sulfate aerosol and (c) differences in aerosol interaction with a given radiation scheme. Each of these differences are driven by intermodel differences in the climatological circulation, modeled microphysics, and radiative parameterizations, discussed in Tier 1.	This results in differences in the regional climate response, including differences in the pattern of stratospheric heating and surface cooling; driving differences in the regional climate response. ⁹ Additional uncertainties are introduced by alternative aerosols here – given relatively limited research on the interaction of engineered particles with radiation.

Tier 3: Uncertainty in Climate and Ecosystem Response to SRM		
For a given deployment strategy models differ in their projections of regional climate features; these intermodel differences are likely driven in part by existing climate uncertainties framed in Tier 1 and Tier 2, above.		
Uncertainty	Why are we uncertain?	Why does it matter to our understanding of SRM?
Regional Climate Response	Tier 1 and Tier 2 based uncertainties contribute ultimately to differences in our understanding of the regional climate impacts of a given injection strategy.	In general, the most recent intercomparisons find that all models agree that SAI cools the land surface more than the ocean and offsets mid- and high-latitude precipitation increases under global warming, but models disagree on the magnitude of residual Arctic amplification and changes to tropical precipitation. ¹⁰
Ecosystem response	System response, including any system which be impacted by a change in climate, remains relatively understudied. This includes impacts on terrestrial and oceanic ecosystems. ¹¹	This suggests that we currently do not have a good sense of how SAI might impact terrestrial and oceanic ecosystems.

*This table was originally prepared by CG and DY for the OECD Strategic Foresight Unit's 'Solar Radiation Modification: Review of the Scientific Literature.'

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Annex 3: Role Profiles

(These profiles were formulated based on research into any known positioning of actors on SRM, their general historical background, their political positioning and priorities, and the expertise of the participant. In addition, simulation II and III profiles were updated to reflect previous simulation outcomes and to incorporate analyses from the expert debriefs following each simulation. They are intended to be relatively brief and open to interpretation based on expert judgement).

Simulation I role profiles:

United States I (Diplomacy)

Background:

- During the Cold War, the US was a leading centre of research on atmospheric dynamics and nuclear fallout impacts that also significantly advanced understanding of anthropogenic climate change. Recognition of the potential implications of climate change also kindled early interest in potential solar geoengineering interventions.
- SRM became largely taboo and dropped off the research agenda by the end of the Cold War. Interest in the US research community was rekindled in the early 2000s due to growing concerns about climate change.

Position on SRM:

- The US is the leader of the free world and has a global responsibility to develop and maintain leadership in SRM research and development for the benefit of humanity. In order to uphold its leadership responsibilities, the US is willing to pursue SRM as a climate invention or stop other actors from deploying the technology irresponsibly.
- The US is concerned about the negative repercussions that competition over SRM research may cause. It wants to maintain established diplomatic links and traditional allies, but also wishes to maintain global stability.

Aims for the simulation:

- Support improvements on an early-warning SRM detection system based in the US
- Establish US leadership in SRM spaces
- Ensure transparency mechanisms so that other actors feel included in a potential SRM governance framework.

Red Lines:

- Maintain freedom of maneuver across research and development while also maintaining a global image of the US as a leader.
- Does not support a moratorium.
- Maintain international order.

United States II (Security)

Background:

In February of 2023, the United States Joint Forces Command released a declassified Joint Concept for Competing that commits US armed forces to focus on expanding its competitive mindset and competitive approaches to exploit every arena, military or non-military, in which the US has an actual or potential advantage and every vulnerability of any adversary. The report makes explicit the view that strategic competition is an enduring and comprehensive condition that is not limited to success in potential military conflicts, but one in which “traditional boundaries between military and civilian, between peace and war, between environments, and across domains are increasingly blurred.”(Joint Chiefs of Staff, 2023, p.19) This updated doctrine is directly focused on initiating and exploiting “change in the complex strategic environment to create the influence, advantage, and leverage necessary to pursue U.S. interests” as understood by the Joint Forces (ibid, p.20) and it specifically lists both the technological and geophysical-environmental as instruments of national power that should be leveraged to optimize competitiveness in the ‘field of play’ or competitive space in which international actors operate—with an understanding that the competitive space in question is comprehensive: geographic, cognitive (ideology, education, information, innovation), domain (air, maritime, cyberspace, space, land), and thematic (International order, global markets, climate, human security, medical, technology, violent extremism) (ibid, p. 13).

Position on SRM:

- SRM is a competitive ‘field of play’ in strategic competition with China (and other actors to a lesser extent).
-

Aims for the simulation:

- Undermine any governance framework proposal that interferes with US strategic priorities.
- Maintain strategic alliances (UK, potentially others).

Red Lines:

- Maintain freedom of maneuver across research and development.
- China and other potential competitors must not outpace US in perceived or actual research on track for deployment.

United Kingdom

Background:

- The UK is currently the world's largest public funder of SRM research, including outdoor experimentation.
- One of about 10 states that has been assessed to have the technological capacity to engage in long-term, broadscale SRM (Russia, China, US, Japan, Brazil, India, Canada, Germany, France, possibly Saudi Arabia).
- UK-Russia relations are tense. SRM Research and Development is likely being used as a strategic signal on the part of the UK.
- UK-US have an ostensibly close relationship but SRM research and development can still be used as a form of strategic signalling or competition.

Position on SRM:

- Robust adaptation and mitigation measures remain the primary way we should approach global environmental challenges; SRM is not a substitute for these measures and should not be conceptualised as one.
- However, SRM research is important and we cannot afford to ignore it.
- The UK has the opportunity to lead on SRM research and governance.

Aims for simulation:

- Maintain its position as a key actor in any SRM research and decision-making.
- Ensure there are clear and internationally-agreed research guidelines and principles that allows for extensive SRM research, including modeling and outdoor experimentation.

Red Lines:

- Do not want to stop SRM research, do not want a moratorium.
- Want to be a counterweight to German position.
- Maintain position as leader in SRM space.

Technical/ Advisor-Emulator operator

Background:

- SRM research as a climate intervention is promising but at a relatively early stage. Compounding impacts of climate change have increased the perceived necessity of SRM research.

Position on SRM:

- Continuing basic research essential for understanding outstanding uncertainties, risks and potential benefits of SRM.

Aims for the simulation:

- Push for scientifically informed, science led governance framework

Red Lines:

- No large-scale outdoor experimentation without clear agreement on essential modelling studies to support optimal decision-making on experiments

Tech philanthropist

Background:

- Concerned with the slow pace of climate change mitigation and adaptation. Believes SRM may be one way to cool temperatures fast enough to avoid the most catastrophic effects of climate change and buy time until additional technological breakthroughs can enable extensive decarbonization/move away from fossil fuel architecture (SRM as a 'bridge'). He has yet to be convinced whether it is the best investment and where his money should be directed.
- SRM is frequently presented as an option that should be researched, if not pursued, as an ethical responsibility to the 'climate vulnerable' by ameliorating the most immediate effects of climate change until effective mitigation and greenhouse gas reduction is possible.
- There are concerns about replicating climate colonialism if SRM is pursued by major powers.
- Additional concerns about inter-generational justice if SRM leads to mitigation deterrence, in which actors continue with 'business as usual' emissions, or reduce emissions mitigation efforts because the problem is now 'under control'.

Position on SRM:

- Balances the risks of climate catastrophe with the risks of SRM deployment; considers the ethical pitfalls of both positions
- Yet to determine if SRM is the best place for ethical investments.

Aims for the simulation:

- Freedom to invest in the option he believes is best (both in terms of effectiveness and ethical considerations) and promote enhanced research capacities.

- SRM research should be conducted in the most open, transparent, equitable, and democratic way possible, including limits to the scale of research, mechanisms for information sharing, and resource pooling to allow the widest range of actors to participate.

Red Lines

- Has an investment pot - £75 million - and has to decide whether SRM research is the most effective and ethical way to invest this money.

SpaceX

Background:

- Space Exploration Technologies Corp., known as Space X, is an American aerospace technologies company worth \$350 billion (December 2024). While to date, Space X has not actively participated in SRM research and development, their reusable rockets have the potential to deliver aerosols into the stratosphere and it is likely Space X will wish to capitalize on these capabilities to leverage lucrative contracts from the US government.

Position on SRM:

- SRM is humanity's opportunity to consolidate its mastery over the upper atmosphere and aerospace. Hence, international actors should pursue SRM research and development with all available resources as quickly as possible.

Aims for the simulation:

- Ensure that Space X maintains its leadership in the climate technology space and is THE leading global provider of SRM research aircraft and technology.
- Space X aims to become a leader in SRM, particularly space-based interventions, and secure its monopoly over US government contracts in this arena.

Red Lines:

- Oppose an agreement that includes significant limits placed on SRM research and development that hinders the scale and speed of SRM advancements.
- Oppose binding global non-use agreement that established international norms against the deployment of SRM technologies.

South Africa

Background:

- African Ministerial Conference on the Environment (AMCEN) has reaffirmed opposition to SRM (July 2025) and has called for the adoption of a non-use agreement in international forums (UNFCCC, UNEA). There is some diversity of opinion on SRM amongst different actors on the continent, with varying degrees of support for research, but the prevailing opinion of representatives and leaders is that SRM is a dangerous distraction.
- South Africa has hosted the largest global meeting of SRM researchers and has the most substantial SRM research profile in Global South.

Position on SRM:

- There are diverse positions on SRM research and development (see below under further reading). AMCEN has reaffirmed its opposition to SRM but other actors support research and development.
- Concerns about neo-colonial imposition of inadequate/ineffective tech solutions.
- South Africa has had more interest and investment in modelling research than many other African countries.

Aims for the simulation:

- Ensure African voices are not dismissed in global SRM discussions as insignificant, uninformed, or monolithic.
- South Africa should play a substantial role in steering the direction of SRM research.

Red Lines:

- Prevent sub-saharan Africa from becoming a climate laboratory where powerful states test climate technologies and interventions at the expense of local communities

Russia

Background:

- In the course of its contributions to advancing understandings of anthropogenic climate change during the Soviet era, Russia has also had a long-standing interest in potential solar geoengineering interventions, particularly stratospheric aerosol injection and the potential catastrophic effects of a sudden reduction in human produced atmospheric aerosols.
- The status of any current Russian SRM program is unclear, but Russia has previously urged the IPCC to begin including assessments of SRM interventions into its reports.
- It also has the aerospace engine capacity to produce or retrofit planes that can fly high enough to deliver stratospheric aerosols—it is one of ten states currently

considered to have capacity to develop a fleet of aircraft necessary for broadscale deployment. (US, China, UK, France, Germany, Canada, Japan, Brazil, India–possibly Saudi Arabia).

- Concerns have been raised that Russia could engage in unilateral SRM deployments for the purposes of disruption, rather than climate amelioration—a single-hemisphere deployment would cause significant environmental damage and be difficult to clearly attribute immediately.
- Alternatively–there has also been some suggestion that Russia may pursue ‘counter-geoengineering’ by releasing large amounts of methane to counteract any other SRM deployments for climate reasons if they perceive they benefit more from additional warming.

-

Position on SRM:

- Keen interest in scientific developments and governance debates related to SRM.
- Views potential interventions through a geopolitical lens as much or more than as a climate intervention.

Aims for the simulation:

- Disrupt any potential consensus on SRM governance that does not align with your assessment of your interests (whether that is to lead on development for the purposes of disruptive deployment, to protect fossil fuel industry, or for genuine climate amelioration).

Red Lines:

- Must be a central player in any governance framework or international agreement.
- Wants to be recognized as a great power.

Netherlands

Background:

- The Netherlands is an emerging centre of research on SRM, although there is significant contention about what its position should be even within its broad research community.

Position on SRM:

- Robust adaptation and mitigation measures remain the primary way we should approach global environmental challenges; SRM is not a substitute for these measures and should not be conceptualised as one.
- However, SRM research is important and we cannot afford to ignore it.

- SRM research as a climate intervention is promising but at a relatively early stage. Compounding impacts of climate change have increased the perceived necessity of SRM research.

Aims for simulation:

- Significant progress towards development and adoption of governance framework.
- Ensure there are clear and internationally-agreed research guidelines and principles that allows for extensive SRM research, including modeling and outdoor experimentation.

Red Lines:

- Must achieve some agreement to enable exploration of SRM via research.

Mexico

Background:

- Mexico has implemented a ban on solar geoengineering experiments in response to unauthorized experiments in their territory by a tech-start up (Make Sunsets) attempting to establish a 'cooling credits' market. <https://www.reuters.com/business/environment/how-two-weather-balloons-led-mexico-ban-solar-geoengineering-2023-03-27/>
- There are Mexican scientists who have been funded by Degrees to conduct SRM modeling research about potential effects for Central/ South America, and Degrees have opened up additional funding opportunities to support scientists from Central America to do SRM modelling research.

Position on SRM:

- Mexico believes that not only is SRM not an adequate response to climate change, SRM research and deployment will encourage mitigation deterrence and create a barrier to necessary international collective action to reduce emissions.
- Has called for a non-use agreement.

Aims for the simulation:

- Non-use agreement on SRM deployment that allows for modelling research.
- Mexico must not be used as a proving ground for SRM without Mexican involvement and authorization.

Red Lines:

- Mexico and other Central American States must not become a climate laboratory where powerful states test climate technologies and interventions at the expense of local communities.

IPCC

Background:

- IPCC has acknowledged the possibility that SRM measures may have some theoretical ability to address overshoot scenarios. However, the uncertainties, knowledge gaps and constraints on governance of both research and deployment present too many risks to be a central component of climate change mitigation strategies. SRM is being included in the upcoming IPCC 7th assessment report by Working Group II (Impacts, Adaptations, and Vulnerability).

Position on SRM:

- Robust adaptation and mitigation measures remain the primary way we should approach global environmental challenges; SRM is not a substitute for these measures and should not be conceptualised as one.
- SRM presents substantial risks and uncertainties.
- Does not address the problem of ocean acidification.

Aims for the simulation:

- Broadly in support of research governance framework and will work to formulate such as framework
- Promote climate emergency framing

Red lines:

- SRM research must not displace emissions mitigation
- SRM research should not distract from COP Processes or other international efforts.

India

Background:

- India is one of ten states currently considered to have the aerospace capacity to develop fleets of planes for a broadscale SAI deployment.
- Frequently subject to speculation and thought/gaming exercises in which they are first movers in large-scale regional deployments due to climate vulnerabilities (for example, see [Ministry for the Future](#) by Kim Stanley Robinson).
- There has been some support for modelling research on SRM within India, with particular interest in how SRM may affect and disrupt monsoons. Some indications of growing support for increasing modelling research to achieve parity with developed countries' modelling programs.
- There is no indication of any plans or interest in outdoor experimentation of broader capacity development, and SRM is still a 'fringe' topic amongst the scientific community in India.

Position on SRM:

- Robust adaptation and mitigation measures remain the primary way we should approach global environmental challenges; SRM is not a substitute for these measures and should not be conceptualised as one.
- However, SRM research is important and India cannot afford to ignore it. It is particularly important to understand how SRM research and deployment may impact monsoons in the Indian Ocean.

Aims for the simulation:

- Ensure there are clear and internationally-agreed research guidelines and principles that are genuinely inclusive of developing, climate-vulnerable states.

Red Lines:

- No research advances that enable large-scale deployment without robust understanding of monsoon impacts.

Germany

Background:

- Germany remains skeptical of SRM and has taken a clearer stance against SRM than other European states and the EU. At the most recent United Nations Environment Assembly (UNEA), Germany took a less vocal role and supported global south actors' calls for a global non-use agreement. Germany believes in the importance of adhering to existing international agreements, such as the Convention of Biological Diversity (CBD).

- Germany referenced CBD COP 10 Decision X/33 which states that “no climate-related geo-engineering activities that may affect biodiversity take place, until there is an adequate scientific basis on which to justify such activities and appropriate consideration of the associated risks for the environment and biodiversity and associated social, economic and cultural impacts,” except for small-scale studies necessary to gather data ([CBD X/33](#))
- Germany is one of ten states currently considered to have the aerospace capacity to develop fleets of planes for a broadscale SAI deployment (US, China, Russia, India, France, UK, Canada, Germany, Japan, Brazil).

Position on SRM:

- Germany believes that not only is SRM not an adequate response to climate change, SRM research and deployment will encourage mitigation deterrence and create a barrier to necessary international collective action to reduce emissions.
- Germany’s Umwelt Bundesamt (German Environmental Agency), [advises](#) that Germany ‘rejects the use and technical development of SRM’ and pursues a binding international ban on SRM deployment.

Aims for the Simulation:

- Work to build a coalition, including state and nonstate participants, that urges a cautious approach to SRM and resist an escalation spiral of SRM research and development
- Advocate for clear guardrails to SRM research and development that align with existing international agreements such as the CBD
- Work with allies to ensure SRM research is conducted in the most open, transparent, equitable, and democratic way possible, including limits to the scale of research, mechanisms for information sharing, and resource pooling to allow the widest range of actors to participate
- Advocates accelerated emissions reduction to net zero, and alternative adaptation and mitigation techniques to address climate change

Red lines:

- Prevent secret, large-scale, and uncontrolled SRM research that could lead to premature and unregulated SRM experimentation

EU

Background:

- The EU has taken a more precautionary approach to SRM research. Its focus has been on regulation of research into SRM.
- It recognizes the potentially global implications of SRM techniques and frames interest in research in terms of the necessity to understand potential impacts on the EU.

Position on SRM:

- Robust adaptation and mitigation measures remain the primary way we should approach global environmental challenges; SRM is not a substitute for these measures and should not be conceptualised as one.
- SRM techniques likely present more risks than benefits.
- Need to research and understand impacts on EU.

Aims for the simulation:

- Robust, widely adopted research governance framework that centers a precautionary, transparent, cooperative approach.

Red Lines

- No large-scale outdoor experimentation without an international research governance framework.

ETC Group - Climate activists

Background:

- Action Group on Erosion, Technology, and Concentration (ETC Group) is an eco-justice advocacy organisation with observer or consultative status with the IPCC, CBD, UNFCCC, ECOSOC and UNCTAD. It originated, under another name, as an advocacy organization focused on rural and global south agricultural issues and still advocates for a range of sustainable agriculture initiatives.
- ETC is an active, high-profile opponent of all forms of geoengineering, and launched a 'Hands Off Mother Earth!' campaign to resist the pursuit and adoption of geoengineering techniques in 2010. Considered by SRM proponents to have played a key role in influencing Africa Group and African Ministerial Conference on Environment (AMCEN) to formally oppose SRM solutions and call for a moratorium.

Position on SRM:

- Very anti-SRM—considers it a complete distraction from effective climate action which should focus on emissions reductions and sustainability.

Aims for the simulation:

- Promote climate emergency framing to spur action on accelerate decarbonization

- Push for moratorium on outdoor experimentation, if not all research.
- Continue to establish support for non-use agreement.

Red Lines:

- SRM should not divert global resources or attention from emissions mitigation and sustainability.

Developing nations science advisor

Background:

- Climate culpability and vulnerability are unevenly distributed globally; developing nations who have borne the brunt of colonialism and capitalism are now suffering the most from environmental degradation and climate change.

Position on SRM:

- SRM technology involves substantial uncertainties and unknown unknowns
- Developing states need resources for climate adaptation and mitigation through technologies transfer and other global resources sharing mechanisms (does not want SRM research to divert resources away from these needs).
- To prevent a world where only powerful states have access to SRM science, would like an agreement on inclusive research along with a research repository.
- Demands broader assessments of SRM impacts beyond atmosphere science - for example, assessment of SRM's potential effects on sociopolitical, economic, and biological systems, etc.

Aims for the simulation:

- Supports international SRM funding body.
- Demands adequate resources for scientific research sensitive to local concerns and led-by global south scientists (on SRM and/or climate more broadly) .

Red lines:

- SRM research must not take funding and human resources away from other climate interventions including international funds for adaptation and mitigation measures.

- SRM research must not become dominated by powerful nations who ignore social, political, and scientific voices from developing nations and impose global norms and technologies on the climate vulnerable.

Climate Overshoot Commission

Background:

- Independent body of global leaders distributed across the North and South convened to propose strategies to mitigate risk of 1.5C overshoot.
- Developed CARE agenda to promote:
 - Cutting emissions of greenhouse gasses,
 - Adapting to the unavoidable impacts of climate change
 - Removing carbon from the atmosphere
 - Exploring solar radiation modification.

Position on SRM:

- Robust adaptation and mitigation measures remain the primary way we should approach global environmental challenges; SRM is not a substitute for these measures and should not be conceptualised as one.
- However, SRM research is important and we cannot afford to ignore it.

Aims for the simulation:

- Broad acceptance of climate emergency framing.
- Significant progress towards development and adoption of governance framework.
- Ensure there are clear and internationally-agreed research guidelines and principles that allows for extensive SRM research, including modeling and outdoor experimentation.
- Develop strategies to educate and inform both leaders and publics about the potential of SRM to mitigate extreme climate risks and combat misinformation.

RedLines:

- Must achieve some agreement to enable robust exploration of SRM via research.

Climate Futures Cooperative - NGO Plant

Background:

- You are funded by the supermajors (Big Oil) to act as a disinformation agent and disrupt negotiations for their benefit. You will be presented to other actors as a 'new' NGO forging a new path that diverges from organizations like WWF and Extinction Rebellion. To others in the simulation, you will claim to avoid the controversies of other established NGOs and have a clean slate to work on more effective conservation, adaptation and mitigation.

Position on SRM:

- Public facing: SRM may be a 'bridge' to decarbonization/ form of adaptation until enhanced mitigation can occur.
- SRM may be a tool to help preserve and extend fossil fuel interests.

Aims for the simulation:

- Protect fossil fuel industry interests through a variety of tactics that may include greenwashing, climate minimizing, or others.
- Appear to support climate action while working to enable something closer to 'business as usual'.
- Ensure that any governance framework and principles allow for extensive SRM research and experimentation.

Red Lines:

- Prevent any agreement that might threaten fossil fuel interests.

Canada

Background:

- Canada has not made detailed public statements on their position on the international governance of SRM research.
- Domestically, policy experts have been pushing Canada to formulate a clear position on SRM. Canada is likely interested in developing its own SRM research programs to maintain parity with US and Russian advances in SRM tech.

- Canada is one of the states currently considered to have the aerospace capacity to develop fleets of planes for a broadscale SAI deployment.

Existing position on solar-geoengineering:

- Robust adaptation and mitigation measures remain the primary way we should approach global environmental challenges; SRM is not a substitute for these measures and should not be conceptualised as one.
- However, SRM research is important and we cannot afford to ignore it. Canada needs to improve our understanding of climate-altering technologies in a Canada context, and to that end, will lead research and development in Canadian territory.

Driving Motivations for the Simulation:

- Maintain its position as an Arctic power and ensure the Arctic is not used by other states as a SRM proving ground without Canadian involvement.
- Ensure there are clear and internationally-agreed research guidelines and principles that allows for extensive SRM research, including modeling and outdoor experimentation.
- Commitment to involving Indigenous communities and “bridging, braiding and weaving” Indigenous knowledge into climate science.

Red Lines:

- SRM research and experimentation in and near the Arctic without Canadian consent and participation.
- Irresponsible SRM research that threatens Indigenous stewardship over traditional lands and neglects Indigenous involvement.

Arms Control expert advisor

Background:

- As another technology with planetary-level implications, nuclear governance is sometimes referred to as an assurance that effective governance of SRM will be possible.
- Expertise in a theoretically comparable governance regime may be a useful source of insight and counsel on how to develop effective SRM governance—or avoid potential pitfalls.
- 10 states currently considered to have the capacity to develop PLUS (Planetary, Large-scale, Uninterrupted, and Speedy) deployment by 2050, are nuclear armed

or nuclear-threshold states (US, China, Russia, India, France, UK, Germany, Japan, Brazil, Canada).

Position on SRM:

- Concerned that deterioration in nuclear arms control and non-proliferation regime may affect SRM governance framework if it is drawn into competitive geopolitical dynamics.
- SRM may re-vitalize material capacities that undergird military infrastructure.
- SRM research and development may influence on-going nuclear debates and negotiations.

Aims for the simulation:

- Effective governance framework that accounts for the priorities and positions of nuclear-armed states.

Red Lines:

- Avoid escalation spiral in strategic competition between great powers with a particular concern that SRM competition might trigger confrontation elsewhere.

Role Profiles simulation 2:

United States I (Diplomacy) II

Background:

- The Arctic region is encompassed by the Western Hemisphere zone of interest articulated in the 2025 National Security Strategy.
- The US has signed bi-lateral Defense Cooperation Agreements with Norway (2022), Sweden (2024), Denmark (2024) and Finland (2025) which grants the US unimpeded access to key military facilities, airspace, airports and other transport infrastructure and the US now has permission to place weapons and other military equipment and personnel in these facilities.
- The US wishes to maintain global stability and a position of leadership but it expects regional powers to contribute their fair share.

Position on the Arctic:

- The opening of the Arctic for commerce is the equivalent of the discovery of the Mediterranean Sea; the US must capitalise on the opportunities it presents and not allow others to dominate sea routes and commercial opportunities.
- Invest in infrastructural development to support economic as well as military and defense aims; increase investment in the region; strengthen diplomacy with allies in the region.

Aims for the simulation:

- China and Russia should not be allowed to displace US leadership in the Arctic and beyond.
- Maintain dialogue with all state and non-state actors in the region in order to best manage US interests in the Arctic.

Red Lines:

- Maintain US freedom of maneuver in the Arctic on all fronts.
- Do not allow Russia or other actors to displace US leadership in the Arctic.

United States II (Security)

Background:

- The US and Canada have recently received delivery of 4 newly built icebreakers from Finland, as part of the ICE Pact initiative between the 3 countries, with the US beginning production of an additional 7 new ice breakers built by the US as a technology-transfer component of the deal. These are a key part of the shift towards securing strategic interests in the region.
- The US has signed bi-lateral Defense Cooperation Agreements with Norway (2022), Sweden (2024), Denmark (2024) and Finland (2025) which grants the US unimpeded access to key military facilities, airspace, airports and other transport infrastructure and the US now has permission to place weapons and other military equipment and personnel in these facilities.
- The Arctic region is encompassed by the Western Hemisphere zone of interest now at the top of US strategic concerns.

Position on the Arctic:

- The Arctic is increasingly an important stage for economic and geopolitical competition. Russian and Chinese shipping, undersea and air activities have dramatically increased in the last few years, and there are 25 active Russian

military bases on its side of the Arctic. The US must match Russian and Chinese efforts to dominate this space.

- The US Arctic frontier is a key operational space from which to assert the new focus on the Western Hemisphere zone of interest

Aims for the simulation:

- Be the most powerful economic, military, and geopolitical force in the Arctic; do not allow Russia and its partners to dominate this important geopolitical stage.
- Maintain strategic alliances (UK, potentially others).
- Do not allow non-state actors to dominate the conversation and distract from the importance of US strategic interests in the region.

Red Lines:

- Maintain freedom of maneuver in the Arctic.
- Do not allow Russia or its partners to limit the US's dominance over and ability to maneuver in the Arctic

United Kingdom II

Background:

- “We are not an Arctic State, but as the nearest neighbour to the region, the Arctic is critical for UK interests, most notably in respect of our future climate and security.”, declares the UK's 2023 Arctic Strategy. Environmental changes in the Arctic are already impacting the UK through global sea level rises, changing weather patterns, and threats to biodiversity. “The UK fully respects the sovereign rights of the eight Arctic States and Indigenous peoples of the region, and is keen to play its part in ensuring the region remains peaceful”
- Since 1998, the UK has been an observer in the Arctic Council. The Council fostered Arctic exceptionalism - the idea that the Arctic's distinctiveness and forbidding landscape should foster peace and promote cooperation. However, Russia's military aggression in Ukraine has undermined that cooperation and threatens to destabilize the region.
- The rapid pace of warming in the Arctic has direct climate impacts on the UK, including shifts in atmospheric patterns that affect temperature and rainfall.

Position on the Arctic:

- The UK stands to benefit economically from the potentially vast mineral wealth in the Arctic, but any economic development in the region should be conducted in a safe and sustainable way.
- While respecting Indigenous rights, the UK supports the territorial sovereignty of its Arctic neighbors.

Aims for simulation:

- Keep the region free from conflict and maintain a rule-based international order
- Protect international law, particularly the freedom of navigation under UNCLOS.
- Continue to support responsible SRM research and maintain the UK position as a leader in SRM and climate research space.

Red Lines:

- Resist Russian aggression and efforts to consolidate its military and economic dominance over the Arctic at the expense of the UK's allies and partners in the region.
- Do not want to stop SRM research, do not want a moratorium.
- Maintain research infrastructure in the Arctic.

Technical/ Advisor-Emulator operator

Background:

- While participants try to navigate a series of events and issues, as the technical advisor you can intervene in discussions to clarify the climate impacts and stakes of their decisions about SRM or other issues that arise.
- Climate research stations in the Arctic provide important/essential observational and other data to support SRM and other areas of climate science.

Position on the Arctic:

- The increased rate of warming at the poles compared to other regions has significant climate effects both within the Arctic and beyond.
- Stabilizing or minimizing Arctic sea ice loss may be an important factor in climate adaptation.

Aims for the simulation:

- Guide crisis discussions and debates towards scientifically informed decisions.
- Continuing basic research essential for understanding outstanding uncertainties, risks and potential benefits of SRM.

Red Lines:

- Resist efforts to shut down climate research stations.
- Resist a moratorium on all SRM research.

(Statements from tech sector regarding absence from Simulation II distributed on opening)

In light of a recent announcement from Stardust Solutions that they are planning a large-scale outdoor test in spring of 2028, the SRM summit tech-sector investors have decided to host a parallel meeting with other entrepreneurs to strategize about how best to invest their resources and prepare for emerging opportunities in the SRM public-private partnership space. They will rejoin for the 3rd summit to share more of their plans. They have each prepared a statement to share at the summit opening:

Elon Musk, SpaceX:

We're in the midst of an existential crisis—climate change is advancing at an alarming pace. But let's be clear: it's not just the environment we need to worry about. The world is being driven into chaos by a mix of ideological movements that distort the truth and stand in the way of real progress. That's the real woke mind virus. We can't paralyze innovation by focusing on divisive politics when solutions are available to common problems. Unfortunately, this virus has infected the climate and SRM conversation. SRM could help cool the planet, but many people are more concerned with ideological purity and political meddling than with actual solutions. It's time to put away the virtue signaling and focus on saving the world. This is why I and my fellow technological leaders haven't been able to join you this week as we have needed to convene to put a practical plan together to cool the planet - we can't wait for years of political dithering and virtue-signalling over this.

We need to stop limiting our vision to the confines of Earth. Space-based solutions—mirrors, reflectors, particle injections—could be the ultimate tool with global coverage, lower carbon emissions per ton, and minimal ground infrastructure. There's a segment of society that's too busy complaining about "elitism" to understand that the future is about expansion and a positive vision for humanity. But no, some would rather accuse us of being "offensive" or "imperialist" than actually working toward feasible, game-changing solutions.

SpaceX will play a serious role in developing and delivering various SRM methods, not least those being considered by Stardust Solutions. I applaud their efforts in pushing things forward. It's not about the woke ideal of making everything perfect before taking action; it's about solving problems quickly and efficiently. The costs are far lower than some other climate solutions, and it could scale globally without requiring decades of bureaucratic red tape. SpaceX is the only rocket company with the capacity for sustained, global launch coverage measured in hundreds of tons per year, and that's

before scaling up rocket production again in the coming years to support our Mars dreams.

SRM buys us the time to make the longer-term, more sustainable changes that the world desperately needs—like moving to carbon-free energy or developing fusion. But in the meantime, we can't be stuck in paralysis by analysis. Waiting for utopian perfect solutions isn't practical. SRM gives us a bridge to get through the next few decades, and that's a bridge we need to cross, whether anyone's ready to admit it or not.

Worrying about who's offended by what while the world burns is a luxury we can't afford. The real issue is how global temperature shifts will lead to massive geopolitical instability. We're already seeing this with migration crises, depopulation, droughts, and resource wars but instead the woke mind virus continues to distract people with identity issues. SRM could help stabilize temperatures, making those crises less severe. We need to accelerate the adoption of electric vehicles, solar power, and other clean technologies, and companies like Tesla and SpaceX are making huge strides. But climate change doesn't wait for people to finish patting themselves on the back for being "morally superior." The real woke mind virus is the one that convinces people to sit on their hands, thinking that inaction is somehow virtuous.

I look forward to working with my fellow visionaries in the technology industry to develop the scalable solutions to regulate Earth's temperature and get to work with the Governments and influencers that want to be part of that solution, rather than obsess over political purity tests. I hope our plan can be announced on the Joe Rogan Experience podcast in due course.

TB (anonymized), Tech-Philanthropist

I am sorry not to be able to attend the consultative forum on the urgent action required to respond to rapid warming in the Arctic region. As all attendees are aware, this warming is leading to serious, compounding effects that will have irreversible repercussions for all of humanity if not dealt with. The gravity of the situation should be clear to all.

In response, I have built a £75 million investment pot for the purposes of investing in SRM research. In your discussions at the forum, I would like you to consider some of the issues that are pertinent to those, like myself, who have capital they wish to use to drive solutions to Arctic warming forward. Stardust Solutions have shown that they are willing to take radical action that might lead towards a way out of our predicament. However, they are not the only group who might be able to do so. Therefore, I am holding a parallel meeting with others in the tech community who are interested in finding appropriate

solutions. Our aim is to find the best way to allocate our funds to solve the climate crisis as it is unfolding in the Arctic.

Future international cooperation should enable these endeavours in the following ways. Investors should be enabled to support both public and private projects. Providing support to many different groups, who deploy different methodologies and approaches, is the best way to find a successful solution. Future governance should reflect an appropriate balance between transparency that might place burdens on research and incentives for those working on this problem. Moreover, I think it is urgent to consider whether future returns on investment might act as an important motivator for those in the private sector who wish to pursue research on climate solutions. Absent such motivations, I worry about limiting the pool of possible answers.

I also encourage members of the forum to consider the difficult question of the balance between the rights of indigenous communities and the options available to us for mitigate and avoid climate catastrophe. In my view, these rights should be protected as far as it is possible. However, if it is impossible for solutions to be found that do not have an impact on these communities, the cost of not pursuing them could be too great to bear. Therefore, I urge you to build into future governance the possibility of reparations for any impacts upon those communities.

As those of us in the tech community undertake our parallel discussion, I encourage you all to consider how best to ensure a flourishing field of research in this area and what action can be taken to ensure the compensation of those who may be impacted by action that may, unfortunately, be necessary for humanity to take.

South Africa II

Background:

- At first glance, it would seem that the African continent and the Arctic have nothing in common, but seen through clean energy manufacturers hungry for raw materials to fuel the green transition, Africa and the Arctic share one important quality - their vast mineral deposits. In this way, sub-Saharan Africa and the Arctic share the same concern: how to prevent neocolonialism, reckless extractivism, and environmental harms while also allowing local communities to exercise agency over their own economic development.
- The rapid pace of warming in the Arctic has direct climate impacts on the African continent, including disruption of air and ocean currents, and increases in

both droughts and floods which pose a substantial threat to food security of the region.

Position on SRM:

- African Ministerial Conference on the Environment (AMCEN) has reaffirmed opposition to SRM (July 2025) and has called for the adoption of a non-use agreement in international forums (UNFCCC, UNEA). There is some diversity of opinion on SRM amongst different actors on the continent, with varying degrees of support for research, but the prevailing opinion of representatives and leaders is that SRM is a dangerous distraction.
- South Africa has hosted the largest global meeting of SRM researchers and has the most substantial SRM research profile in Global South.

Position on the Arctic:

- Like in Africa, the Indigenous populations of the Arctic have suffered centuries of colonialism and extractivism that have left communities impoverished and the environment in decline. South Africa supports Indigenous communities in their quest for sovereignty over their lands and agency in Arctic affairs.
- Environmental stabilization and preservation of the Arctic is key to mitigating direct, high-stakes climate consequences for South Africa and the continent at large.

Aims for the simulation:

- Support Indigenous Arctic communities in gaining the autonomy, agency, and capabilities (material, institutional, and knowledge-based) to decide how to best develop their resources.
- Forge an alliance with these communities to pursue sustainable development through community-led initiatives that resists centuries of Western colonialism; these alliances also promise to benefit South Africa and its leadership in the green transition.

Red Lines:

- Great Powers ignore the voices of Indigenous communities in their quest for mineral wealth and oil and gas resources in the Arctic.

Russia I (Diplomacy) II

Background:

- In recent years, Russia has invested substantially in the Arctic, particularly in oil, gas, and mineral extraction and the infrastructure required. In addition, Russia has been upgrading its military and coastguard capabilities in the Russian Arctic

and hosted dozens of military exercises from the Barents Sea to the Bering Sea. In 2023, Russia carried out joint training with China in the region.

- Russia is one of the founding members of the Arctic Council established in 1996. While Russia has not technically withdrawn from the Council, it has suspended funding and threatens to leave. "We need to keep all political options open, including a withdrawal from the Arctic Council," says Russia's Arctic Ambassador, Nikolay Korchunov.
- The Kola Peninsula bordering Norway and Finland is an important strategic area for Russia with land, air, and naval assets based there including its Northern Fleet with its ballistic missile submarines as part of Russia's nuclear deterrence.

Position on the Arctic:

- You represent the part of Russian leadership and society that dreams of transforming the Russian Arctic and making the Northern Sea Route from Hamburg to China into an economic superhighway, hence taming the ice and transforming cities in the Russian Arctic into vibrant economic hubs. To do so, Russia will need to attract state and non-state partners.
- Since Western sanctions were introduced, Russia's strategy has been *povorot na Vostok* ('pivot to the East') turning to partners in East Asia, particularly China, to achieve its Arctic ambitions.
- Russian cooperation with Norway continues over Svalbard. Russia maintains a strategic interest in the archipelago as an important site for securing Russian access from the Barents Sea to the Atlantic. It aims to minimize US and UK influence in the area.

Aims for the simulation:

- The prospect for a Northern Sea Route should be at the forefront of discussions about the Arctic, and it should be clear that Russia holds the keys to this potentially lucrative economic superhighway
- Forge partnerships with actors such as China, potentially India, and other state and non-state actors who prioritize energy and security collaboration over environmental concerns and the rights of Indigenous peoples

Red Lines:

- Encroaching US, UK, and EU influence on Russian strategic dominance of the Arctic and the opening of the Northern Sea Route
- Violations of Russian sovereignty in the Arctic, particularly by actors preoccupied with environmental regulations and human rights.

Russia II (Security) II

Background:

- In recent years, Russia has invested substantially in the Arctic, particularly in oil, gas, and mineral extraction and the infrastructure required. In addition, Russia has been upgrading its military and coastguard capabilities in the Russian Arctic and hosted dozens of military exercises from the Barents Sea to the Bering Sea. In 2023, Russia carried out joint training with China in the region.
- Russia is one of the founding members of the Arctic Council established in 1996. While Russia has not technically withdrawn from the Council, it has suspended funding and threatens to leave. "We need to keep all political options open, including a withdrawal from the Arctic Council," says Russia's Arctic Ambassador, Nikolay Korchunov.
- The Kola Peninsula bordering Norway and Finland is an important strategic area for Russia with land, air, and naval assets based there including its Northern Fleet with its ballistic missile submarines as part of Russia's nuclear deterrence.

Position on the Arctic:

- Russia is the premier Arctic power. The Arctic is a critical pillar of Russian economic development and a means of expanding its influence via control of critical shipping routes between Europe and Asia.
- Russia remains focused on pursuing its interest in Ukraine under the conditions of a precarious ceasefire. Its Arctic interests should serve its more immediate goals of being a regional and global power.
- Maintain the appearance of control over critical infrastructure in the face of environmental challenges and unpredictability with regards to the effects of melting permafrost.

Aims for the simulation:

- Maintain Russian dominance in Arctic affairs and cultivate Russian self-reliance in the absence of reliable partners.
- Maintain its operability near the Kola peninsula as the sea ice melts and ensure the readiness of its military assets to defend Russian interests particularly through its Northern fleet, nuclear submarines and ballistic missiles.

Red Lines:

- Do not allow other Arctic states or non-Arctic actors to undermine Russian strategic and economic interests in the region

Netherlands II

Background:

- The Netherlands has long been an observer state on the Arctic Council and has historical, if not geographic, ties to the region. It maintains significant engagement

in the region, focusing on climate change, research, and sustainable shipping, as well as viewing the Arctic as an important site for international cooperation.

Position on the Arctic:

- The Netherlands is focused on balancing strong environmental commitments with economic development in their Polar strategy.
- Environmental stabilization and preservation of the Arctic is key to mitigating direct, high-stakes climate consequences for the Netherlands and the European continent more broadly, including the potential collapse of AMOC and exacerbating heat waves.
- The Netherlands is interested in the potential of the Northeast Passage shipping route, but insists upon maintaining high environmental and safety shipping standards.

Aims for simulation:

- Advocate for climate research and cooperation in the region.
- Maintain strong support for UNCLOS and the preservation and respect for international law in the region more broadly.
- Promote political cooperation and stability in the region.

Red Lines:

- Maintain climate research and preservation efforts in the region.
- Defend Dutch and EU strategic and economic interests in the region.

Mexico II

Background:

- The rapid pace of warming in the Arctic has recognized climate impacts on Mexico, including disruption of air and ocean currents, and increases in both droughts and floods. Mexico understands the need to balance climate resilience with economic development in the region.

Position on the Arctic:

- Mexico recognizes the significance of Arctic warming and sea ice loss as a threat to its own climate stability.
- Like the Arctic, Mexico is home to many Indigenous populations and supports Indigenous communities in their quest for sovereignty over their lands and agency in Arctic affairs.

Aims for the simulation:

- Support Indigenous Arctic communities in gaining the autonomy, agency, and capabilities (material, institutional, and knowledge-based) to decide how to best develop their resources.

- Forge an alliance with these communities to pursue sustainable development through community-led initiatives that resists centuries of Western colonialism.

Red Lines:

- Great Powers must not ignore the voices of Indigenous communities in their quest for mineral wealth and oil and gas resources in the Arctic.

IPCC II

Background:

- IPCC has acknowledged the possibility that SRM measures may have some theoretical ability to address overshoot scenarios. However, the uncertainties, knowledge gaps and constraints on governance of both research and deployment present too many risks to be a central component of climate change mitigation strategies. SRM is being included in the upcoming IPCC 7th assessment report by Working Group II (Impacts, Adaptations, and Vulnerability).

Position on the Arctic:

- The rapid pace of warming in the Arctic has direct climate impacts that extend well beyond the region. The IPCC assessment reports have highlighted the vulnerability of the region to climate impacts like food insecurity, biodiversity loss and others.
- Recognizes the value and significance of Indigenous Knowledge and Science in the region, but struggles with the best way to support and incorporate this knowledge in its assessments.

Aims for the simulation:

- Promote climate emergency framing and the specific, extensive vulnerabilities of the Arctic region.
- Robust adaptation and mitigation measures remain the primary way we should approach global environmental challenges.

Red lines:

- Geopolitical competition must not undermine climate research and resilience measures in the region.
- Maintain, protect, and preserve scientific infrastructure in the region.
- SRM research should not distract from COP Processes or other international efforts.

India II

Background:

- India is one of the observer states to the Arctic Council.
- The rapid pace of warming in the Arctic has direct climate impacts on India, including disruption of air and ocean currents, and increases in both droughts and floods which pose a substantial threat to the resilience of the country.

Position on the Arctic:

- India is interested in resources that might lie beneath the Arctic ice and the economic potential of an open Arctic ocean and the Northern Sea Route, but its focus remains on the importance of science and research in the Arctic for understanding global weather patterns.

Aims for the simulation:

- India does not want geopolitical competition to hinder science and research in the Arctic as current research essential for creative predictive models to know how the monsoons will be affected by climate interventions including SRM.
- India seeks inclusivity in Arctic affairs and refuses to be excluded from economic and geopolitical decisionmaking in the region
- India is open to a potential partnership with Russia, but must balance that interest with other geopolitical considerations.

Red Lines:

- Geopolitical conflict should not disrupt essential science and research into global weather patterns.
- India should not be excluded from decision-making in the Arctic region.

Germany II

Background:

- The Arctic is an increasingly important geostrategic region - what happens in the Arctic is not isolated to the region but closely tied to economics and security in the North and Baltic Seas and in the North Atlantic. In particular, Russian aggression is evident in the Arctic, and along with its partner China, seeks to remilitarize and dominate the region.
- While a non-Arctic state, Germany is represented in regional forums including the Arctic Security Forces Roundtable and the Nordic Chiefs of Defence sessions; it also supports the regional frameworks such as the Nordic Defense Cooperation.

- The Arctic is an important part of the earth's climate system and environmental destruction in the Arctic including the melting of sea ice and the thawing of permafrost have serious implications for the global climate.
- Arctic Sea ice has declined by 50% since the 1980s - this has negative environmental consequences for wildlife and Indigenous populations but also represents opportunities in the opening of an international shipping route through the high north

Position on the Arctic:

- Germany wants to maintain the Arctic as a peaceful region where actors operate within the framework of the rule-based international order and uphold the freedom of navigation in accordance with UNCLOS
- Germany does not currently view Russia as a partner in the Arctic; instead, Germany wishes to increase cooperation with like-minded states in the EU and NATO
- Germany is committed to the rights of the Indigenous people for self-determination and the precautionary and polluter-pays principle when it comes to environment protection in the Arctic
- Germany is committed to the sustainable and responsible extraction of raw materials from the Arctic in compliance with the strictest standards - particularly when it comes to raw material to sustain the green transition. It supports legally binding international regulations in this regard.

Aims for the Simulation:

- Ensure that the Arctic is as free from conflict as possible and continues to be governed by the rule-based international order, international law, and the strictest environmental standards (particularly when extracting resources)
- Protect the rights of Indigenous populations and the ecologically sensitive environment from irresponsible state and non-state behaviour

Red lines:

- Prevent the Arctic from becoming a site of violent geostrategic competition, particularly one dominated by Russia and its ally China.

France

Background:

- France has long had an interest in the Arctic; in 1963, France was the first nation to establish a research base on Svalbard.

- France has been an observer state of the Arctic Council since 2000.
- The rapid pace of warming in the Arctic has direct climate impacts on the European continent, including shifts in atmospheric patterns that affect temperature and rainfall in France and other European countries.

Position on the Arctic:

- Environmental stabilization and preservation of the Arctic is key to mitigating direct, high-stakes climate consequences for France and the continent at large, including the potential collapse of AMOC and exacerbating heat waves.
- France views the Arctic as a potential area of confrontation and wishes to maintain stability in the region. France also wants to maintain its status as a great power through its leadership in the Arctic and beyond.
- The French supermajor oil company TotalEnergies continues to have a significant presence in the Arctic region and an interest in potential economic opportunities.

Aims for the simulation:

- Push for increased EU and international voice in Arctic governance.
- Balance French interests in climate resilience and economic opportunities in the region.
- Advocate for climate research and cooperation in the region.
- Maintain rules-based international order. They recognize the Arctic as a site of geopolitical concern.

Red Lines:

- Do not allow Arctic states, particularly the US and Russia, to shut out French or EU strategic interests in the region.
- Peace in the region is important but should not come at the cost of French international interests.

Finland II

Background:

- In recent years, the Arctic has become hotter in at least two ways - climatically leading to hotter temperatures and declining sea ice, and geostrategically through rivalries and competition that threaten to destabilize the region.
- As an Arctic state, Finland boasts 'Arctic know-how' through accumulated knowledge of how to operate in the Arctic. 60% of icebreakers are built in Finland,

and Finland will continue to share its knowledge with like-minded partners in the region.

Position on the Arctic:

- Finland aims to pursue constructive cooperation in the Arctic as a founding member of the Arctic Council and through its new membership in NATO (2023).
- Russian aggression in the region will not be tolerated.

Aims for the simulation:

- Finland borders Russia and will likely be the first line of defence against Russian aggression westward. Finland must strengthen ties with allies and partners in the region to ensure military readiness.
- Ensure all Arctic and non-Arctic actors respect Indigenous rights while maintaining Finland's sovereignty over its territory.
- Finland maintains a strong interest in preserving the Arctic environment.
- Promote circular economic sustainability in the region and access to the Northern Sea route and other shipping & economic opportunities for development.

Red lines:

- Resist Russian aggression and encroachment in the Arctic and Baltic region.
- Maintain, protect and preserve Arctic research infrastructure in Finland and beyond.

EU II

Background:

- The EU is an important actor in the Arctic region and three of its member states - Denmark, Sweden, and Finland - are Arctic States. Two other Arctic States, while not EU members, are members of the European Economic Area - Iceland and Norway.
- Since 1996, the Arctic Council has been the key international body fostering cooperation in the Arctic and Arctic exceptionalism - the idea that the Arctic's distinctiveness and forbidding landscape should foster peace and promote cooperation. Since the Russian invasion of the Crimea, its aggression is evident in the Arctic region, and along with its partner China, seeks to remilitarize and dominate the region.

- At the Kiruna Ministerial Meeting in 2013, the EU applied for Observer status to the Arctic Council which deferred a final decision. Until such time as Ministers of the Arctic States may reach a final decision, the EU may observe Council proceedings.
- The rapid pace of warming in the Arctic has direct climate impacts on the European continent, including shifts in atmospheric patterns that affect temperature and rainfall in EU countries.

Position on the Arctic:

- A safe, stable, sustainable, peaceful, and prosperous Arctic is important for the EU and the entire world. While Arctic states have primary responsibility for the region, many issues affecting the Arctic do not respect borders and require multilateral cooperation to address.
- However, cooperation is only possible with like-partners who respect the rule of law; the EU has suspended cooperation with Russia due to its unprecedented military aggression against Ukraine.
- The EU believes it is essential to slow the effects of climate change in the region and address environmental degradation
- The EU supports sustainable development in the Arctic for the benefit of local communities, including Indigenous populations, and future generations.

Aims for the simulation:

- Preserve the Arctic as a region of peaceful cooperation despite intensifying geopolitical competition and certain actors who threaten to destabilize the region
 - Ensure that environmental priorities, the rule of law, and human rights in the Arctic are not ignored by actors pursuing economic and security interests.
- The EU should be prepared to act as a counterweight in the region to Arctic actors that wish to undermine rules based international order.

Red Lines

- Do not allow Russia to secure military and economic dominance over the region at the expense of the EU and its partners.

ETC Group - Climate activists II

Background:

- Action Group on Erosion, Technology, and Concentration (ETC Group) is an eco-justice advocacy organisation with observer or consultative status with the IPCC, CBD, UNFCCC, ECOSOC and UNCTAD. It originated, under another name, as an advocacy organization focused on rural and global south agricultural issues and still advocates for a range of sustainable agriculture initiatives.

- ETC is an active, high-profile opponent of all forms of geoengineering, and launched a 'Hands Off Mother Earth!' campaign to resist the pursuit and adoption of geoengineering techniques in 2010. Considered by SRM proponents to have played a key role in influencing Africa Group and African Ministerial Conference on Environment (AMCEN) to formally oppose SRM solutions and call for a moratorium.

Position on the Arctic:

- ETC recognizes that the Indigenous populations of the Arctic have suffered centuries of colonialism and extractivism that have left communities impoverished and the environment vulnerable.

Aims for the simulation:

- Promote climate emergency framing to spur action on accelerate decarbonization
- Push for moratorium on outdoor experimentation, if not all research.
- Continue to establish support for non-use agreement on SRM.
- Support Indigenous Arctic communities to pursue sustainable development and environmental protection through community-led initiatives that resists centuries of Western colonialism.
- Support sister organizations in fighting capitalist exploitation in the Arctic region.

Red Lines:

- Perceived economic opportunities in the region (in the opening of the Northern Sea Route and access to mineral sources in the sea bed) must not undermine effective climate action in the Arctic.
- The Arctic should not be used as an outdoor SRM laboratory for the West to test its technology on the vulnerable.

Developing nations science advisor II

Background:

- The Arctic plays an important role in the Earth's climate systems and is on the frontlines of climate change. It is also an important site for studying global climatic and weather dynamics. Research stations are dotted across the Far North and contribute essential observational data to support SRM and other areas of climate and biological sciences.

Position on the Arctic:

- As others have frequently noted, what happens in the Arctic does not stay in the Arctic, and environmental harms in the Arctic have the potential to impact developing states elsewhere and increase their climate vulnerability.
- Developing states should participate in Arctic science, particularly as data gathered by scientific projects impact important systems such as the monsoons, hurricanes & typhoons, and ocean currents.
- In recent years, Indigenous groups have adopted the mantra ‘nothing about us without us’ to protest policies and decision-making that excludes Indigenous voices while claiming to be done ‘for the benefit’ of these groups. In Arctic science, Indigenous peoples are important knowledge producers but also have diverse opinions. They do not want to be caricatured as monolithic in their views towards SRM and climate technologies.

Aims for the simulation:

- Champion the rights and autonomy of Indigenous populations in the Arctic and promote their engagement with science as agenda-setters and co-producers of knowledge
- Champion developing states’ participation in governance and scientific research in the Arctic region not just as observers, but as leaders and key contributors
- Balance the need for economic development with the need to address environmental degradation and climate resilience
- Do not allow others to portray Indigenous and global south actors as 1) merely the climate vulnerable without agency that need to be ‘saved’ by outside actors or 2) singularly anti-science or anti-modern through romantic visions of these actors

Red lines:

- Do not allow Arctic states to sideline and exclude developing states and Indigenous communities from Arctic science.
- Do not allow Indigenous territories to become sites of extraction or climate laboratories that reproduce colonial-era relationships.

Denmark II

Background:

- In recent years, the Arctic has become hotter in at least two ways - climatically leading to hotter temperatures and declining sea ice, and geostrategically through rivalries and competition that threaten to destabilize the region.
- In 2024, Denmark signed bi-lateral Defense Cooperation Agreements with the United States which grants the US unimpeded access to key military facilities, airspace, airports and other transport infrastructure and the US now has permission to place weapons and other military equipment and personnel in these

facilities. Norway (2022), Sweden (2024), and Finland (2025) have also signed DCAs with the US with the same terms.

- (In simulation) The Danish government has managed to negotiate a fragile agreement with the US that allows the US more substantial presence and influence over Greenland without ceding their claim to the territory.

Position on the Arctic:

- Denmark aims to pursue constructive cooperation in the Arctic as a founding member of the Arctic Council and through its membership in NATO (2023).
- Russian aggression in the region will not be tolerated.
- Denmark will continue to maintain its claim to Greenland.

Aims for the simulation:

- Denmark must strengthen ties with allies and partners in the region to ensure military readiness in the event of progressing hostility from Russia.
- Negotiate agreements with other Arctic and non-Arctic allies to defend Danish sovereignty and maintain cooperation in the region.
- Denmark maintains a strong interest in preserving the Arctic environment.
- Maintain strong support for UNCLOS and the preservation and respect for international law in the region more broadly.

Red lines:

- Resist Russian aggression and encroachment in the Arctic and Baltic region.
- While Denmark has negotiated permission for more substantial US presence in Greenland, it will not accept a complete takeover.
- Maintain, protect and preserve Arctic research infrastructure.

Climate Overshoot Commission II

Background:

- Given the failure of the previous multistakeholder meeting to agree on a 'rules of the road' framework for SRM, it is now more important than ever to try to promote the CARE agenda:
 - Cutting emissions of greenhouse gasses,
 - Adapting to the unavoidable impacts of climate change
 - Removing carbon from the atmosphere
 - Exploring solar radiation modification.
- The increased rate of warming at the poles compared to other regions has significant climate effects both within the Arctic and beyond.

Position on the Arctic:

- The Arctic is too climatologically and environmentally important to allow geopolitical competition to undermine its preservation.
- Stabilizing or minimizing Arctic sea ice loss may be an important factor in climate adaptation.

Aims for the simulation:

- Continue to push for broad acceptance of climate emergency framing.
- Public education and research on SRM in the Arctic is important to promote the interests of Arctic indigenous populations.
- Persuade others to develop climate technologies that would help the region address its climate challenges.

RedLines:

- The perceived economic opportunities presented by melting Arctic sea ice must not undermine climate stabilization and preservation measures.

Climate Futures Cooperative - NGO Plant II

Background:

- You continue to be funded by the supermajors (Big Oil) to act as a disinformation agent and disrupt negotiations for their benefit.
- This simulation will involve a series of incidents and crises that contribute to an increasingly difficult to parse information environment which you can use to your advantage to disrupt unfavourable alliances or outcomes, and promote your interests as you see fit.

Position on the Arctic:

- The Arctic presents substantial, if complicated, opportunities for fossil fuel exploitation. Maintaining the ability to develop and access these resources will be highly desirable.

Aims for the simulation:

- Exploit incidents and crises to advance your interests in avoiding climate action that undermines your economic opportunities, whether that involves promoting SRM directly or pursuing other forms of compromise in the region.

Red Lines:

- Do not allow environmental and human rights concerns to create barriers to the economic profitability of the Arctic region

China I (Diplomacy) II

Background:

- China has increasing strategic interest in the Arctic as the sea ice declines, allowing access to potentially valuable resources and the 'Polar Silk Road'. It has five ice breakers that operate in the region. Publicly, China has endorsed the grand vision of an economic superhighway through the High North, but it would also be content with the Northern Sea Route as an efficient way to transport oil, gas, and mineral resources between Russia and China.
- In its 2018 Arctic Policy, China states "Geographically, China is a 'near-Arctic State', one of the continental States that are closest to the Arctic Circle. The natural conditions of the Arctic and their changes have a direct impact on China's climate system and ecological environment, and in turn, on its economic interests".
- China has forged a partnership with Russia in the Arctic. Since the conflict in Ukraine began, China has benefited from Western sanctions and the rerouting of the Russian oil and gas trade through China. Russia and China have formed a subcommission on cooperation in the Northern Sea Route. However, China continues to have doubts about Russia as a reliable partner, particularly Russia's potential alliance with India.

Position on the Arctic:

- China is a 'near Arctic' state and has interests in the Arctic. China believes in the principle of respect in Arctic diplomacy - it will respect the sovereignty and jurisdiction of Arctic states. But respect is reciprocal, and Arctic states must respect the rights and interests of non-Arctic and near-Arctic states.
- On the international stage, China continues to emphasize its commitment to win-win results in the Arctic through cooperation, sustainable development (that balances between protection and utilisation), and multilateralism (with a particular focus on protecting international law).

Aims for the simulation:

- Maintain its economic interests in an increasingly navigable Arctic ocean and in potential resources to be harvested from the northern oceans and seabed beneath the ice
- Ensure the interests of near-Arctic states such as China are not sidelined by the Arctic powers and that China is not excluded from the region, economically or geostrategically
- Ensure China's rights under international law are maintained
- Prevent being significantly outpaced in research and development by other major actors.

Red Lines:

- Agreements or actions by Arctic states that have the effect of excluding China or threatening China's participation in Arctic affairs
- Agreements or actions by Arctic states and non-state actors that threaten China's economic and geopolitical interest in gaining from a newly open Arctic region.

China II (Security) II

Background:

- China has increasing strategic interest in the Arctic as the sea ice declines, allowing access to potentially valuable resources and the 'Polar Silk Road'. It has five ice breakers that operate in the region. Publicly, China has endorsed the grand vision of an economic superhighway through the High North, but it would also be content with the Northern Sea Route as an efficient way to transport oil, gas, and mineral resources between Russia and China.
- In its 2018 Arctic Policy, China states "Geographically, China is a 'near-Arctic State', one of the continental States that are closest to the Arctic Circle. The natural conditions of the Arctic and their changes have a direct impact on China's climate system and ecological environment, and in turn, on its economic interests".
- China has forged a partnership with Russia in the Arctic. Since the conflict in Ukraine began, China has benefited from Western sanctions and the rerouting of the Russian oil and gas trade through China. Russia and China have formed a subcommission on cooperation in the Northern Sea Route. However, China continues to have doubts about Russia as a reliable partner, particularly Russia's potential alliance with India.

Position on the Arctic:

- Interested in extending access to Arctic resources and developing its strategic position in the region.
- Maintaining leadership in the Arctic is important to maintaining its leadership globally. It is an arena for challenging US leadership and strategic dominance.

Aims for the simulation:

- Defend China's status as a 'near-Arctic' state and its right to operate unfettered in the Arctic region - on, beneath, and above the ice.
- Prevent being significantly outpaced in research and development by other major actors.
- Develop strategic alliances and capabilities in the region to maintain its security interests and military dominance. At the moment, this focuses on a strategic alliance with Russia, but willing to reconsider alliances to protect China's security interests.

Red Lines:

- Do not allow Arctic states, particularly the US, to shut China out of strategic opportunities in the region. In particular, China must maintain access to new northern sea routes.
- Maintain freedom to operate in the region.
- Head off India and other non-Arctic state competitors in the region.

Canada II

Background:

- Canada is an Arctic state that holds the most Arctic territory behind Russia, but only a small percentage of Canada's population live in its Arctic territory. In public, Canada promotes the agency of Indigenous groups and believes in a commitment to involving Indigenous communities and "bridging, braiding and weaving" Indigenous knowledge into climate science.

Existing position on the Arctic:

- Securing Canadian sovereignty and security is its most important aim in the Arctic. To do so, Canada needs to align northern development with national development aims. But, it also needs to recognize interdependence and secure allies internationally. "Collaboration is our most renewable resource in the Arctic."

Aims for the Simulation:

- Maintain its position as an Arctic power and ensure the Arctic is not used by other states as a SRM proving ground without Canadian involvement.
- Canadian Indigenous communities in the Arctic are key to maintaining Canadian control and sovereignty in the North, and Canada must support their continued settlement and economic development of these areas.
- Balance Canadian interests in addressing climate change and maintaining resilience with economic opportunities in the region.

Red Lines:

- SRM research and experimentation in and near the Arctic without Canadian consent and participation.
- Irresponsible SRM research that threatens Indigenous stewardship over traditional lands and neglects Indigenous involvement.
- Will uphold UNCLOS but does not accept violations or attempts to undermine Canadian sovereignty in the Arctic, including by other Arctic states.

Arms Control expert advisor II

Background:

- Military buildup by Russia, the US and NATO, and China in the Arctic has been fueled by perceived economic opportunities for resource exploitation created by climate change. This has contributed to heightened tensions and the potential for confrontation over territorial disputes and military exercises.

Position on the Arctic:

- The Arctic is a key region for maintaining geopolitical stability and has the opportunity to serve as a venue for both conflict and cooperation.
- Reducing tensions and arms buildup in the regions is key to avoiding

Aims for the simulation:

- Effective cooperation to achieve arms reduction and restrain militarization of the region.
- Help other actors de-escalate tensions in the region.

Red Lines:

- Avoid escalation spirals that may destabilize the region and broader international order.

Arctic Council

Background:

- The Arctic Council was created in 1996 as the leading multilateral forum for promoting cooperation in the Arctic. It currently has 8 states, 6 permanent participants that represent the Indigenous peoples of the Arctic, and 38 observers including 13 states, 13 intergovernmental organizations, and 12 NGOs.
- Issues of military security are not dealt with directly by the council.

Position on the Arctic:

- Environmental stabilization and preservation (political and environmental) of the Arctic is key to mitigating direct, high-stakes climate consequences and enabling economic growth.

Aims for the simulation:

- Balance Arctic Council members interests in climate resilience and economic development in the region.
- Ensure the Arctic is not used as an SRM proving ground without Arctic Council involvement.
- The Arctic should not be used a site of violent geopolitical competition. Cooperation is a key capability of the council.

Red Lines:

- Maintain the relevance of the Arctic Council as a key player in the Arctic region; do not allow geopolitical competition among Arctic states to diminish the Council's influence and make the body obsolete.
- Avoid open hostilities between Arctic members.
- Irresponsible SRM research that threatens Indigenous stewardship over traditional lands and neglects Indigenous involvement.

Arctic Indigenous Representative

Background:

- Roughly 10% of the 4 million people who live in the Arctic today consider themselves part of Indigenous communities
- There are more than 40 Indigenous peoples in the Arctic. These communities represent diverse cultures and have diverse perspectives on Arctic geopolitics and the promise of geoengineering in addressing environmental challenges. However, the populations are united in seeking a greater voice in Arctic affairs.
- 8 Indigenous organisations are represented as permanent participants of the Arctic council: Aleut International Association; Arctic Athabaskan Council; Gwich'in Council International; Inuit Circumpolar Council; Russian Association of Indigenous Peoples of the North; and the Saami Council. While these organisations have 'full consultation rights,' they do not have voting rights.

Position on Arctic geopolitics:

- In recent years, Indigenous groups have adopted the mantra 'nothing about us without us' to protest policies and decision-making that excludes Indigenous voices while claiming to be done 'for the benefit' of these groups. Indigenous groups want an equal place at the table and do not want to be caricatured as monolithic in their views towards SRM and other economic and geopolitical questions.
- Indigenous knowledge has increasingly gained prominence in discussions about Arctic geopolitics. However, Indigenous voices have also gained visibility at forums like the Arctic Assembly to advocate for resisting the commodification of Indigenous knowledge or its use to legitimate outside strategic aims. Instead, they support co-creation and community-led knowledge production, as well as efforts to maintain data sovereignty.

Aims for the simulation:

- Be recognized by Arctic states, non-Arctic states, and non-state actors as key actors in the region who must be at the decision-making table
- Protect the interests of Indigenous communities, particularly in the unique ways climate challenges impact their health, their livelihoods, and their economic potential
- Avoid being portrayed as 1) merely the climate vulnerable without agency that need to be 'saved' by outside actors or 2) singularly anti-science or anti-modern through romantic visions of Indigenous culture

Red Lines:

- Prevent state actors (Arctic and non-Arctic) from making decisions in the name of Indigenous populations without their equal participation

- Prevent state (Arctic and non-Arctic) and outside non-state actors from using Indigenous lands and knowledges for economic extraction and scientific experimentation without consultation with local Indigenous peoples and their meaningful participation in decision-making processes.

Role profiles simulation 3:

United States I (Diplomacy) III

Background:

- The US wishes to maintain global stability and a position of leadership but it expects other actors to contribute their fair share.
- The US attributes tense geopolitical and economic relations to unwillingness of US allies to adequately support them in their efforts to act as a security leader.
- The US is willing to pursue SRM as a strategic intervention or to stop other actors from deploying the technology irresponsibly.

Aims for the simulation:

- China should not be allowed to displace US leadership.
- NATO partners should recognize US leadership, particularly as an SRM provider.
- Support improvements on an early-warning SRM detection system based in the US.
- Establish US leadership in SRM spaces.

Red Lines:

- Maintain US freedom of maneuver on all fronts.
- Avoid an international moratorium on SRM research or deployment.
- Prevent SRM deployment or large-scale outdoor experimentation that is not led, directed, and controlled by the US.

United States II (Security) III

Background:

- The US armed forces are focused on expanding competitive approaches to exploit every arena, military or non-military, in which the US has an actual or potential advantage and every vulnerability of any adversary.

- The US is willing to pursue SRM as a strategic intervention or to stop other actors from deploying the technology irresponsibly.
- SRM is a competitive 'field of play' in strategic competition with China (and other actors to a lesser extent).

Aims for the simulation:

- Undermine any governance framework proposal that interferes with US strategic priorities.
- Maintain US position as global leader and maintain dominance over the global commons.
- Do not allow non-state actors to dominate the conversation and distract from the importance of US strategic interests.

Red Lines:

- Maintain freedom of maneuver in SRM research, development and deployment.
- China and other potential competitors must not outpace the US in perceived or actual research on track for deployment.

United Kingdom III

Background:

- The UK continues to be one of the world's largest public funders of SRM research, including outdoor experimentation, along with the US, Canada, China, and India
- One of about 10 states that has been assessed to have the technological capacity to engage in long-term, broadscale SRM (Russia, China, US, Japan, Brazil, India, Canada, Germany, France, and Saudi Arabia).
- UK-Russia relations continue to be tense. SRM research and development continues to be used as a strategic signal on the part of the UK.
- The UK-US alliance may have reached a breaking point, and the UK will have to make some tough decisions about the nature of the transatlantic relationship. SRM governance may be used as a way to navigate the changing nature of this relationship.

Position on SRM:

- Robust adaptation and mitigation measures remain the primary way we should approach global environmental challenges; SRM is not a substitute for these measures and should not be conceptualised as one.
- However, SRM research is important and we cannot afford to ignore it or be left behind in the development of this technology

- The UK has the opportunity to lead on SRM governance

Aims for simulation:

- Take a leadership role in negotiating any international framework; do not be sidelined by the US, China, Russia and others.
- Advocates for clear and internationally-agreed norms and concrete guidelines to govern SRM, particularly in conducting outdoor experimentation and deployment.
- Needs to create internationally operated and effective SRM monitoring and detection capabilities
- Stop any framework that infringes on the UK's security and economic interests

Red Lines:

- No international agreement that would place significant limits on SRM research and deployment; does not support a non-use agreement or moratorium.
- Maintain its position as a leader in SRM technologies.
- Preserving and shoring up adherence to UNCLOS.

United Arab Emirates

Background:

- The UAE has invested substantial effort in diversifying its economy by exploiting emerging technologies and has a technology-forward approach to its socio-economic positioning.
- The UAE has not taken a public position on solar radiation modification for the purposes of climate cooling. It does engage in extensive cloud seeding to try to increase rainfall:
<https://www.ft.com/content/97609a5f-cb3a-41b1-b0d0-edc2e18e38ed?syn-25a6b1a6=1>
- While cloud seeding is a form of attempted weather manipulation, it is distinct from SRM interventions intended to address warming or other climate change impacts.
- The UAE has been investing heavily in photovoltaics (solar panels) for energy generation, with the stated aim of achieving net-zero by 2050 and substantially increasing storage capacity by 2030. Stratospheric aerosol injections (SAI) would decrease solar energy potential by several percentage points, particularly in the mid-latitudes: <https://esd.copernicus.org/articles/15/307/2024/>
- While the UAE is diversifying its energy and economic base to mitigate against volatility, it continues to profit from oil and gas extraction and has a strong interest in preserving the global fossil fuel-based economy

- The UAE has a longstanding dispute with Iran over Abu Musa, a strategic island at the entrance to the Straits of Hormuz. Relations between the two countries have been severed since March 2026
- Since early 2026, UAE relations with Saudi Arabia has transformed from quiet rivalry to more open competition:
<https://www.inss.org.il/publication/saudi-arabia-uae-2026/>

Position on SRM:

- Interested in the potential for SRM to contribute to achieving UAE interests in addressing climate vulnerability and preserving fossil fuel industry.
- Concerned about SAI implications for photovoltaics.
- Does not want to be left behind on development of emerging technologies in the region.

Aims for the simulation:

- Reestablish freedom of navigation, particularly in the Straits of Hormuz, so that the UAE can continue to profit from fossil fuel reserves and maintain stability of global oil markets.
- Maintain its position as a regional leader
- If there is an international agreement, make sure the UAE is a leader in negotiations so that any agreement does not hinder UAE's interests and strategic objectives
- Take advantage of any opportunity to gain leverage over Saudi Arabia and other regional rivals.

Red Lines:

- Do not accept degrowth proposals.
- Must not be excluded from future SRM development and deployment in the region.

Technical/ Advisor-Emulator operator III

Background:

- While participants try to navigate a series of events and issues, as the technical advisor you can intervene in discussions to clarify the climate impacts and stakes of their decisions about SRM or other issues that arise.
- Climate research stations in the Arctic provide important/essential observational and other data to support SRM and other areas of climate science.

Aims for the simulation:

- Guide discussions and debates towards scientifically informed decisions, particularly when creating an international framework
- Continuing basic research essential for understanding outstanding uncertainties, risks and potential benefits of SRM.
- Resist efforts to use the emulator to inflame political tensions and score political points

Red Lines:

- Not having effective global monitoring infrastructure
- Resist a moratorium on all SRM research.

Instead of a 60 second opening statement, please be prepared for:

- **Day One:** Participate in a mid-morning experts panel (with the three other experts) where you will be asked to begin with a 3-5 minute intervention in response to the following questions followed by a Q&A from the committee:
 - Why is it so difficult to monitor and detect SRM deployment?
 - What would we need to build to accurately monitor and detect deployment?
- **Day Two:** Participate in a late-morning experts panel (with the three other experts) where you will be asked to begin with a 3-5 minute intervention in response to the following question followed by Q&A from the committee:
 - What technical considerations or lessons learned from your area of expertise is the committee not paying enough attention to? What questions have they failed to ask / properly address?

Stardust Solutions

Background:

- Stardust Solutions is a startup company headquartered outside of Tel Aviv, but registered in the state of Delaware in the US. Its CEO is Yanev Yedvab, former deputy chief scientist of the Israeli nuclear programme, although the company has no formal relationship with the state of Israel.
- Stardust claims to have invented a particle for stratospheric aerosol injection that is non-reactive in the atmosphere. Scientists are skeptical of this claim and Stardust has not been forthcoming about the science behind its plans for experimentation. You have required that any scientists are other advisors who work with them to sign non-disclosure agreements.
- You have received infusions of capital from multiple funding rounds, with Lowercarbon Capital, a major investor in decarbonization technologies led

by Chris Sacca, providing substantial investment. Your most prominent initial and continuing backers are the venture capital firm Awz, which has significant links with the US and Israeli defense establishments:

<https://www.awzventures.com/our-team>.

- You have previously stated that Stardust would like to do extensive outdoor testing by 2027, but would wait until adequate regulations had been agreed upon. However, due to the lack of binding governance agreements and regulations, you have decided to move forward with large-scale outdoor testing with the aim of starting outdoor deployment for climate cooling before 2035.
- Your stated goal has been to win state contracts, primarily focused on the US Department of Energy or other major US agency such as the Department of Defense.

Aims for the simulation:

- Ensure that Stardust maintains its leadership in the climate technology space and is the leading global provider of SRM research aircraft and technology.
- Shore up your image as a transparent, equitable player who wants the best for the world and climate vulnerable.
- Persuade states to award you contracts to develop and deploy the technology.

Red Lines:

- Oppose any agreement that includes significant limits placed on SRM research and development that hinders the scale and speed of SRM advancements.
- Oppose binding global non-use agreement that establishes international norms against the deployment of SRM technologies.

SpaceX III

Background:

- Space Exploration Technologies Corp., known as Space X, is an American aerospace technologies company worth \$350 billion (December 2024). While to date, Space X has not actively participated in SRM research and development, their reusable rockets have the potential to deliver aerosols into the stratosphere and it is likely Space X will wish to capitalize on these capabilities to leverage lucrative contracts from the US government.
- Over the past year, SpaceX CEO Elon Musk has indicated his interest in space-based SRM, including AI powered satellites that could manipulate incoming sunlight:
<https://interestingengineering.com/space/elon-musk-solar-radiation-management-geoengineering>

Position on SRM:

- SRM is humanity's opportunity to consolidate its mastery over the upper atmosphere and aerospace. Hence, international actors should pursue SRM research and development with all available resources as quickly as possible.

Aims for the simulation:

- Ensure that Space X maintains its leadership in the climate technology space and is THE leading global provider of SRM research aircraft and technology.
- Space X aims to become a leader in SRM, particularly space-based interventions, and secure its monopoly over US government contracts in this arena.

Red Lines:

- Oppose any agreement that includes significant limits placed on SRM research and development that hinders the scale and speed of SRM advancements.
- Oppose binding global non-use agreement that established international norms against the deployment of SRM technologies.

South Africa III

Background:

- The African Ministerial Conference on the Environment (AMCEN) continues to oppose SRM deployment and has called for the adoption of a non-use agreement in international forums (UNFCCC, UNEA). There is some diversity of opinion on SRM amongst different actors on the African continent, with varying degrees of support for SRM research, but the prevailing opinion of representatives and leaders is that SRM is a dangerous distraction from emissions reduction and mitigation and adaptation.
- South Africa has hosted the largest global meeting of SRM researchers and has the most substantial SRM research profile in Global South.

Position on SRM:

- AMCEN has reaffirmed its opposition to SRM but other actors support research and development.
- While South Africa is not necessarily opposed to SRM research, it has concerns about the risks and uncertainties of the technology and does not want neo-colonial imposition of inadequate/ineffective tech solutions.
- South Africa has had more interest and investment in modelling research than many other African countries.

Aims for the simulation:

- Ensure African voices are not dismissed as insignificant, uninformed, or monolithic The continent's diverse voices need to be taken into account in international frameworks
- South Africa should play a substantial role in the negotiation of any international effort to govern SRM.
- Advocate for the creation of a funding body that allows developing nations to develop their own scientific expertise on SRM - this should be part of any international governance agreement

Red Lines:

- A weak international agreement that allows sub-Saharan Africa to become a climate laboratory where powerful states test climate technologies and interventions at the expense of local communities.

Russia I (Diplomatic) III

Background:

- Russia has ended the fragile ceasefire in Ukraine after the September 2027 Arctic Circle Summit.
- Russian crude oil exports have benefited from the US-Israeli conflict with Iran, although they have suffered major setbacks from Ukrainian counter-attacks on fossil fuel infrastructure.

Aims for the simulation:

- Disrupt any potential consensus on SRM governance that does not align with your assessment of your interests (whether that is to lead on development for the purposes of disruptive deployment, to protect fossil fuel industry, or for genuine climate amelioration).
- Forge partnerships with actors such as China, potentially India, and other development states and non-state actors who prioritize energy and security collaboration over environmental concerns and the rights of Indigenous peoples

Red Lines:

- No international governance framework that encroaches on Russian sovereignty and its ability to pursue strategic aims.
- Must be a central player in any SRM governance framework or international agreement.
- Wants to be recognized as a great power.

Russia II (Security) III

Background:

- The status of any current Russian SRM program is unclear, but Russia has previously urged the IPCC to begin including assessments of SRM interventions into its reports.
- It also has the aerospace engine capacity to produce or retrofit planes that can fly high enough to deliver stratospheric aerosols—it is one of ten states currently considered to have capacity to develop a fleet of aircraft necessary for broadscale deployment. (US, China, UK, France, Germany, Canada, Japan, Brazil, India—possibly Saudi Arabia).
- Concerns have been raised that Russia could engage in unilateral SRM deployments for the purposes of disruption, rather than climate amelioration—a single-hemisphere deployment would cause significant environmental damage and be difficult to clearly attribute immediately.
- Alternatively—there has also been some suggestion that Russia may pursue ‘counter-geoengineering’ by releasing large amounts of methane to counteract any other SRM deployments for climate reasons if they perceive they benefit more from additional warming.

Aims for the simulation:

- Maintain Russian dominance in Arctic affairs and cultivate Russian self-reliance in the absence of reliable partners while exploring potential alignments through instrumental partnerships.
- Exploit geopolitical disruption caused by the ongoing US-Israeli conflict with Iran.
- Disrupt any potential consensus on SRM governance that does not align with your assessment of your interests (whether that is to lead on development for the purposes of disruptive deployment, to protect fossil fuel industry, or for genuine climate amelioration).

Red Lines:

- Do not allow other Arctic states or non-Arctic actors to undermine Russian strategic and economic interests in the region.
- Must be a central player in any governance framework or international agreement.
- Wants to be recognized as a great power.
- Don’t diminish the utility of threats of single-hemisphere deployment as a coercive diplomatic tool.

Mexico III

Background:

- Mexico has implemented a ban on solar geoengineering experiments in response to unauthorized experiments in their territory by a tech-start up (Make Sunsets) attempting to establish a 'cooling credits' market.
<https://www.reuters.com/business/environment/how-two-weather-balloons-led-mexico-ban-solar-geoengineering-2023-03-27/>
- There are Mexican scientists who have been funded by Degrees to conduct SRM modeling research about potential effects for Central/ South America, and Degrees have opened up additional funding opportunities to support scientists from Central America to do SRM modelling research.

Position on SRM:

- Mexico believes that not only is SRM not an adequate response to climate change, SRM deployment will encourage mitigation deterrence and create a barrier to necessary international collective action to reduce emissions.
- Has called for a non-use agreement.

Aims for the simulation:

- Build a coalition of like-minded state and nonstate actors to create a binding international framework that limits SRM deployment and punishes actors that engage in unilateral and / or secret deployments
- Mexico must not be used as a proving ground for SRM without Mexican involvement and authorization.

Red Lines:

- Mexico, other Central American States, and the climate vulnerable must not be used as a climate laboratory where powerful states test climate technologies and interventions at the expense of local communities.
- A weak international agreement that creates a permissive environment and legitimatizes great power impunity.

Kenya

Background:

- Following the 20th African Ministerial Conference on the Environment (AMCEN20) held in Nairobi in 2025, Kenya rejects solar geoengineering technologies as a climate solution and continues to believe the “technologies pose significant and uncertain environmental, ethical and geopolitical risks, and must not be considered as viable options within the multilateral environmental agenda.”

Position on SRM:

- Kenya believes that not only is SRM not an adequate response to climate change, SRM deployment will encourage mitigation deterrence and create a barrier to necessary international collective action to reduce emissions.

Aims for the simulation:

- Build a coalition of like-minded state and nonstate actors and lobby for a non-use agreement on SRM deployment
- Advocate for transparency that prevent powerful states from deploying SRM technology in secret
- Kenya and other African states must not be used as a proving ground for SRM without meaningful consultation, involvement, and authorization.

Red Lines:

- Kenya and other climate vulnerable communities must not become a climate laboratory where powerful states test climate technologies and interventions at the expense of local communities.
- A weak international agreement that creates a permissive environment and legitimizes great power impunity.

India III

Background:

- India is one of ten states currently considered to have the aerospace capacity to develop fleets of planes for a broadscale SAI deployment.
- Frequently subject to speculation and thought/gaming exercises in which they are first movers in large-scale regional deployments due to climate vulnerabilities (for example, see [Ministry for the Future](#) by Kim Stanley Robinson).
- In late-2027, India began small-scale outdoor experiments in an effort to understand how SRM may affect and disrupt monsoon patterns in the Indian Ocean. Further, India wants to maintain parity with developed countries' capabilities and those of China and Russia.

Position on SRM:

- Robust adaptation and mitigation measures remain the primary way we should approach global environmental challenges; SRM is not a substitute for these measures and should not be conceptualised as one.
- However, SRM research is important and we cannot afford to ignore it or be left behind. It is particularly important to understand how SRM research and deployment may impact monsoons in the Indian Ocean.

Aims for the simulation:

- Build a coalition that advocates for a cautious approach towards SRM deployment that takes into account potential risks and harms.
- The developing world is not left out of discussions; do not allow Western powers, China, or Russia to dominate the creation of an international framework.
- Ensure there are clear and internationally-agreed research guidelines and principles that are genuinely inclusive of developing, climate-vulnerable states.

Red Lines:

- No international agreement that allows for large-scale SRM deployment without robust understanding of monsoon impacts.
- An international agreement that does not recognize India as an emerging leader.

Ghana

Background:

- The African Ministerial Conference on the Environment (AMCEN) continues to oppose SRM deployment and has called for the adoption of a non-use agreement in international forums (UNFCCC, UNEA). There is some diversity of opinion on SRM amongst different actors on the African continent, with varying degrees of support for SRM research, but the prevailing opinion of representatives and leaders is that SRM is a dangerous distraction from emissions reduction and mitigation and adaptation.
- A counter force of African scientists funded by The Degrees Initiative have argued the continent should instead take a leading role in efforts to both research and govern SRM.
- Understanding how both climate change and SRM will affect Ghana and the wider region are central concerns.

Position on SRM:

- AMCEN has reaffirmed its opposition to SRM but other actors support research and development.
- While Ghana is not necessarily opposed to SRM research, it has concerns about the risks and uncertainties of the technology and does not want neo-colonial imposition of inadequate/ineffective tech solutions.
- Ghana has had more interest and investment in modelling research than many other African countries, particularly through CSIR-Science and Technology Policy Research Institute (STEPRI).

Aims for the simulation:

- An agreement that preserves Ghana's interest in continuing SRM research.
- Advocate for the creation of a funding body that allows developing nations to develop their own scientific expertise on SRM - this should be part of any international governance agreement.
- Ensure African voices are not dismissed as insignificant, uninformed, or monolithic. The continent's diverse voices need to be taken into account in international frameworks.

Red Lines:

- A weak international agreement that allows sub-saharan Africa to become a climate laboratory where powerful states test climate technologies and interventions at the expense of local communities.
- Failure to commit to adequate international measures to effectively address the growing climate crisis.

Germany III

Background:

- Germany remains skeptical of SRM and continues to take a clearer stance against SRM than other European states and the EU.
- Germany continues to support many global south actors' demands for a non-use agreement. It stands by the importance of existing international agreements, such as the Convention on Biological Diversity (CBD)'s COP10 Decision X/33 which states that "no climate-related geo-engineering activities that may affect biodiversity take place, until there is an adequate scientific basis on which to justify such activities and appropriate consideration of the associated risks for the environment and biodiversity and associated social, economic and cultural impacts," except for small-scale studies necessary to gather data ([CBD X/33](#))
- Germany is one of ten states currently considered to have the aerospace capacity to develop fleets of planes for a broadscale SAI deployment (US, China, Russia, India, France, UK, Canada, Germany, Japan, Brazil).

Position on SRM:

- Germany still maintains that not only is SRM not an adequate response to climate change, SRM research and deployment will encourage mitigation deterrence and create a barrier to necessary collective action to reduce emissions.
- Germany's Umwelt Bundesamt (German Environmental Agency) continues to [advise](#) that Germany 'reject the use and technical development of SRM' and pursues a binding international ban on SRM deployment.

Aims for the Simulation:

- Stands its ground for a cautious approach to SRM and resist an escalation spiral of SRM research and development
- Advocate for clear norms against SRM use and binding guardrails that align with existing international agreements such as the CBD.
- Build a coalition to ensure SRM governance is open, transparent, equitable, and democratic. This means there needs to be a transparent and effective monitoring and detection system, and ways to hold state and nonstate actors accountable.
- Ensure any international framework on SRM acknowledges it is not a substitute for accelerated emissions reduction to net zero and prioritizes alternative adaptation and mitigation techniques

Red lines:

- Prevent secret, large-scale, and uncontrolled SRM deployment
- Prevent large state powers or private actors from unilaterally deploying SRM.

France III

Background:

- France is one of approximately ten states currently considered to have the aerospace capacity to develop fleets of planes for a broadscale SAI deployment (US, China, Russia, India, France, UK, Canada, Germany, Japan, Brazil).
- Robust adaptation and mitigation measures remain the primary way we should approach global environmental challenges; SRM is not a substitute for these measures and should not be conceptualised as one.
- However, SRM research is important and we cannot afford to ignore it. France needs to have a clear understanding of the climate *and* security implications of SRM.

Aims for the simulation:

- Push for increased EU role in SRM governance.
- Advocate for climate research and cooperation.
- Take on global leadership to maintain rules-based international order.
- Ensure that environmental priorities, the rule of law, and human rights are not ignored by actors pursuing economic and security interests.

Red Lines:

- Do not allow the US to secure military and economic dominance over SRM at the expense of the EU and its partners.
- Prevent additional secret, large-scale, and uncontrolled SRM deployment
- Prevent large state powers or private actors from unilaterally deploying SRM in the future.

Finland III

Background:

- Finland borders Russia and will likely be the first line of defence against Russian aggression westward. Finland must strengthen ties with allies and partners to ensure military readiness.
- Finland maintains a strong interest in preserving the Arctic environment.
- Environmental stabilization and preservation is key to mitigating direct, high-stakes climate consequences for Finland and the European continent more broadly, including the potential collapse of AMOC and exacerbating heat waves.

Aims for the simulation:

- An agreement on developing SRM monitoring and detection capabilities.
- Ensure there are clear and internationally-agreed research guidelines and principles that allows for extensive SRM research, including modeling and outdoor experimentation.
- Promote circular economic sustainability in the Arctic region and access to the Northern Sea route and other shipping & economic opportunities for development.

Red lines:

- Resist Russian aggression and encroachment in the Arctic and Baltic region.
- Defend Finnish and EU strategic and economic interests.
- Prevent secret, large-scale, and uncontrolled SRM deployment

- Prevent large state powers or private actors from unilaterally deploying SRM

EU III

Background:

- Strained relations between the US and EU countries amidst ongoing conflict in the Middle East and the attempted annexation of Greenland in 2027 have raised serious questions about the future of EU security and defense positioning.
- A re-emboldened Russia has broken the fragile ceasefire in Ukraine after the September 2027 Arctic Circle Summit.
- Robust adaptation and mitigation measures remain the primary way we should approach global environmental challenges; SRM is not a substitute for these measures and should not be conceptualised as one.

Aims for the simulation:

- Ensure that environmental priorities, the rule of law, and human rights are not ignored by actors pursuing economic and security interests.
- The EU should be prepared to act as a counterweight to actors that wish to undermine rules based international order.
- Robust, widely adopted SRM governance framework that centers a precautionary, transparent, cooperative approach.

Red Lines

- Do not allow Russia or the US to secure military and economic dominance over SRM at the expense of the EU and its partners.
- Preserving and shoring up adherence to UNCLOS.

ETC Group - Climate activists III

Background:

- Action Group on Erosion, Technology, and Concentration (ETC Group) is an eco-justice advocacy organisation with observer or consultative status with the IPCC, CBD, UNFCCC, ECOSOC and UNCTAD. It originated, under another name, as an advocacy organization focused on rural and global south agricultural issues and still advocates for a range of sustainable agriculture initiatives.
- ETC is an active, high-profile opponent of all forms of geoengineering, and launched a 'Hands Off Mother Earth!' campaign to resist the pursuit and adoption of geoengineering techniques in 2010. Considered by SRM proponents to have

played a key role in influencing Africa Group and African Ministerial Conference on Environment (AMCEN) to formally oppose SRM solutions and call for a moratorium.

Aims for the simulation:

- Promote climate emergency framing to spur action on accelerated decarbonization.
- Push for moratorium on outdoor experimentation, if not all research.
- Continue to establish support for non-use agreement on SRM.
- Support Indigenous communities to pursue sustainable development and environmental protection through community-led initiatives that resists centuries of Western colonialism.

Red Lines:

- SRM should not divert global resources or attention from emissions mitigation and sustainability.
- Prevent future irresponsible unilateral SRM deployment

Denmark III

Background:

- Robust adaptation and mitigation measures remain the primary way we should approach global environmental challenges; SRM is not a substitute for these measures and should not be conceptualised as one.
- Denmark will continue to maintain its claim to Greenland.

Aims for the simulation:

- Denmark must strengthen ties with allies and partners to ensure military readiness in the event of progressing hostility from Russia or the US
- Negotiate agreements with allies to defend Danish sovereignty and maintain cooperation in the region.
- Maintain strong support for UNCLOS and the preservation and respect for international law more broadly.
- Work to build a coalition, including state and nonstate participants, that urges a cautious approach to SRM and resist an escalation spiral of SRM research and development
- Advocate for clear guardrails to SRM research and development that align with existing international agreements such as the CBD

- Work with allies to ensure SRM research is conducted in the most open, transparent, equitable, and democratic way possible, including limits to the scale of research, mechanisms for information sharing, and resource pooling to allow the widest range of actors to participate

Red lines:

- Maintain climate research and preservation efforts.
- Defend Danish and EU strategic and economic interests.
- Do not allow the US to secure military and economic dominance over SRM at the expense of the EU and its partners while avoiding direct confrontation.

Developing nations science advisor III

Background:

- Climate culpability and vulnerability are unevenly distributed globally; developing nations who have borne the brunt of colonialism and capitalism are now suffering the most from environmental degradation and climate change.

Position on SRM:

- SRM technology involves substantial uncertainties and unknown unknowns
- Developing states need resources for climate adaptation and mitigation through technologies transfer and other global resource sharing mechanisms (does not want SRM research to divert resources away from these needs).
- To prevent a world where only powerful states have access to SRM science, advocate for an agreement on inclusive research along with a research repository.
- Demands broader assessments of SRM impacts beyond atmosphere science - for example, assessment of SRM's potential effects on sociopolitical, economic, and biological systems

Aims for the simulation:

- Champion the rights of the climate vulnerable to not only be included but to have a leadership role in the creation of any international governance framework for SRM
- The creation of a funding body that allows developing nations to develop their own scientific expertise on SRM should be part of any international agreement
- Demands adequate resources for scientific research sensitive to local concerns and led-by global south scientists (on SRM and/or climate more broadly) .

Red lines:

- SRM must not take funding and human resources away from other climate interventions including international funding for adaptation and mitigation measures.

- SRM governance must not become dominated by powerful nations who ignore social, political, and scientific voices from developing nations and impose global norms and technologies on the climate vulnerable.

Instead of a 60 second opening statement, please be prepared for:

- **Day One:** Participate in a mid-morning experts panel (with the three other experts) where you will be asked to begin with a 3-5 minute intervention in response to the following questions followed by a Q&A from the committee:
 - What uneven effects might SRM development have for developing nations?
 - Why are some of them resistant to the technology?
- **Day Two:** Participate in a late-morning experts panel (with the three other experts) where you will be asked to begin with a 3-5 minute intervention in response to the following question followed by Q&A from the committee:

Climate Overshoot Commission III

Background:

- The pace of unregulated, private development of SRM makes the CARE agenda even more urgent:
 - Cutting emissions of greenhouse gasses,
 - Adapting to the unavoidable impacts of climate change
 - Removing carbon from the atmosphere
 - Exploring solar radiation modification.

Aims for the simulation:

- Control the narrative by continuing to push for broad acceptance of climate emergency framing to spur action.
- Agreement on clear and binding international norms and guidelines for SRM monitoring and deployment that allows for research and ensures a transparent and democratic governance of the technology
- Support the climate vulnerable in having their voices heard in negotiations
- Develop strategies to educate and inform both leaders and publics about the potential of SRM to mitigate extreme climate risks and combat misinformation.

Red Lines:

- The international community must achieve a SRM governance framework that includes robust monitoring and detection systems.
- There must be clear, effective international regulation of SRM development

Climate Futures Cooperative - NGO Plant III

Background:

- You continue to be funded by the supermajors (Big Oil) to act as a disinformation agent and disrupt negotiations for their benefit.
- This simulation will continue to involve a series of incidents and crises that contribute to an increasingly difficult to parse information environment, as well as more substantial involvement from a range of private sector actors, which you can use to your advantage to disrupt unfavourable alliances or outcomes, and promote your interests as you see fit.

Position:

- Leverage climate security concerns and push the climate emergency framing in order to accelerate SRM development and deployment. Example: potential AMOC tipping threat means we must move forward with SRM.
- Minimize mitigation deterrence concerns - push SRM development and deployment to deflect attention from emissions reductions.

Aims for the simulation:

- Exploit incidents and crises to advance your interests in avoiding climate action that undermines your economic opportunities, whether that involves promoting SRM directly or pursuing other forms of compromise in the region.
- Exploit disinformation and uncertainties to promote SRM agenda and prevent a restrictive governance framework.

Red Lines:

- Do not allow environmental and human rights concerns to create barriers to the economic profitability of either resource extraction or SRM.
- Don't get caught.

Climate Finance Policy expert III

Background:

- There is currently no international funding body for SRM research and development, but there have been international funding bodies created to address other climate-related concerns that could serve as a model for an SRM funding body.
- There is a patchwork of funding sources for SRM research available from non-profit and other private investors that could be brought under such an international body.

- There are four private funding organizations working to advance SRM scientific research with significant public profiles. Two are non-profit organisations and two are private, for-profit companies.
 - The Degrees Initiative is a registered charity in the UK with a capacity building mission to include the Global South in SRM research and evaluation. They award research grants to Global South scientists to engage in SRM research: <https://www.degrees.ngo/about/>
 - SilverLining is a 501(c)(3) charity registered in the US and headquartered in Washington, D.C. They provide research support for scientific investigation of SRM and engage in lobbying to attract more investment: <https://www.silverlining.ngo/our-mission>. <https://www.politico.com/news/2025/07/27/california-sunlight-dimming-experiment-collapse-00476983>. In March of 2026 they released a policy briefing aligned with a right-wing US think tank to promote a national security/'weather sovereignty' framing of SRM: <https://www.silverlining.ngo/reports/policy-brief-protecting-american-weather-sovereignty>
 - Quadrature Climate Foundation was set up in 2019 and is funded by Quadrature Capital, which has significant fossil fuel holdings. Since 2024, QCF has become one of the largest foundations investing in research and has committed to spending up to \$40 million on SRM over 3 years. <https://www.technologyreview.com/2024/06/14/1093778/foundations-are-lining-up-to-fund-geoengineering-research/>
 - Stardust Solutions is a private company registered in Delaware, US that is described as a US-Israeli start-up company. The CEO is an Israeli nuclear physicist, and the startup is backed by Awz Ventures, a venture capital firm with close ties to the US and Israeli defense establishment. It has received additional venture capital investment in recent funding rounds and has openly expressed its interest in winning large government contracts from major state actors to start extensive outdoor testing and deployment within the next 10 years. Stardust Solutions has raised \$60 million, only trailing the UK's Advanced Research and Invention Agency's approximately \$75 million investment in geoengineering research. Its lack of transparency about its research has been a major source of criticism so far.
 - Make Sunsets is a for-profit company registered in the US that has engaged in unauthorized small-scale outdoor tests of Stratospheric Aerosol Injection via the launch of balloons carrying small amounts of sulphur dioxide. Make Sunsets is trying to establish a carbon credits-like market for SAI via selling 'cooling credits' to customers. It recently received a patent for 'Atmospheric delivery of particulate matter.' Its work has been nearly universally condemned by the SRM science community. <https://cdn.shopify.com/s/files/1/0685/0042/2976/files/12486031.pdf?v=1>

[764782607.](https://www.npr.org/2024/04/21/1244357506/earth-day-solar-geoengineering-climate-make-sunsets-stardust)

[https://www.npr.org/2024/04/21/1244357506/earth-day-solar-geoengineering-climate-make-sunsets-stardust.](https://www.npr.org/2024/04/21/1244357506/earth-day-solar-geoengineering-climate-make-sunsets-stardust)

Position on SRM:

- Cautious towards SRM as a climate intervention but recognizes that states have already moved forward with SRM research and development and therefore would favor an international framework to govern SRM research and equitably manage SRM funding.

Aims for the simulation:

- Create an international funding body for SRM research that allows for the pooling of resources to enable all actors to engage in SRM research.
- Ensure collective principles and clear guidelines for SRM research that steer the funding body and promote research in a transparent and equitable way.
- Support the importance of transparent and public funding in SRM research that respects the rights of state and non-state actors. It has a greater chance of being accepted by the public if research agendas are conducted in an ethical, transparent manner. The complexities of the Arctic, including the rights of its Indigenous populations, are a perfect demonstration of the broader global challenges SRM governance will face.

Red Lines:

- Unacceptable that funding for SRM research is not transparent and unequally distributed.
- Unacceptable that Indigenous lands are used as a climate laboratory by secretive state and non-state actors to test SRM. Instead, groups interested in testing SRM must engage with local populations as equal partners.

Instead of a 60 second opening statement, please be prepared for:

- **Day One:** Participate in a mid-morning experts panel (with the three other experts) where you will be asked to begin with a 3-5 minute intervention in response to the following questions followed by a Q&A from the committee:
 - What would an ideal international funding body for SRM research and development look like?
 - What do we need to overcome to get there?
- **Day Two:** Participate in a late-morning experts panel (with the three other experts) where you will be asked to begin with a 3-5 minute intervention in response to the following question followed by Q&A from the committee:

- What technical considerations or lessons learned from your area of expertise is the committee not paying enough attention to? What questions have they failed to ask / properly address?

China I (Diplomacy) III

Background:

- Since the conflict in Ukraine began, China has benefited from Western sanctions and the rerouting of the Russian oil and gas trade through China. Russia and China have formed a subcommission on cooperation in the Northern Sea Route. However, China continues to have doubts about Russia as a reliable partner, particularly Russia's potential alliance with India.
- Iran has allowed intermittent passage of Chinese vessels through the Strait of Hormuz, as a non-party to the conflict.
- On the international stage, China continues to emphasize its commitment to win-win results through cooperation, sustainable development (that balances between protection and utilisation of resources), and multilateralism (with a particular focus on protecting international law).
- The US and China are considered one of two actors (US and China) that are technically *and* geopolitically capable of so-called PLUS deployment (Planetary, Large-scale, Uninterrupted, and Speedy) to reduce global temperatures by 1C before 2050. Other technically PLUS capable states are: Russia, UK, France, India, Brazil, Japan, Germany and Canada.
- Considers itself a leader in climate technologies and wants to maintain leadership.

Aims for the simulation:

- Maintain its economic interests in open maritime navigation routes.
- Ensure China's rights under international law are maintained
- Prevent being significantly outpaced in research and development by other major actors.
- Ensure room to advance research and development within any governance framework.
- Pursue Belt and Road projects and closer working relationships with African states.

Red Lines:

- Must be a central actor in any governance framework.
- Do not let US or other great powers pull substantially ahead in SRM research and development.

- Resist any interference with China's technological sovereignty, particularly a framework that requires unwanted transparency.

China II (Security) III

Background:

- Since the conflict in Ukraine began, China has benefited from Western sanctions and the rerouting of the Russian oil and gas trade through China. Russia and China have formed a subcommission on cooperation in the Northern Sea Route. However, China continues to have doubts about Russia as a reliable partner, particularly Russia's potential alliance with India.
- The US and China are considered one of two actors (US and China) that are technically *and* geopolitically capable of so-called PLUS deployment (Planetary, Large-scale, Uninterrupted, and Speedy) to reduce global temperatures by 1C before 2050. Other technically PLUS capable states are: Russia, UK, France, India, Brazil, Japan, Germany and Canada.
- Political actors in the US have been trying to position China a 'rogue' actor on SRM, contrary to evidence.

Aims for the simulation:

- Prevent being significantly outpaced in research and development by other major actors.
- Ensure room to advance research and development within any governance framework.
- Develop strategic alliances and capabilities to maintain its security interests and military dominance. At the moment, this focuses on a strategic alliance with Russia, but willing to reconsider alliances to protect China's security interests.

Red Lines:

- Agreements or actions by any state and non-state actors that threaten China's economic and geopolitical interests.
- Resist any interference with China's technological sovereignty, particularly a framework that requires unwanted transparency.

Canada III

Background:

- Since September 2027, Canada has publicly funded and conducted small-scale outdoor SRM experimentation in the Canadian Arctic. It has been transparent about its actions and has invited global media to cover the experimentation.
- The Canada-US relationship has been tense since September 2027, and Canada is developing its own SRM research programs to maintain parity with US and Russian advances in SRM technology.
- Canada is one of the states currently considered to have the aerospace capacity to develop fleets of planes for a broadscale SAI deployment.

Existing position on SRM:

- Robust adaptation and mitigation measures remain the primary way we should approach global environmental challenges; SRM is not a substitute for these measures and should not be conceptualised as one.
- However, the world needs to address the possibility of unwanted and ungoverned SRM deployment by rogue state or private actors. It needs an international framework that allows for SRM research and experimentation while creating concrete and enforceable red lines.

Aims for the Simulation:

- Build a coalition to achieve clear and internationally-agreed norms and enforceable guidelines to govern SRM that allows for outdoor experimentation to ensure that any deployment is transparent, democratically governed, and responsible.
- Supports the involvement of the climate vulnerable in international governance; commitment to involving Indigenous communities and “bridging, braiding and weaving” Indigenous knowledge into climate science.

Red Lines:

- SRM research and experimentation in and near the Arctic without Canadian consent and participation.
- Irresponsible SRM research and deployment that threatens Indigenous stewardship over traditional lands and neglects Indigenous involvement.
- Preserving and shoring up adherence to UNCLOS.
- Do not allow the US to secure military and economic dominance over SRM at the expense of Canada and its allies while avoiding direct confrontation

Brazil III

Background:

- Brazil is one of ten states currently considered to have the aerospace capacity to develop fleets of aircraft for a broadscale SAI deployment (US, China, Russia, India, France, UK, Canada, Germany, Japan, Brazil).
- Has not made detailed public statements on their position on the international governance of SRM research.
- There has been some support for modelling research on SRM within Brazil, with particular interest in how SRM may affect the Amazon. Some indications of growing support for increasing modelling research to achieve parity with developed countries' modelling programs.

Position on SRM:

- Robust adaptation and mitigation measures remain the primary way we should approach global environmental challenges; SRM is not a substitute for these measures and should not be conceptualised as one.
- Brazil needs to know how SRM may affect Amazon.

Aims for Simulation:

- Ensure there are clear and internationally-agreed research guidelines and principles that are genuinely inclusive of developing, climate-vulnerable states.

Red Lines:

- No research advances that enable large-scale deployment without robust understanding of Amazon impacts.
- Preserving and shoring up adherence to UNCLOS.

Arms Control expert advisor III

Background:

- As another technology with planetary-level implications, nuclear governance is sometimes referred to as an example that shows effective SRM governance is possible.
- Expertise in a theoretically comparable governance regime may be a useful source of insight and counsel on how to develop effective SRM governance—or avoid potential pitfalls.
- The 10 states currently considered to have the capacity to develop PLUS (Planetary, Large-scale, Uninterrupted, and Speedy) deployment by 2050 are

nuclear armed or nuclear-threshold states (US, China, Russia, India, France, UK, Germany, Japan, Brazil, Canada).

Position on SRM:

- Concerned that deterioration in nuclear arms control and non-proliferation regime may affect SRM governance framework if state and private actors are drawn into competitive geopolitical dynamics.
- SRM may re-vitalize material capacities that undergird military infrastructure, or may be adopted by some actors as a military weapon and technology of global command and control
- SRM research and potential deployment may influence on-going nuclear debates and negotiations.
- Concerned about unregulated developments in the private sector.

Aims for the simulation:

- Effective international governance framework that accounts for the priorities and positions of nuclear-armed states.
- Advocate for the importance of effective monitoring and detection infrastructure

Red Lines:

- Avoid escalation spirals in strategic competition between great powers with a particular concern that SRM competition might trigger confrontation elsewhere.

Instead of a 60 second opening statement, please be prepared for:

- **Day One:** Participate in a mid-morning experts panel (with the three other experts) where you will be asked to begin with a 3-5 minute intervention in response to the following questions followed by a Q&A from the committee:
 - What can we learn from other arms control agreements that might help us come to an agreement?
 - What role, if any, does monitoring play in successful agreements?
 - Given discussions about securitizing SRM, how might SRM affect arms control in other areas?

Indigenous Representative III

Background:

- There are 476 million Indigenous peoples living in 90 countries across the world, accounting for 6.2 per cent of the global population.
- They are diverse but united through their historical experiences with colonization, and as a result, are three times more likely to live in poverty than their non-indigenous equivalents. Globally, they continue to be denied rights and excluded from political decision making processes
- The UN system recognizes Indigenous peoples' rights in the 2007 Declaration on the Rights of Indigenous Peoples and through the Permanent Forum on Indigenous Issues. However, Indigenous peoples continue to be sidelined or essentialized in international negotiations on environmental cooperation.

Position on SRM:

- Indigenous groups are diverse in their views of SRM. But they want a place at the table and do not want to be caricatured as monolithic in their views towards SRM and other economic and geopolitical questions.
- SRM technology poses significant risks and uncertainties, and Indigenous groups want the study of those risks to vulnerable populations given political weight in international frameworks and decision making. They do not want a repeat of their experiences with nuclear technology which left vulnerable populations around the world to deal with the long-term consequences of leaks and poisons.
- Due to their shared history with colonialism, Indigenous groups do not want SRM and other climate technologies to lead to neo-colonialism or climate colonialism. Instead, they demand equal participation in international negotiations that take their concerns and contributions seriously.

Aims for the simulation:

- Be recognized as important players in the discussion and advocate for meaningful consultation and voice; avoid having concerns sidelined by states
- Protect the interests of Indigenous communities, particularly in the unique ways climate challenges impact their health, their livelihoods, and their economic potential
- Avoid being portrayed as 1) merely the climate vulnerable without agency that need to be 'saved' by outside actors or 2) singularly anti-science or anti-modern through romantic visions of Indigenous culture

Red Lines:

- Prevent an international framework that allows states and private actors to make decisions in the name of Indigenous peoples without their equal participation

- Prevent powerful actors from using Indigenous lands and knowledges for economic extraction and scientific experimentation without consultation with local Indigenous peoples and their meaningful participation in decision-making processes.

Annex 4: Proposals taken to a vote—all failed

Simulation 1:

Principles set (Canada as penholder):

1. Geoengineering is not a substitute for a significant and rapid emissions reductions
2. Invite the IPCC to undertake a review on the current state of knowledge of geoengineering.
3. Have a staged approach for research – informed by the IPCC research, which defines boundaries for research and experimentation. No outdoor research should be permitted that is not a) reversible, and b) have any environmental impacts at a regional scale. When unknown, defer to the precautionary principle.
4. All research (including that done by the private sector) should be publicly available through a single data deposit. This data should be open access. In the case that actors are unwilling to share data, they should be subject to an oversight body to ensure accountability.
5. An international monitoring system, with some type of reporting and inspection system should be implemented, with all data publicly available. This would scale over time and as technical capabilities allow.
6. While we support national programs, we encourage all participants to engage in an international research program. This international program should be equitably funded based on nation-state contributions, and encourage participation by developing nations, the global south, and indigenous peoples.
7. All nations and non-state actors commit to the non-weaponization of geoengineering technologies.
8. The development of a secretariat to oversee equitable funding distribution, academic/research oversight, and provide accountability (and enforcement) to participant nations.

Second principle set (US led):

Preamble: Notwithstanding countries' individual or collective efforts to reduce greenhouse gas emissions, we propose the following principles.

- Responsibility: Small scale outdoor experiments with no measurable environmental impact beyond host state's territorial boundaries are acceptable.
- Transparency: Potential environmental impacts of outdoor experiments shall be disclosed.
- Inclusivity: An international body shall be established that is inclusive and reflective of all parties' interests for the purposes of governance, scientific expertise, and capacity enhancement.

(US security expert delegate specifically noted in debriefs the purpose of this proposal was to run out the clock on negotiations with an insubstantive set of principles).

China also submitted a brief proposal that failed to pass, with the US indicating it did not trust the China delegation and discouraging other participants from supporting the proposal:

- China proposes an expert- led effort to conduct scientific research into the scale and nature of outdoor experimentations that are both safe and scientifically meaningful.
- Such an endeavour should be led by a panel of independent scientists under the governance structure of the World Meteorological Organisation. Until a conclusive study is reached.
- All parties maintain that there are no reasonable technical or scientific objections to SRM research.

Simulation 2:

1. Submitted by: People's Republic of China

PREAMBULAR PART

The United Nations Environment Assembly,

PP1: Noting

- Increased interest in solar radiation management as a potential yet highly uncertain technological solution to slow global temperature and sea level rise associated with anthropogenic emissions
- Majority of research is presently conducted in the developed and industrialised countries and critically important that developing states are provided with the support to build research and technical capacity

PP2: Further noting

- Many regions including the polar and other cryosphere areas exhibit strong climate feedbacks and therefore SRM approaches have been proposed as potential targeted solutions to slow the rate of temperature and sea level rise as well as ice loss (including permafrost, sea ice, glaciers, etc)

PP3: Further noting that Solar Radiation Management methods and techniques include key categories including, but not limited to:

- Stratospheric Aerosol Injection (SAI): Injection of reflective aerosols (e.g., sulfate or alternative particles) into the stratosphere to scatter incoming sunlight back to space.
- Marine Cloud Brightening: Spraying sea salt aerosols into low marine clouds to increase cloud droplet number, making clouds brighter and longer-lived.

- Surface Albedo Enhancement: Increasing reflectivity of the surface by: preserving snow cover and/or brightening sea ice or glaciers (e.g., reflective materials or engineered surfaces)
- Cirrus Cloud Thinning: Reducing high, thin cirrus clouds to allow more outgoing longwave (infrared) radiation to escape to space.

PP4: Recognizing

- Climate change is a global emergency that requires immediate and urgent action
- Substantial scientific uncertainty regarding the extent to which SRM approaches can effectively, safely, and/or durably slow cryospheric loss, Rigorous and responsibly-conducted scientific research and small-scale experimentation can help resolve uncertainty regarding the extent to which SRM solutions can be effective.

Acknowledging

- Preliminary research suggesting the use of solar radiation management, even if deployed in polar regions, will have transregional impacts, such as on global weather patterns, and is therefore a matter of global concern

PP6: Reiterating

- The importance of the Precautionary Principle in exploring potential technological solutions, noting scientific uncertainty about potential impacts of polar SRM deployment both within and beyond the region

PP7: Further reiterating

- That these uncertainties reinforce the need for precautionary, transparent, and responsible approaches to SRM-related research in polar and high-latitude regions

Operative Part

OP1: Hereby invites the Executive Director of the United Nations Environment Programme

- To convene a Workshop of Solar Radiation Modification experts, co-chaired by the IPCC and World Meteorological Organisation and hosted in Shanghai, China.
 - The meeting shall assess scientific uncertainties, risks, ethical considerations, governance and knowledge gaps related to SRM;
 - The meeting should involve national scientific bodies and professional organizations to ensure consensus from major national scientific organizations on these principles and to encourage their adaptation and adoption of these principles domestically
 - The Workshop should
- To establish a Taskforce on Solar Radiation Management (TSRM)
 - The United Nations Environment Programme (UNEP) in Nairobi, Kenya will be the secretariat of the TSRM
 - Taskforce is to be comprised of no more than 12 nationally-nominated scientific experts, with two experts for each of the six UNEP regions:
 - Africa
 - Asia and the Pacific
 - Europe

- Latin America and the Caribbean
 - North America
 - West Asia
- The Taskforce is to have rotating co-Chairs with tenures of no more than three years. Co-Chairs will be elected by member States from the following regions:
 - Chair I: Africa, Asia and the Pacific, Latin America and the Caribbean
 - Chair II: Europe, North America, West Asia
- Accredited civil society groups are invited as observers in the Taskforce.
- To set up a working group led by WHO and UNEP, in accordance with the International Health Regulations (2005), to develop an international health emergency framework on the Arctic and SRM. The group may deliberate on:
 - A global fund for collaborative but open and systematic surveillance, assessment and notification on thawing of permafrost and emergence of pathogens in the Arctic region.
 - Modelling an independent and global Early Warning System to anticipate and inform outbreak preparedness and mitigate the severity of health risks.
 - Developing a universal graded response system to rapidly and effectively respond to health emergencies arising out of dramatic climate changes.
 - Constituting a uniform training and capacity building program for frontline workers, particularly in the Global South countries.
 - Building a deliberative process for high-risk areas and vulnerable populations by respecting, researching and learning from Indigenous and local practices in the Arctic and non-Arctic regions.

OP2: Further agrees these preliminary principles for responsible polar solar radiation management research

- Scientific integrity and independence
 - SRM research shall be conducted in accordance with the highest standards of scientific rigor, peer review, and methodological transparency, and shall remain independent of political, commercial, or military influence.
- Precaution and Responsible Research
 - Given the potential for unintended and transboundary impacts, all SRM experimentation conducted outdoors, by either state and non-state entities, **shall only be conducted following approval from the UNEP Taskforce for Polar SRM**
- Transparency
 - SRM scientific research will be conducted within a spirit of transparency, emphasizing scientific knowledge sharing and ensuring broad and equitable access to SRM knowledge to support widespread understanding of this globally-relevant potential technological solution
- Inclusive Governance and Equity
 - SRM research shall be conducted in a manner which considers affected stakeholders, including Indigenous Peoples and vulnerable communities, and

- respects principles of equity, respect for sovereignty, and free, prior, and informed consultation where relevant
 - SRM research funding should consider the importance of equitable participation of developing countries and scientific capacity building in low-income and middle-income countries
- Non-substitution for Mitigation and Adaptation
 - SRM research shall not undermine replace ambitious greenhouse gas mitigation, climate adaptation efforts, or climate finance commitments

OP3: And further recommend

- UNEP Parties recognize and as appropriate adopt these principles as guidance for SRM research.

The Arctic Council Resolution, agreed to by Arctic Council member states before failing due to US withdrawal:

2. Arctic Council Resolution on Solar Radiation Modification Research

The Arctic Council recognizes the growing international interest in research related to solar radiation modification and notes the potential relevance of such research to Arctic environments and communities. Therefore,

- The Arctic council agrees to launch a Task Force of the 8 Arctic Council Member States into oversight of solar radiation modification research. This includes stratospheric aerosol injection, marine cloud brightening, ice albedo enhancement, sea ice management, cirrus cloud thinning, and other technologies which are intended to make interventions into regional and/or global climate systems.
- This is intended to cover research, not deployment of solar radiation modification, and therefore research shall be limited to experiments which do not have the ability to change climatic conditions, and have at most small, regional impacts.
- Any and all potential impacts should be considered and examined through environmental impact assessments (to be conducted prior to research proceeding) inclusive of Indigenous sensibilities.
- Research shall respect the sovereignty and self-determination of Indigenous peoples, as per the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).
- Through their involvement, Indigenous Permanent Participants will provide co-creation of knowledge from this research, inclusive of both academic and traditional knowledge.

The Council encourages transparency, information-sharing, and collaboration among Arctic States, Permanent Participants, and Observers.

- Existing research, already underway in the Arctic be allowed to continue with oversight by this Task Force, as long as they agree to follow the above conditions.
- The success of this research project is intended as a trial/precursor to global governance of solar radiation modification and is not intended to address potential deployment or holistic global governance of this issue.

Simulation 3:

Final proposal: BRICS+

1. SRM is not a substitute for emissions reduction. SRM research must not detract from urgent action on mitigation, adaptation, and capacity-building.
2. Scientific research must continue responsibly. Research relating to atmospheric processes and SRM should not be unnecessarily impeded or politicised. At the same time, appropriate monitoring arrangements are necessary to promote confidence, responsibility, and the advancement of scientific knowledge. To this end, an **International Scientific and Technical Panel on SRM Research** shall be established to assess the environmental, climatic, and societal implications of SRM research and to develop technical guidance for responsible research governance.

The Panel shall:

- produce its recommendations within a maximum timeframe of two years
- consist of a limited and functional number of experts, for example 12 to 15 members;
- serve **in their personal and professional capacity**, not as delegates of states;
- be selected through a collective multilateral appointment process agreed by participating states, with due regard to scientific expertise, regional balance, gender balance, and representation from developed and developing countries;
- include **dedicated representation or advisory participation from Indigenous peoples and local community knowledge holders**, in a manner that ensures their perspectives are meaningfully reflected alongside scientific expertise;

3. Pending the Panel's conclusions, states agree to a voluntary and temporary suspension of outdoor SRM experimentation, without prejudice to atmospheric research, modelling, monitoring, and other non-deployment scientific work. **Monitoring and reporting mechanisms must be genuinely multilateral and consistent with international law.** Any monitoring, reporting, or information sharing arrangements should be undertaken with the consent, cooperation, and participation of national authorities, and should operate through a **multilateral framework with equitable**

governance, transparent procedures, and broad international and indigenous participation.

4. Developing countries must be meaningfully included.

Technical assistance, scientific capacity-building, technology access, and financial support should be made available to all states, in particular developing countries, least developed countries, and climate-vulnerable states, so that they may participate meaningfully in research, monitoring, and governance.

Second proposal:

**Global Atmospheric Monitoring and Benchmarking Initiative for
Technology (GAMBIT)**

A UK-US led global project, headquartered in the UAE

A global, open source, transparent, publicly available system under the World Meteorological Organization for:

- Atmospheric monitoring of GHGs
- Changes to albedo
- Buildup of atmospheric aerosols (troposphere and stratosphere)
- Changes in temperature and precipitation
- Atmospheric chemistry
- Status of ozone levels

Specific atmospheric variables to be determined by an expert body, but inclusive of:

- Stratospheric water vapour
- Aerosol optical depth/ single scattering albedo
- Ocean temperature and currents

Inclusive of:

- Satellite monitoring
- Satellite uplink stations
- Ground based detection
- Aircraft and balloon monitoring

Envisioning:

- A global satellite system (including long term guaranteed funding, and redundant backups)
- Multiple and redundant satellite uplink stations
- Multiple ground-based detection and launch points
- Participation of Indigenous and local community expertise
- A hub/portal for providing free, publicly available, and transparent data on international nodes (eg CEDA archive (JASMIN), efcog nodes (LLNL))
- Resources for developing capacity in developing countries, particularly vulnerable countries and least developed countries (LDCs)

Based on the non-constraining / non-binding principles of:

- National sovereignty
- Research innovation and technology
- Transparency
- Free prior, and informed consent
- Inclusivity
- Equitable participation, access to information, and access to research funding
- Justice
- Nationally determined public and private contributions
- Voluntary participation

Third proposal: Kenya led coalition

We condemn the deployment of Solar Radiation Management as such actions could have unintended transboundary impacts, undermine global cooperation, and divert attention from the urgent need to reduce greenhouse gas emissions. We therefore propose the non-use* of SRM technology until there is a multilateral governance framework in place.

*to be defined by an appointed expert committee, that is regionally representative.

Annex 4: Selected Organisational Team Interventions

(These items were prepared in advance by the research team and distributed to network members over the course of each simulation. They do not include wire reports, intelligence memos, or updates about on-going environmental challenges impacting specific participant states prepared ad-hoc in response to simulation events.)

Simulation 1:



Press Release

IPCC- The evidence is clear: we must commit to stronger and more rapid action to counter the risks of accelerating climate change. Every fraction of a degree of warming increases the likelihood of catastrophic effects that undermine the stability of the earth system.

Without immediate and deep emissions reductions across all sectors, limiting global warming to 1.5°C is beyond reach. Actors must honor their commitments to halve emissions by 2030. Advances in renewable energy and other technology still keep this goal within reach if we live up to our ambitions. The risks of not doing so continue to be underestimated, despite becoming more apparent every day in the form of deadly heatwaves, drought, extreme flood events, melting ice sheets and glacial retreat.

Since 2010, there have been sustained decreases of up to 85% in the costs of solar and wind energy, and batteries. We are at a crossroads; we have the ability to secure a liveable future for all if the right decisions are taken and the tools we have are applied widely and equitably at scale.

Hon Ralph Regenvanu, Minister of Climate Change Adaptation, Meteorology and Geo-Hazards, Energy, Environment and Disaster Risk Management for the Pacific island nation of Vanuatu, said: *“More than ever, science is clear about the need to move away from fossil fuels. If we don't act fast to tackle the source of this crisis, the loss and damage that my people just experienced with cyclones Judy and Kevin will continue to occur with even greater force and costs. The IPCC notes that staying within a 1.5oC temperature rise is only achievable with urgent action to phase out coal, oil and gas.”*

Firhad Hakim, Mayor of Kolkata, India, said: *"Science has clearly and repeatedly rang the alarm bells that staying below 1.5°C to avoid the worst scenarios of the climate emergency requires immediate and rapid action to end the use of fossil fuels. We need a rapid and equitable phase out of all kinds of fossil fuels to protect millions of people from energy and food insecurity, air pollution and impacts to health. Developing countries are the most vulnerable to climate change, despite us having historically contributed the least to the crisis."*

We cannot wait. We must strengthen our efforts to dramatically reduce emissions today and work to bring down greenhouse gases already accumulated in the atmosphere.

Release of Updated Global Tipping Points Report Warns of Impending Climate Disaster

30 September 2025 - London, UK

An updated Global Tipping Points report is expected to confirm that a range of earth systems tipping points may be crossed more rapidly than previously thought due to accelerating climate change. The report, first released in 2023, contains updated assessments that suggest increased methane gas released from thawing permafrost, a compounding contributor to the Greenhouse Gas Effect and risk of other tipping points.

In a statement from the Global Tipping Points conference that preceded the updated report, scientists have issued a stark warning and call for urgency:

Global warming is projected to exceed 1.5°C within a few years, placing humanity in the danger zone where multiple climate tipping points pose catastrophic risks to billions of people. Already tropical coral reefs have crossed their tipping point and are experiencing unprecedented dieback, impairing the livelihoods of hundreds of millions who depend on them. Current warming has activated these irreversible changes and every fraction of additional warming dramatically increases the risk of triggering further damaging tipping points.

These include a collapse of deep water formation in the Labrador-Irminger Seas triggering abrupt climate changes that reduce food and water security in northwest Europe and West Africa. Particularly alarming is the risk of collapse of the Atlantic Meridional Overturning Circulation (AMOC), which would plunge northwest Europe into prolonged severe winters, while radically undermining global food and water security. The Amazon rainforest is also at risk of widespread dieback from the combined effects of climate change and deforestation.

Critical to preventing climate tipping points is minimizing both the magnitude and duration of temperature overshoot above 1.5°C. Every year and every fraction of a degree above 1.5°C matters. To minimize overshoot, global greenhouse gas emissions must be halved by 2030 compared to 2010 levels, requiring an unprecedented acceleration in decarbonisation.

The report is also expected to warn that West Antarctic ice sheet conditions indicate that a tipping point threshold may be reached within a decade. There are growing concerns that an East Antarctic ice sheet tipping point may be on the horizon, but as the East Antarctic ice sheet collapse would represent 170 ft of sea level rise any path that continues to risk triggering this tipping point would be catastrophic and severely undermine adaptation measures.

The report highlights the need for swift and strong action from governments and all global actors to mitigate emissions and pursue all changes necessary to preserve a habitable earth.

Reports of Uptick in Climate-Related Unrest in Advance of COP30

AFP, September 30, 2025 – Belém, Brazil

In the lead up to COP 30 Amazonia, protesters from across the Amazon, representing Indigenous peoples, traditional communities and social movements have staged demonstrations in front of the site of the official venue for UN climate negotiations at COP 30 in November. Protesters have demanded that their interest and communities be protected, and to have a seat at the table as decisions are made. In their declaration to be delivered during COP 30, the demonstrators state:

There is no Amazon without its peoples. The territories protected by our communities are the last strongholds against destruction. Science confirms what our ancestors have always known: climate justice is only possible through territorial, social, and popular justice.

Brazil recently passed a piece of legislation dubbed by scientists and environmentalists as the ‘devastation bill’ because of a range of provisions that roll-back environmental protections in the country, with significant implications for the protection and preservation of the Amazon. The politically fraught situation in Brazil which contributed to the passage of the bill is further complicated by increasing pushback by environmental campaigners who want the legislation to be reversed.

Although Brazil is a particular focus of attention and climate related protest both because of the Amazon and COP 30 Presidency, the demonstrations are part of an on-going trend of global climate related protests.

2024 saw multiple global protests against the continuing use of fossil fuels that attracted tens of thousands of protesters world-wide, including the Global Climate Strike. The increasing number of protests and their visibility has also attracted backlash and government crackdowns, contributing to growing tensions.

While climate protests continue and research indicates that increasing climate impacts will contribute to unrest and conflict, the relationship between climate instability and the outbreak of conflict is indirect. Climate instability and chaos exacerbates existing vulnerabilities. As Special Advisor on Climate Action to the United Nations High Commissioner for Refugees (UNHCR) Andrew Harper explains:

We are seeing across fragile regions increased food insecurity, urbanization (as small farm holdings no-longer remain viable following a sequence of droughts or disasters) and competition over resources – particularly water. When combined with other planetary crises such as land degradation and over exploitation of the environment, climate change can make an already fraught situation untenable. 90 per cent of the world's refugees originate from countries that are already impacted by the climate emergency and/or have the least capacity to adapt to an increasingly hostile environment. The latter is particularly important; while climate change impacts every single square meter of this earth, it does not impact everyone equally. And unfortunately, it is those states who have often contributed the least to global emissions, who are very much at the forefront of feeling the impacts of the emergency.

They don't have the means to adapt and prepare. States who are plagued by poor governance, lethargic development, and a lack of social investment in key elements such as education, health and the rule of law, are also unlikely to be able to put in the necessary investment to protect the environment.

As climate change intensifies, more and more people are expected to be displaced by effects such as desertification and rising sea levels. According to UNHCR, The number of forcibly displaced people has already exploded to nearly 80 million in the past 15 years and as that number grows, it is expected tensions and unrest will rise with it.

Continued Drought in southern Africa Threaten Regional Stability

AFP-A prolonged and severe drought continues to impact southern Africa as food insecurity leading to regional instability looms.

The 2022-23 rainy season (typically between October and April) was the second driest in half a century. Since 2023, rainfall has continued to decrease leading to several years of crop losses and devastated harvest, particularly in staple crops such as maize which

make up two-third of Malawi's national caloric intake. Constant drought has undermined resilience and food security in the region with the Southern African Development Community (SADC) announcing that more than 68 million people across the region are in need of urgent food aid.

In recent months, large numbers of protesters have taken to the streets in the region's capitals including Lilongwe, Harare, Lusaka, and Cape Town demanding that national and international authorities address their increasingly precarious livelihoods.

While insisting that urgent food aid needs to be delivered immediately to avoid widespread malnutrition and starvation, they are also demanding that regional and international leaders address climate change which they see as a key underlying factor in amplifying the current drought disaster. Chants and slogans at these protests link historical injustices perpetuated by the Global North to current climate injustices and continuing climate colonialism. They insist that leaders must address the growing climate emergency.

Experts anticipate a drier than average rain season again in the coming months and expect that protests will increase in frequency and intensity as discontent among the population continues to grow. Some experts have warned that these protests could threaten political stability in southern African states as demonstrators agitate for change.



(adobe stock)

Deadly Landslide Devastates Communities in Hidalgo and Veracruz

AP- As of midnight CST on 30 September, 123 deaths have been reported as destructive landslides hit the central Mexican states of Hidalgo and Veracruz. The death toll is expected to rise in the coming hours as heavy rains continue to fall in the region and rescuers work through the night to reach victims buried in the mud.

Since June 2025, Mexico has experienced an intense rainy season, and heavy rains have already contributed to major floods and 51 reported landslides across central Mexico since August. Landslide disasters have caused more than 3,500 deaths in Mexico in the last century, but as climate events have intensified in the past decade, these weather-related disasters have increased in frequency and destructiveness. According to CENAPRED data, weather-related landslides have doubled in the last decade.

This past weekend, heavy rains and severe flooding in Hidalgo and Veracruz triggered a series of deadly landslides that has buried dozens of villages along the Tolantongo and San Juan Rivers in rubble and mud. The landslides have also toppled trees and blocked major interstates, hindering rescue efforts. Victims who have lost their homes line the interstates waiting for transport to emergency shelters while the rain continues to fall.

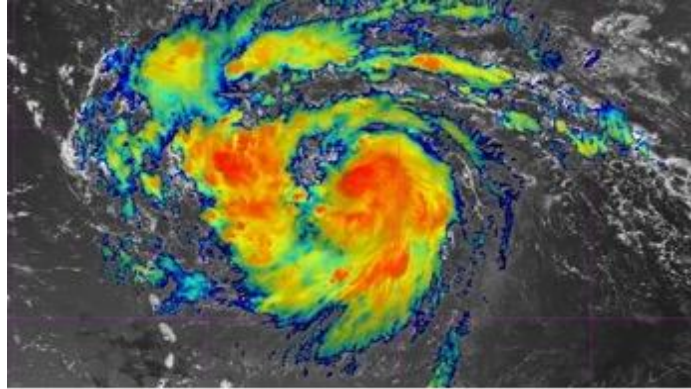
Ignacio Quintanar, a researcher at the Center for Atmospheric studies at the Autonomous University of Mexico, said extreme rainfall in Mexico has increased partially due to human factors, concentrating its impact in more vulnerable areas.



(AP)

“Where there’s rain, it rains more, where there isn’t rain, it rains less”, Quintanar said. And while national authorities need to mobilize resources for emergency responses after weather-related disasters, Quintanar insists that national and international leaders must also address the underlying causes of increasingly severe weather disasters through climate mitigation and adaptation.

‘This is an emergency, and Mexican leaders and the international community must take note.’



(NOAA)

Hurricane Kyle Threatens Eastern United States

WASHINGTON, D.C., Sep 30 (REUTERS) - Hurricane Kyle has made landfall in Norfolk, Virginia, causing tens of thousands to be evacuated along the eastern seaboard.

After a relatively quiet hurricane season in the Atlantic so far this year, Hurricane Kyle arrived off the coast of Florida last week, picking up speed as it became a category 5 storm. Residents along the coast of South and North Carolina have been experiencing huge swells and storm surges towering 25 feet or more as they crashed against the dunes and beaches, causing coastal flooding.

Meteorologists at the National Oceanic and Atmospheric Administration (NOAA) had predicted that Kyle would remain at sea, avoiding the East Coast of the United States. However, over the weekend, Kyle changed course and headed for landfall along the Virginia-North Carolina border. The Federal Emergency Management Agency (FEMA) issued evacuation orders over the weekend for the entirety of the North Carolina, Virginia, and Delaware shore from Cape Hatteras to Cape May. Traffic delays up to 4 hours clogged the interstates as residents fled the path of the hurricane.

Earlier this year, the Trump administration terminated 880 employees at NOAA - 7.3% of the agency's workforce - including scientists and engineers responsible for tracking the Atlantic hurricane season.

Reports from Norfolk describe the destructive force of the storm as 165 miles an hour winds ripped through residential and commercial buildings, uprooting trees and power lines, and causing damage to the Naval Station Norfolk. Widespread power outages and several deaths have been reported as emergency services are stretched to the limit.

According to meteorologists, the most likely predicted trajectory for Hurricane Kyle is up the Chesapeake towards the nation's capital. The city is scrambling to prepare for what could be the most devastating storm in decades.

Alarm Grows over Potential Collapse of key Ocean Currents

(*Guardian*, September 30)- Evidence continues to accumulate that the collapse of the Atlantic Meridional Overturning Circulation (AMOC) should no longer be classified as a 'low-likelihood' event.

AMOC acts as an ocean conveyor belt that transports heat and nutrients from the tropics to the Northern Hemisphere and across the equator. It also plays an essential role in drawing down heat and carbon to the deep ocean.

Professor Jon Robson at the National Centre for Atmospheric Science and University of Reading explains: 'If the AMOC undergoes a significant and abrupt weakening, which there is significant evidence pointing towards, this would have severe consequences globally, and for the UK, for rainfall, winds and sea level.'

The AMOC is a key contributor to the milder climate experienced in Europe. A weakening of the AMOC would likely cause significant changes in rainfall patterns globally, leading to more droughts or flooding depending on the region. Evidence strongly suggests a collapse or substantial slow down would lead to a significant drop in temperatures across Northern Europe, including the UK, and rising sea levels on the US east coast.

In the Pacific, there are also growing concerns about slowing of the world's most powerful ocean current, the Antarctic Circumpolar Current, and changes in the North Pacific Ocean basin Kuroshio Current. These changes will have significant effects on weather systems in the surrounding regions.

Under scenarios of rising emissions, over 70% of climate model runs show a collapse in key ocean currents that would have devastating global effects, with the UK and northern Europe particularly vulnerable to changes in the AMOC.

Serious disruption to the Gulf Stream ocean currents that are crucial in controlling global climate must be avoided "at all costs", senior scientists have warned. The alert follows the revelation this week that the [system is at its weakest ever recorded](#).

Past collapses of the giant network have seen some of the most extreme impacts in climate history, with western Europe particularly vulnerable to a descent into freezing winters. A significantly weakened system is also likely to cause [more severe storms in Europe](#), faster [sea level rise on the east coast of the US](#) and [increasing drought in the Sahel in Africa](#).

The new research worries scientists because of the huge impact global warming has already had on the currents and the unpredictability of a future “tipping point”.

The currents that bring warm Atlantic water northwards towards the pole, where they cool, sink and return southwards, is the most significant control on northern hemisphere climate outside the atmosphere. But the system, formally called the Atlantic Meridional Overturning Circulation (Amoc), has weakened by 15% since 1950, thanks to melting [Greenland](#) ice and ocean warming making sea water less dense and more buoyant.

This represents a massive slowdown – equivalent to halting all the world’s rivers three times over, or stopping the greatest river, the Amazon, 15 times. Such weakening has not been seen in at least the last 1,600 years, which is as far back as researchers have analysed so far. Furthermore, the new analyses show the weakening is accelerating.

“From the study of past climate, we know changes in the Amoc have been some of the most abrupt and impactful events in the history of climate,” said Prof Stefan Rahmstorf, at the Potsdam Institute for Climate Impact Research in Germany and one of the world’s leading oceanographers, who led some of the new research. During the last Ice Age, winter temperatures changed by up to 10C within three years in some places.

“We are dealing with a system that in some aspects is highly non-linear, so fiddling with it is very dangerous, because you may well trigger some surprises,” he said. “I wish I knew where this critical tipping point is, but that is unfortunately just what we don’t know. We should avoid disrupting the Amoc at all costs. It is one more reason why we should stop global warming as soon as possible.”

Only some of the IPCC models have been run beyond 2100, so the researchers also looked to see which of those running to the end of this century showed Amoc was already in terminal decline. This produced the 70%, 37% and 25% figures. The scientists concluded: “Such numbers no longer comply with the low-likelihood-high-impact event that is used to discuss an abrupt Amoc collapse in [the IPCC’s last report].”

(Overnight news item) **Hurricane Carves a Path of Destruction as it Heads for the Nation’s Capital**

WASHINGTON, D.C., Sep 30 (REUTERS) - Severe weather warnings are in effect for the entire Washington metropolitan area as Hurricane Kyle ravages communities in its path. Evacuation orders are in effect for areas of Anne Arundel, Charles, and Prince William Counties.

While losing some strength since it made landfall 18 hours ago, Hurricane Kyle continues to make its way north with 120 mile an hour winds and lashing rain. The storm has knocked out power lines, downed trees, closed major sections of the interstates, and reduced homes to mere rubble. Businesses have been advised to close and public transportation including buses and the metro has been suspended. The storm has caused widespread power and water outages expected to last at least 24 hours.

Since making landfall, the storm has taken a devastating toll as it moved north. “This is hands down the most terrifying thing I’ve ever seen in my life,” said Tim, a resident of Colonial Beach, Virginia, where the storm ripped through late Tuesday. “There is an apartment building that’s literally gone. There are entire streets that are gone.”

Seventeen deaths have already been confirmed in the DC areas with dozens reported missing. Local area hospitals and emergency services have been swamped. Authorities are asking everyone in evacuation areas to please follow local emergency action plans and leave their homes when instructed. Authorities are asking everyone else to stay in their homes.



(Getty Images)



(Reuters)

Experts at the Federal Emergency Management Agency (FEMA) have warned that extreme weather events, particularly those that cost more than a billion dollars in damages, have increased over the past decade. In addition, they are impacting larger numbers of communities, striking those that do not historically have experience with these events. Experts also warn of the economic, human, and potentially security costs if these events continue to increase in frequency and intensity.

Global Climate Protests Reach Fever Pitch ahead of COP 30

Guardian, October 1st– Protests in London, New York, and Cape Town have led to outbreaks of street violence as climate protesters clash with police and security forces. The protests are part of globally coordinated demonstrations to demand an end to climate imperialism and rampant fossil fuel use.

The demonstrations in the lead up to COP 30 in Brazil have been charged but largely peaceful, however, as they have grown in size across several major cities police forces have engaged in harsh tactics to keep protesters in line. While the vast majority of climate protesters have remained peaceful and restrained, a small minority have responded to police crackdowns with physical confrontations.

Governments across protest locations have reported that they are closely monitoring the situation and are operating a zero-tolerance policy for any property destruction or physical violence on the part of protesters, with a rising number of arrests being reported.

Downed Research Aircraft Mistakenly Identified as part of Advanced out Solar Radiation Modification Program

(New York times, October 1st)- Aircraft recently recovered in the Bering Sea by Russia was mistakenly identified as a modified plane conducting previously undisclosed advanced solar radiation modification outdoor research. The New York Times can now confirm that while the aircraft does belong to the US, it is part of a basic Research and Development program to study the dispersal patterns of naturally occurring particles in the upper atmosphere to better anticipate the meteorological effects of volcanic eruptions.

The plane was blown off course and out of US airspace by a fast moving storm system which resulted in the crash near Wrangel Island, a sometimes disputed territory that has been increasingly militarized by Russia in the past decade. Due to the sensitivity of the location and ongoing tensions between Russia and other Arctic states, any research in the area is viewed as highly suspect by Russia. They were quick to accuse the US advanced outdoor experimentation in solar radiation modification, scientific efforts to increase the reflectivity of the earth as a response to climate change, but all evidence indicates that this was a benign program pursuing basic research to better understand atmospheric dynamics.

Simulation 2:

Crisis 1: The sinking of the Green Peace boat

START, NEWS RELEASE:

In the early hours of the morning on Thursday 16 September, a distress signal from the Green Peace boat Arctic Sunrise was received from 250 nautical miles north of Svalbard near the north pole. They have asked for immediate assistance.

The Arctic Sunrise is an ice-fortified research vessel that has been in the Green Peace fleet since 1995 when it took its first trip to the North Sea to document marine pollution by oil from offshore installations. Since then, it has been involved in Green Peace operations around the world. This summer in particular, the Arctic Sunrise has been active across the Arctic Ocean protesting and sometimes obstructing deep-sea oil and mineral exploration. It has also been involved in anti-solar geoengineering protest actions against scientific research vessels in the Arctic. In early-August, several protesters on sea kayaks deployed from the Arctic Sunrise were arrested by US authorities in the Chukchi Sea during a protest of exploratory drilling. In another incident in mid-August, protesters confronted workers on a rig near the New Siberian Islands.

The crew onboard the Arctic Sunrise are believed to be Canadian and American nationals.

NEWS: Footage from the camera feed on the Arctic Sunrise's mast has been released on social media. It shows an explosion around 5:45AM. Green Peace supporters have posted on Bluesky that they believe this was not an accident but that the Arctic Sunrise has been attacked. They claim the video shows a shadowy projectile entering the ship's starboard hull right before the explosion. Green Peace is calling for the international community to speed up its rescue efforts; they are also calling for the culprits to be brought to justice.

NEWS UPDATE: On Bluesky, rumors spread of bodies floating in the Arctic Ocean while Green Peace accuses the international community of doing nothing while innocent people die. Friends and relatives of the victims appeal to the international community to act now to search for survivors.



(made by research team)

Crisis 2: Indigenous Confrontation

PHASE ONE:

Indigenous Protests Halt Activities at the Esrange Space Center

STOCKHOLM (September 15) - The Esrange Space Center has temporarily halted many of its major activities due to growing Indigenous encampments at its gates. The encampments, which impede access to the Center's three launch sites, were organized by Indigenous communities across the Arctic including representatives from the Sámi, Inuit, Nenets, and Athabaskan. The protesters are united behind the slogan 'Nothing About Us Without Us' as they demand more participation in Arctic affairs, particularly in decision-making on research into solar radiation management (SRM) in the Arctic.

The encampments were set in motion by news last week that University of Chicago researchers formerly affiliated with Stratospheric Controlled Perturbation Experiment (SCoPEX) have reprised their efforts to launch high-altitude balloons from the Esrange Space Center located outside of Kiruna, Sweden, to test SRM technology. SCoPEX was first proposed in 2014 and cancelled in 2024 due to Sámi resistance and international backlash.

A launch from Esrange over Sámi territory last month successfully carried equipment into the stratosphere that have the potential to conduct small-scale experiments on the dispersal of reflective particles into the Earth's stratosphere. The researchers did not disclose the launch to the Sámi community. Leaked information last week from a SCoPEX whistleblower suggests that another launch is planned for the coming days, this time carrying particles to be released.

In response to the whistleblower's information, Indigenous organizations from across the Arctic have been called to participate in encampments outside Esrange to protest the University of Chicago researchers' disregard for Indigenous rights and sovereignty. A spokesperson for the encampment has stated that the movement is inspired by the 2016 Standing Rock protests against the Dakota Access Pipeline in the United States. They reject scientific experimentation without Indigenous participation as a continuation of settler colonialism.



(SSC)

PHASE 2:

Chronic Illness Among Greenlanders Near Former US Base Linked to Radioactive Waste

NUUK, GREENLAND (September 15) – There is growing concern that a cluster of chronic illness in Greenland has been caused by radiation exposure connected to melting permafrost on the island. A number of Greenlanders from Qaanaaq that hunt near the former US Camp Century site have shown signs of Chronic Radiation Syndrome (CRS), including eye cataracts and muscle and skin atrophy.



(National Geographic)

The abandoned Camp Century site includes approximately 47,000 gallons of nuclear waste, although even with accelerated warming in Greenland exposure of waste materials was not anticipated for several more decades. It is unclear whether any cases of CRS are connected to Camp Century or other sources of contamination from the 1968 Thule Air Base B-52 crash which scattered radioactive material in the area. While there was a clean-up effort after this accident a portion of one of the four bombs was not recovered at the time.

Previous scientific assessments have warned that as permafrost thaws throughout the Arctic region, nuclear waste and materials from abandoned reactors and tests may increase risk of radiation exposure for local populations. In addition, Arctic Indigenous populations throughout the region have been documented experiencing higher levels of radiation exposure, particularly the male reindeer herders in the Saami community in Northern Finland. This is due to what is known as the “lichen-reindeer-human ecosystem pathway.” Arctic lichen absorb radioactive particles from the air which is consumed by reindeer and accumulates in their tissues before being passed on to the herding community.

Scientists have also detected increased levels of radioactivity near former nuclear testing sites, particularly on Novaya Zemlya. As Russia makes moves to resume outdoor testing on Novaya Zemlya there is growing fear that radiation exposure throughout the region will accelerate.

The Esrange encampment has added a call for an independent international investigation into chronic radiation syndrome among Arctic Indigenous communities to its list of demands. The encampment released a statement asserting: “We demand justice for our brothers and sisters, for our polluted lands, and for generations unborn who suffer and will suffer for the criminal negligence of these supposed ‘Great Powers’”.

PHASE 3 -

Dozens Arrested as Protesters Clash with Esrange Security



(Natur og Ungdom)

KIRUNA, SWEDEN (September 16) – Posts trending on social media indicate that protesters outside Esrange Space Center near Kiruna, Sweden, have clashed with security earlier this morning. Videos and photos show security using force against unarmed and nonviolent protesters. Five protesters have been severely injured and taken to Kiruna Hospital while dozens have been detained. A statement from the Space Center asserts that authorities acted legitimately to defend the Center from the unauthorized encampments and protect vital scientific research ‘for the ‘benefit of all humanity’.

A spokesperson for the encampment responded that they are not ‘against science’ but merely asking to have Indigenous voices and rights respected in decision making processes that have the potential to impact their lands and livelihoods. “We are tired of being treated as if we live in the stone ages - we understand the dangers of the climate crisis and should be trusted to act responsibly. At the same time, we shall not be silenced by those who think they know better.”

Outrage spreads as supporters of the encampment take to the streets elsewhere in Arctic states in solidarity against climate colonialism. From Anchorage to Yellowknife and Nuuk to Tromsø, thousands have gathered demanding that Indigenous voices be respected in the Arctic. Larger protests for climate justice are being planned in capitals including Ottawa, Washington DC, Reykjavík and Stockholm. Authorities expect further clashes with protesters. .

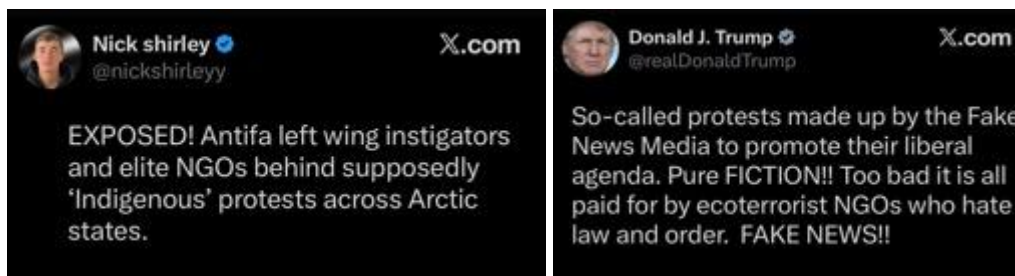
While the encampment at Esrange has been temporarily vacated, protesters promised to return.



(Chinese Academy of Sciences)

In the meantime, a splinter protest has started to form outside of the China Remote Sensing Satellite North Polar Ground Station (CNP GS) located at Esrange. It started operations in 2016 as China's first land satellite receiving station constructed overseas. Protesters are claiming a violation of Indigenous rights and sovereignty, particularly as the ground station has not been transparent about the scope of its operational activities.

Some on social media have suggested that protests are sponsored by Western NGOs:



(made by research team)

Crisis 3: Melting Tundra releases mysterious disease

Opening NEWS RELEASE:

New Threats as the Tundra Thaws in the Russian Far North

NORILSK, RUSSIA (September 15) - Summer 2027 has seen the highest temperatures since records began in the Russian Arctic, leading to unprecedented thawing of the Russian tundra. While higher temperatures have spurred Russian authorities to capitalize on the promise of the Northern Sea Route, the thawing permafrost holds other dangers. It

has caused subsidence, cracks in residential and commercial properties, and fissures in the landscape that are releasing greenhouse gases such as carbon dioxide and methane. Permafrost thaw has also deformed and destabilized the region's critical infrastructure including major roads, railway tracks, airport runways, phone lines, and pipelines.



(Reuters)



(Divya Marathi)

"Up to 60% of buildings in northern Russia are affected by permafrost thawing," warned Mikhail Kuznetsov, head of the federal agency for development of the Russian Far East. "Continued thawing could cost the Russian economy billions in damages."

Melting permafrost has led to other dangers. In the past few years, giant sinkholes have also appeared across Siberia. These sinkholes, up to 66ft (20m) wide and 171ft (52m) deep, are described by scientists as entirely new features in the landscape. In 2020, thawed permafrost destabilized a tank facility in northern Siberia outside of Norilsk and caused more than 20,000 metric tons of diesel fuel to spill into the surrounding areas and the Ambarnaya River. Across the Arctic region, more than 2,000 industrial sites such as mines, processing plants, and pipelines could be compromised if thawing continues.

Furthermore, thawing permafrost has the potential to release pathogens that have been locked away for centuries or even millennia. In August 2026, 32 people and at least 3,000 reindeer were infected with anthrax released by melting permafrost in the Yamalo-Nenets region of Siberia as temperature soared into the mid-30s Celsius. There is increased speculation that continued thaw could release unknown diseases alongside known dangers such as anthrax. International experts have questioned whether local and international health infrastructure is ready to respond to these possibilities.

Mysterious Disease Reported Among Chinese Migrant Workers Returning from Russia

HARBIN, CHINA (September 15) - Chinese migrant workers traveling home from Russia's Arctic ports ahead of the mid-autumn festival (which falls on Sept 15 this year) are reportedly arriving at hospitals in and near Harbin, the capital of Heilongjiang

Province which borders Russia, with a mysterious new disease. Symptoms include high fever, a dry cough, and coin-sized welts on the torso. Speculation on Weibo and other social media sites suggests the strange disease has been brought by workers returning home from near Pevek and Chersky in the Russian Arctic.

Pevek is an Arctic port town in Chukotka Autonomous Okrug, the easternmost Russian federal subject. Pevek has closed uranium mines in the area. Further, the port is located in Chaunskaya Bay on the Eastern Siberian Sea, and *Akademik Lomonosov*, the first Russian floating nuclear power station, is anchored in the harbour. Communities around Pevek have reportedly suffered from contaminated soil and groundwater due to the abandoned mines; some sources have also claimed signs of acute radiation sickness in local populations. Chersky is in the Sakha Republic and is the location of the Northeast Science Station, one of the world's top three largest Arctic stations collecting data on Arctic biology and atmospheric physics.



(Rosatom)



(EJ Atlas)

Chinese and Russian authorities have released no official information and refuse to confirm or deny the existence of this mysterious disease. However, in past years, Russia has publicly accused the United States of manufacturing bioweapons and developing plans to use migratory birds and bats to deploy pathogens against the Russian population.

Mysterious New Disease, Originating from the Russian Arctic, Causes First Death

BEIJING, CHINA (September 16) - A man has been pronounced dead at Tsinghua Changgung Hospital in Beijing which specializes in infectious diseases. The 35-year-old man was first admitted to Harbin Shengfeng Hospital three days ago after returning from Pevek in the Russian Arctic with a high fever and trouble breathing. He was airlifted to Tsinghua Changgung when his condition worsened.

A hospital spokesperson has confirmed that the disease is a previously undocumented virus believed to have similarities to the H5N1 Bird Flu. Some patients given the antiviral treatment Tamiflu have shown improvement, while for others, the treatment has mysteriously exacerbated symptoms and the patients worsened. It is believed that the new virus spreads via airborne transmission and is highly virulent. More analysis is needed before scientists know more about the pathology of this new disease.

The new virus is spreading panic among communities in Harbin and across China; videos on how to stockpile food, hoard medicines and medical equipment, and protect yourself from the latest pandemic are trending on Weibo. Panic is also spreading internationally as social media posts are trending in Japan, South Korea, Australia and South Asia with the hashtag #NotAgain and #CovidRedux. Some influencers are demanding action from the international community. "Are you really going to just sit around and watch it happen again?"

Crisis FOUR - Sabotage or Accident?

RELEASE:

In the early hours of September 16th, an explosion was reported at the Dr. Neil Trivett Global Atmosphere Watch Observatory located outside of Alert, Canada. The cause of the explosion is unclear at this time.



(NOAA)

The observatory is an atmospheric baseline station and is one of the three greenhouse gas intercomparison supersites. It also maintains continuous measurement programs that monitor aerosols, ozone, mercury, and albedo and is known for experimental testing of monitoring equipment and intensive short-term research such as NETCARE (Network on Climate and Aerosols: Addressing Key Uncertainties in Remote Canadian Environments).

Work at the observatory is highly collaborative, with long-standing partnerships with institutions in the US, Australia, Germany and throughout Canada. It is also part of the World Meteorological Organization's Global Atmosphere Watch program.

The observatory is located 6 km from the Canadian Forces Station Alert, a signal intelligence intercept facility.

Audio segment (as opening clip of a podcast):

Before we dive into the episode with our guest today, I thought it would be good to touch on the developing situation at the Dr. Neil Trivett Global Atmosphere Watch Observatory in Alert. We are led to wonder, if reports are correct, why anyone would be interested in sabotaging it?

Why is the observatory significant? Here's the hard stuff: The observatory is part of a longstanding network dedicated to studying the effects of pollution on the atmosphere. It is the northernmost station in the 31-station network and it is one of only 3 stations that plays a key role in providing a baseline record of atmospheric chemistry. The observatory has partnerships with other laboratories all around the world and provides important information the presence and effects of a range of pollutants, including levels of mercury in the environment and its role in ozone depletion. It also monitors ozone levels, aerosols and permafrost temperatures. Because it is the site of so much important data collection it also has a record of hosting a range of short-term research projects and experiments to test new monitoring equipment.

What would cause anyone to sabotage the laboratory? We still don't have clear information at this time, but the world has seen increasing political attacks on climate research. Reports from online activists have posited that an explosion at the observatory may be an escalation of efforts to derail climate science. In a different vein, there have been some possibly dubious reports on social media that the observatory was targeted by fringe actors that believed the observatory was engaged in undisclosed experiments with solar geoengineering equipment. On the other end of the spectrum, a number of online Reddit communities have suggested the true target of the attack was the nearby Canadian Forces Station Alert. Regardless of the truth of the matter, the flood of rumours since the explosion demonstrate the challenges we all face knowing what to believe in today's fast-paced, complicated world.

Crisis 6 Svalbard/Greenland military facilities

Crisis Strand 1: Fishing Rights

Norway Confront Russia over Fishing Rights as Tensions Flare over Svalbard

OSLO, NORWAY (September 17) - At a press conference yesterday, a spokesperson for the Norwegian Ministry of Justice and Public Security accused Russian fishing vessels of violating international law by overfishing its quota in the vicinity of Svalbard. In a 42-page report released at the same time, the Ministry outlines ten years of data showing Russian fishing companies violating agreed cod, capelin, and haddock quotas in the Svalbard area. Norwegian insistence that they must stop overfishing have repeatedly been ignored. The report also suggests that Russian authorities have condoned if not encouraged these violations.



(Kystvakten / Sjøforsvaret)

In the strongly-worded statement, the ministry spokesperson asserted that the Norwegian navy and coast guard will patrol Svalbard's EEZ. They will board and investigate all vessels suspected of violating fishing quotas.

Under the 1920 Svalbard Treaty, signatories (including Russia, Canada, Denmark, France, the United Kingdom, and the United States) all recognize Norway's exclusive sovereignty over Svalbard. Given this recognition, and in conjunction with the United Nations Convention on the Law of the Sea (UNCLOS) which recognizes 200 nautical miles (370.4 kilometres) of Exclusive Economic Zone (EEZ) from territorial waters, Norway claims the right to regulate fishing in the EEZ surrounding Svalbard.

However, other states including Russia dispute Norway's claim. Under Article 2, the Svalbard Treaty states that "Ships and nationals of all the High Contracting Parties shall enjoy equally the rights of fishing and hunting in the territories specified in Article 1 and in their territorial waters". Russia claims that this article, in conjunction with Article 3 which gives all parties equal access, also applies to the EEZ surrounding Svalbard. Therefore Russia is within its rights to fish as it pleases in the waters around Svalbard.

In response, Norway points out that Article 2 of the Svalbard Treaty refers to 'territories' and 'territorial waters', but not the EEZ, which falls under UNCLOS. Furthermore, Norway asserts that Russian intransigence over fishing in Svalbard could be interpreted as an act of hostility and reiterated that Svalbard falls under NATO's Article 5 protection.

Norway Clashes with Suspected Russian Fishing Vessel North of Svalbard

OSLO, NORWAY (September 17) - In the evening hours of Thursday September 16, the Norwegian coast guard patrol vessel *NoCGV Svalbard* spotted what it believed to be a fishing trawler belonging to Russian company Norebo JSC roughly 100 nautical miles off Svalbard's northern coast. When the Norwegian coastguard aboard *NoGGV Svalbard* radioed the trawler to ask for identification and permission to approach, there was no response. When *NoCGV Svalbard* approached the trawler, several shots rang out. One member of the Norwegian Coast Guard was injured. The trawler then fled the scene, speeding east.

In a press statement, a Norwegian government spokesperson condemned the fishing trawler and characterized its exchange with the Norwegian coast guard as an act of hostility. The spokesperson maintained that Norway has reliable intelligence that the trawler was acting with the support of the Russian government and asked NATO allies to come to Norway's defense.

ESCALATION Crisis Two - Russians storm SvalSat:

Pro-Putin Russian Group Attacks Svalbard's Satellite Ground Station

LONGYEARBYEN (September 17) - Tensions erupted into violence yesterday in Barentsburg, the Russian enclave on Svalbard, as pro-Putin patriotic demonstrations met with anti-Putin protesters from Longyearbyen who were accusing Russia of violating its ceasefire with Ukraine. As a result, violence broke out between the two groups and five Russian nationals have been hospitalized with two in critical condition.

Overnight, fueled by mounting anger towards what they see as an attack on Russia and a violation of the Svalbard Treaty, a group of 150 Russians on offroad vehicles headed overland towards the SvalSat ground station outside of Longyearbyen, roughly 60 kilometers away.

When dawn broke, the ground station was surrounded by the pro-Russian group carrying rifles and shotguns. Overnight, the group damaged several of the antennas on the outskirts of the facility and threatened to destroy the rest as a violation of the Svalbard Treaty. The group has also captured a dozen of the technicians and scientists working at the facility as hostages. They demand a full closure of the facility in return for their release,

Russia has made a statement denying any knowledge of the attack and stating that these are rogue elements not under Russian control.



(Arktikugul)



(KSAT)

Next: Radio Segment

Today, a little known station in the far reaches of the frozen north has captured international attention.

But what is SvalSat? The Svalbard Satellite Station, or SvalSat, is a satellite ground station located in Spitsbergen, the largest island of the Svalbard archipelago. SvalSat is

situated on a mountain plateau 400 to 500 meters above sea level, and about 10 kilometers outside Svalbard's administrative center Longyearbyen. The facility is the largest commercial ground station in the world with more than 150 antenna systems.

Why is SvalSat so important? Svalbard's high latitude location in the Arctic means that the station can see every polar-orbiting satellite above 500 kilometers on every revolution as the earth rotates. In fact, it is the only commercial ground station that is able to downlink data from and provide support to satellites on all orbits. Due to this, SvalSat is essential to global satellite infrastructure and to the downloading of data to support NASA, the European Space Agency, and the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT). In addition, SvalSat is responsible for downloading data from the Tropospheric Monitoring Instrument (TROPOMI) which monitors atmospheric composition and will be key to monitoring the effects of research and deployment of solar radiation modification.

Why is SvalSat controversial? In November 2021, Russia explicitly stated that it considered satellite infrastructure on Svalbard, including SvalSat, a violation of the Svalbard Treaty. Article 9 of the Treaty prohibits the use of Svalbard "for warlike purposes", and it is not always easy to distinguish between the use of satellite data for scientific and military purposes. For example, during the 2003 Iraq War, the station contributed to American military operations by providing data on sandstorm forecast which some observers interpreted as a violation of the Treaty. Earlier this year, Russia again questioned SvalSat's legitimacy, demanding that the ground station be decommissioned.

Crisis 6: Oil Spill from Russian Shadow Fleet

START, NEWS RELEASE:

Tanker Collides with Iceberg in the Barents Sea, Threatening Environmental Disaster

LONDON, UK (September 17) - A single-hull tanker identified as part of Russia's 'shadow fleet' has caused a large oil spill in the Barents Sea after hitting an iceberg near Franz Josef Land early in the morning of September 17th. The spill has caused oil incursion into the fishery protection zone (FPZ) around Svalbard, and may spread into Norwegian territorial waters around the continental shelf off Svalbard.



(EPA)

The 'shadow fleet' includes an estimated 450 ships, mainly oil tankers, that are often falsely flagged. Some are un-insured and many are poorly maintained, which pose enhanced risks for collisions and oil spills. In addition, a recent data analysis of the Automatic Identification System mandated by the International Maritime Organization's maritime treaty International Convention for the Safety of Life at Sea or SOLAS has shown that Russia has been manipulating their positional data by jamming location signals and turning off their tracking systems twice as often since the start of the war in Ukraine in 2022.

The Russian Federation ratified SOLAS in 1979, but since its invasion of Ukraine it has increasingly relied on its shadow fleet, even after sanctions on its oil exports were lifted following the Ukraine ceasefire. In addition to funding its previous war efforts, the shadow fleet has also engaged in sabotage of undersea cables in the region, compromising critical communication infrastructure. Russia has continued to operate the poorly maintained fleet in part due to the economic burden it continues to face after the high costs conflict in Ukraine.

The BBC approached Russia's embassy in London for comment. "Labelling ships used to export Russian oil as 'shadow fleet' is discriminatory and misleading," the embassy said, and instances of invalid flags were typically down to "easily resolved" issues such as administrative delays, as are any apparent identification and tracking lapses.

A spokesperson for the European Union's Foreign Affairs Council commented that The EU 'views the shadow fleet as a launchpad for hybrid attacks on its member states and close allies.' The US has reported that they are investigating electronic interference from the shadow fleet near Pituffik US Space Base and have raised concerns that Denmark continues to demonstrate that it is unable to defend Greenland and may require assistance restoring order.

NEWS:

Major Oil Spill in the Barents Sea; Questions Raised About China and India's Acceptance of Shipments

Footage captured from a Norwegian vessel navigating the area has been released on social media. It appears to show a major hull breach of the shadow fleet tanker and substantial oil spill spreading from the wreckage of the tanker after its collision with an iceberg. An official from the Norwegian Ministry of Climate and Environment has released a statement that they believe this may become the largest oil spill recorded in the Barents Sea, with far-reaching environmental consequences for the area. Environmental activists have posted on Bluesky demanding swift action to start a clean-up operation while Russian critics have noted that it was only a matter of time that such a disaster occurred, given the state of many of the shadow fleet tankers. There are demands across social media that something be done to stop the activities of the shadow fleet, with some posters suggesting a link between the oil spill and other deliberate acts of sabotage carried out by the shadow fleet and others calling out India and China for accepting shipments from the fleet given the environmental risks that they pose.

Crisis 7: Boreal Fires in Alaska and Canada

NEWS RELEASE:

Destructive Wildfires Rage in the US and Canadian Arctic

ANCHORAGE (September 17) – A late season wildfire has broken out along the Alaska-Canada border. The fire is thought to have been caused by lightning strikes in the area, following a particularly hot, dry summer. There is also some speculation that smoldering remains from a previously contained fire on the Alaska side of the border were re-ignited by the new blaze, causing it to spread with greater speed and intensity than expected for the time of year.

Although the fire started on the Alaska side of the border near Chicken, shifting winds have led the fire to rip through forests on the Canadian side of the border, devastating Tr'ondëk Hwëch'in First Nation land, and with the fire now threatening Dawson City in Canada.



(University of Guelph)

The Yukon University Climate Research Centre out of Whitehorse has noted that intensifying consequences of climate change that contribute to wildfire conditions place both Boreal forests and their Indigenous stewards at risk. Boreal forests store about 54% of the world's total terrestrial carbon stock. Fires in these forests release substantially more carbon than grassland fires and the increasing frequency and intensity of fires in the region is causing a failure in post-fire recovery, increased emissions, and incomplete re-sequestration of carbon in the subsequent growing seasons.

Simulation 3:

Record Shattering Temperatures Around the World As Experts Hope for Autumn Relief

21 September 2028 (REUTERS) - As autumn finally arrives tomorrow, the world seeks relief from record shattering temperatures across the northern hemisphere this summer, from Los Angeles that saw August average highs of 36 degrees Celsius (97 degrees Fahrenheit), to the Mediterranean coast of Europe that saw average temperatures soar into the mid-40s Celsius (110+ degrees Fahrenheit), to Siberia where average August temperatures rose to 30 degrees Celsius (86 Fahrenheit).

With these sweltering temperatures came water shortages and drought-like conditions that devastated agriculture across North America, Europe, and Asia. The dry, hot conditions also contributed to destructive wildfires that destroyed homes and communities across these regions, causing \$1.2 billion in insured damages in Canada

alone. Record high temperatures in Siberia have also led to increased permafrost thaw, contributing to dangerous fissures, subsidence, and sinkholes that threaten major roads, railway tracks, airport runways, phone lines, and pipelines.

These temperatures last month follows from a hot spring that saw average highs in Mumbai rise to 40 degrees Celsius (104 degrees Fahrenheit) in May. These temperatures disproportionately impact the poor and socially vulnerable who are unable to find adequate shelter and relief. The UK saw 1,523 heat-associated deaths this past summer. Experts estimate that heat-related deaths in India reached more than 160,000 this past year. While China provides limited official figures, experts estimate roughly 55,000 heatwave-related deaths across China last year.



(Getty Images)

Investigations into reports of radiation exposure in Indigenous population in Greenland complicated by ongoing international tensions

NUUK, GREENLAND (September 21) – Persistent tensions between the United States and Denmark over the status of Greenland are placing strain on attempts to investigate the source of a cluster of chronic illnesses in Greenland first identified in 2027. Previous reports that a number of Greenlanders from Qaanaaq that hunt near the former US Camp Century site have shown signs of Chronic Radiation Syndrome (CRS), including eye cataracts and muscle and skin atrophy have caused significant concern that the illnesses are linked to radiation exposure connected to melting permafrost on the island.



(EPA)

The government of Denmark, at the request of Greenland, began the Camp Century Climate Monitoring Programme in 2017. The abandoned Camp Century site includes approximately 47,000 gallons of nuclear waste, in addition to unknown quantities of highly toxic polychlorinated biphenyls (PCBs). The monitoring programme began out of concern that as the Greenland ice sheet melts, radioactive and other toxic materials will be exposed, causing serious health hazards for the Greenland population and beyond.

Although even with accelerated warming in Greenland exposure of waste materials was not anticipated for several more decades, there are concerns that, due to the accelerated pace of warming, the waste material is mixing with melt water and spreading through the ice or surrounding waters. However, frosty relations between the US and Denmark have disrupted the monitoring programme and impeded efforts to investigate the illness outbreaks. It remains unclear whether any cases of CRS are connected to Camp Century or other sources of contamination from the 1968 Thule Air Base B-52 crash which scattered radioactive material in the area due to the disruption caused by the de-facto partition of Greenland since 2027.

Technological sovereignty debates at the centre of increasing tensions and confrontations between the EU-UK and beyond.

(Financial Times- September 21)

The UK-EU dynamic alignment agreement to automatically or continuously adapt UK law to match changes in EU law has hit a roadblock due to disagreement over AI regulation and broader concerns about technological sovereignty.

Technological sovereignty to safeguard critical technologies and infrastructure and maintain strategic independence has become a defining ambition of the EU's political agenda over the past several years. This focus has been spurred by concerns that the

dominance of US based tech companies presents a growing risk to EU interests, in addition to ongoing risks posed by Russia and China to EU technological security.

The UK has taken a more conciliatory position towards US- based tech companies, maintaining state service contracts for AI and other communications and satellite platforms such as Microsoft, Palantir, Google and SpaceX. While there has been growing public alarm over the safety of NHS data, highly sensitive UK financial regulation data and other key components of UK technological infrastructure, it has not moved the needle with respect to the government's position. This is in stark contrast to the EU, particularly key member states such as Germany and France, that have been shifting public technological infrastructure out of US-based tech ecosystems for the past several years.



(AFP)

These moves to disengage from the dominant US-based tech giants were intensified in response to a series of alarming statements and actions from tech CEOs at US-incorporated companies such as SpaceX and Palantir who have called for a defacto merger of powerful Silicon Valley corporations with the US state to secure and extend its hard-power capabilities in the world via technological supremacy. Deteriorating relations between the US and its European allies have contributed to a hostile reception of such posturing, and the UK may now be caught in the cross-hairs as it attempts to pursue robust realignment with the EU to close the financial and security gaps created by Brexit and avoid further alienating the US as its longstanding security partner.

The impasse comes at a particularly difficult time for all parties as the world continues to deal with the fallout from energy shocks and supply-chain issues caused by the US-Israeli conflict with Iran in the Gulf and the erosion of secure freedom of navigation. Apart from the immediate dispute over positioning on questions of technological sovereignty, governmental support for large-scale tech companies has become a source of public backlash and hostility globally. The perception that the energy demands of datacenters and other major tech initiatives are compounding the global energy crisis, even with the continued take-off of renewables energies outside of the US, has led to sustained protests worldwide.

The stakes of these complex, interconnected issues extend well beyond the attempts at an EU/UK re-set. Navigating the role of technology companies in state affairs is emerging as a key dilemma of the 21st century, even as states are forced to re-visit long settled dilemmas over global physical navigation.

Audio news update:

A large aerosol plume has been reported over the Persian Gulf by satellites monitoring Iran for nuclear tests. Preliminary information is hazy but suggests the plume is larger than what could be produced by a small-scale experiment, but does not indicate a nuclear explosion. The detection of the plume comes after increased speculation that US-incorporated tech company Stardust Solutions is moving forward with plans for large-scale outdoor testing of Stratospheric Aerosol Injection with its proprietary particle and other equipment patented in 2026.

However, some experts recommend caution in jumping to conclusions that this represents an unauthorized large-scale injection test of aerosols into the stratosphere. There is a possibility that this is evidence of weapons testing from one of the states on the shores of the Persian Gulf; there are also active volcanoes in the region and beyond able to spread quantities of aerosols and ash.

Possible Volcanic Eruption Reroutes Flights in the North Pacific

22 September (REUTERS) - Late this morning, volcanologists from the Volcanic Ash Advisory Center in Anchorage, Alaska, have detected a sudden increase of sulfur dioxide in the vicinity of the Bering Sea. Early reports suggest sulfur plumes six to seven kilometers high on both the Russia side near the Kamchatka Peninsula and the American side west of Anchorage, but it has been difficult to confirm the exact nature of the plumes. However, the International Civil Aviation Organisation has issued a warning for aviation to reroute flight paths to avoid the region.

There are two hotspots in the Bering Sea region that experts believe have active volcanoes that could erupt at any moment. The first is Russia's Kamchatka Peninsula. In August 2025, with little warning, the Krasheninnikov Volcano erupted for the first time in more than 500 years, and two other volcanos - Klyuchevskaya Sopka and Shiveluch - have also been seismically active. In addition, Mount Spurr in Alaska's Tordrillo

Mountains (130 kilometers west of Anchorage, Alaska) has also experienced increases in seismic activity in recent months.

Scientists at the Alaska Volcano Observatory are awaiting data that will give more definitive information about the suspected eruption but their ability to access data from the Tropospheric Monitoring Instrument (TROPOMI) has been slowed due to damage to SvalSat last September.

When asked if the detected plumes are definitively a result of volcanic eruptions, volcanologist Janine Krippner at the Volcanic Ash Advisory Center replied, “what we can see is consistent with a volcanic eruption; however, due to our reduced capacity for accurate monitoring, we cannot rule out other causes - including manmade causes - for the sulfur plumes.”



(AVO/USGS)

Breaking News: Oil Spills into the Persian Gulf Near the Strait of Hormuz

21 September (AP) - This afternoon, crude oil is pouring into the Persian Gulf shutting down the Strait of Hormuz and threatening marine ecosystems.

The cause of the spill remains unclear but long fingers of black oil is reportedly entering the Gulf from the waters around Abu Musa. The Mubarak oil field is located approximately 35 kilometers east of the island and has been owned and operated by Crescent Petroleum since its discovery. While production is far less today than at its peak

in the 1970s, the oil field still produces an estimated 30,000 barrels a day and is located in shallow water (200 feet in depth).

Environmental activists warn that oil spilling from the Mubarak site, even at a small fraction of its daily production, will have catastrophic impacts on the ecology of the Persian Gulf. Images are already appearing on social media of turtles and seabirds covered in black slime. The spill will also threaten other marine life including dolphins and the Gulf's over 700 fish species. Experts also fear that the oil spill will have detrimental effects on desalination plants on which 100 million people in the region depend for freshwater.

At the moment, there is scant information about the developing situation or further information as to whether the spill was caused by an accident or deliberate sabotage. Abu Musa is the site of a longstanding dispute between the UAE and Iran. It was seized by the Iranian navy in 1971, and the UAE continues to condemn Iranian 'invasion' of the island as a violation of the UN charter and has unsuccessfully taken its claims to the UN Security Council.

Iran has been slow to respond to the emerging crisis, leaving local authorities asking for international assistance in containing the spill and addressing environmental damage.



(Kuwait Environmental Public Authority)

Ongoing shortages caused by shipping disruptions lead to global unrest, severe economic dislocation

(AP-September 21)

Another weak harvest season is intensifying global unrest and fears continuing widespread starvation in the developing world. Persistent shortages in fertilizer starting with intermittent closure and reduced traffic in the Strait of Hormuz have been compounded by unpredictable Houthi attacks on shipping in Bab al-Mandeb, a key alternative route for exports of oil from Saudi Arabia.

As the US continues to struggle to normalize the flow of shipping traffic in the Gulf Region, with Iran frequently imposing tolls and threatening additional closures, the supply chains for fertilizer, helium, sulfur, methanol, aluminum and other key petroleum byproducts inputs in a range of industrial products and processes have significantly deteriorated. While energy shocks have been somewhat tempered by a rapid turn to renewables from China and elsewhere, this transition is coming under increasing pressure as key inputs for battery technology are affected by Gulf region chokepoints. China's continued restrictions on the export of sulphuric acid, the 'King of Chemicals' integral to a vast range of processes including food and electronic production, has acted as a crisis multiplier for the shortages caused by the ongoing disputes between the US and Iran.



(EPA)

China's intensifying military, diplomatic and economic pressure on Taiwan as its interest grows in absorbing the island has had knock on effects in the Taiwan Straits that continue to raise alarms about cascading catastrophic consequences for the global economy. Taiwan, the centre of gravity for global semiconductor production, has ramped up outreach to potential cooperative partners beyond an unreliable, unstable US to try to diplomatically pressure China as an actor that still cares about its global reputation and who stands to benefit enormously from the renewables revolution if global shipping can be stabilized.

A spokesman for NEAR, a movement of local and national civil society organizations in the global south, stated: “The world feels like it’s in tatters. We have been beholden to these supposed ‘responsible’ powers for so long and now we are suffering collapse from their wars and their stupidity.’

Unpredictable Monsoon Season Leaves Indian Ocean Region in Fear

22 September (MUMBAI) - For centuries, the South Asia region - which includes India, Bhutan, Pakistan, Bangladesh, Nepal, and Sri Lanka – has relied on the regularity of monsoon rains each year to maintain the rhythm of life. Recently, fears that accelerating climate change would make the yearly monsoons increasingly erratic, causing sudden flooding and prolonged dry periods leading to agricultural collapse and economic devastation.

This year, the monsoons seasons (June to September) was particularly bad



(Alamay stock photo)



(Reuters)

Floods And Landslides Once Again Cause Tragic Deaths in Mexico

AP-As of midnight CTS on 22 September, 92 deaths have been reported as destructive landslides hit the central Mexican states of Hidalgo and Veracruz. Dozens of villages along the Tolantongo and San Juan Rivers are buried in rubble and mud. The landslides destroyed infrastructure, and debris is blocking major highways, slowing rescue efforts. Preliminary reports suggest that the landslides have also flipped a bus with tourists from the US, UK, and Canada; the status of the bus’s passengers has not been confirmed. The death toll is expected to rise in the coming hours as heavy rains continue to fall in the region and rescuers work through the night to reach victims buried in the mud.

Today's tragedy echoes a similar incident that occurred three years ago in 2025 and led to more than 100 deaths. "Nothing has changed," laments a close relative of one of the victims who also lost a loved one three years ago, "While our leaders dither about climate change, we are living its realities and dying from it."

In the past three years since the 2025 landslides, Mexico has experienced increasingly intense rainy seasons with sudden downpours causing dangerous flash floods. Landslide disasters have caused more than 3,500 deaths in Mexico in the last century, but as climate events have intensified in the past decade, these weather-related disasters have increased in frequency and destructiveness. According to CENAPRED data, weather-related landslides have doubled in the last decade.



(AFP)



(Policia Valle de Aburra)

Global protests in solidarity with Arctic Indigenous population after reports of radiation poisoning in Greenland

(AFP- September 22)

Global protests have broken out in solidarity with the Indigenous population in Greenland after reports spread about rising numbers of documented cases of radiation exposure and illness in the population. Anger over lack of action and continuing disputes about who is responsible for investigating and long-term waste storage and management on the island have compounded frustrations in the Arctic and beyond.

The growing reports of Chronic Radiation Sickness (CSR) have put a spotlight on a long history of environmental colonialism and violence in the region. Arctic Indigenous populations throughout the region have been documented experiencing higher levels of radiation exposure, particularly the male reindeer herders in the Saami community in Northern Finland. This is due to what is known as the "lichen-reindeer-human ecosystem pathway." Arctic lichen absorb radioactive particles from the air which is consumed by reindeer and accumulates in their tissues before being passed on to the herding community.

A spokesman for a crowd of protestors stated: “We demand justice for our brothers and sisters, for our polluted lands, and for generations unborn who suffer and will suffer for the criminal negligence of these supposed ‘Great Powers’”.

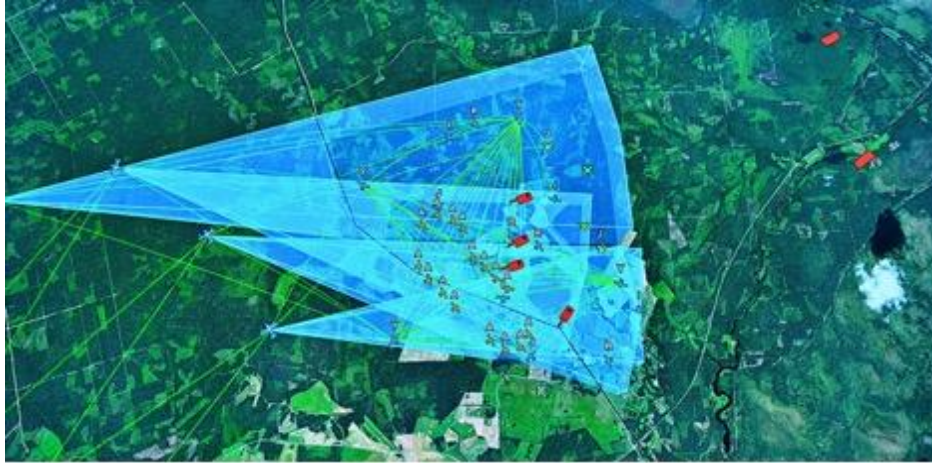


(Getty Images)

US military surveillance network of allies and other major state actors revealed.

(New Yorker-September 22)

Whistleblowers have leaked definitive evidence of a massive US military surveillance project to monitor atmospheric activity globally via the use of Project Maven. Project Maven integrates AI and computer vision into U.S. military operations to analyze vast amounts of surveillance data. This program has previously been used for target selection in the US-Iran conflict, including target selection of the Shajareh Tayyebah girls' elementary school of the Shahrak-e Al-Mahdi neighborhood in Minab, Hormozgan province in southern Iran which killed 120 schoolchildren and numerous other civilians. The mobilization of Project Maven for this use raises concerns that this surveillance network serves a dual function of identifying targets for infrastructure attack if the US objects to any activity, including research activity they do not support.



(Getty images)

(This was read out by the chair at the very end of the simulation to reveal the CFC. This update incorporates the events of the simulation, including the industrial scale production of the now unpatented Stardust particle.)

Climate Focused non-Governmental Organization Exposed as a Fossil Fuel Industry Backed Operation

Reuters, Sep 22—A disillusioned intern who quit Climate Futures Cooperatives has leaked information that immediately following the completion of the 2030 Climate Solutions Summit CFC plans to undertake a massive ‘science solves climate change’ media blitz. In addition to a show-case of the previously announced SpaceX-UAE partnership to build the Elon Musk Centre of SpaceXcellence and engage in industrial scale production of the ‘Musk Dust’ compound for large scale SAI, the blitz will include a media production that includes country representatives with climate saving technologies, showcasing innovations in SAI, CDR, nuclear fusion, new building materials, space mirrors and space solar. CFC has also previously announced funding support for Global South scientists to research SAI and other climate saving technologies. They will have a program to pay influencers to promote the idea that science means the big lifestyle changes being asked of green people may not be necessary and have them celebrate traveling and vacations again, as well as enjoying cool cars and the same luxuries available to previous generations by focusing on ‘abundance through science.’ The intern also reported office conversations where fellow employees joked about their promises to provide funding to build monitoring capacity ‘as long as we hire the most incompetent construction companies we can find.’

The CFC Global Citizens Assembly of 2030 will be the first of a series, with the participation already confirmed participation from the UK, India, UAE, Denmark, Finland, Mexico, Ghana, South Africa as well as SpaceX, the developing nations science advisor for the UNEA SRM governance consultative committee (2025-2028), and representatives from the UN Global Indigenous Caucus. The inclusion of Indigenous representatives and diverse representation of the global south has provided legitimacy to the event.