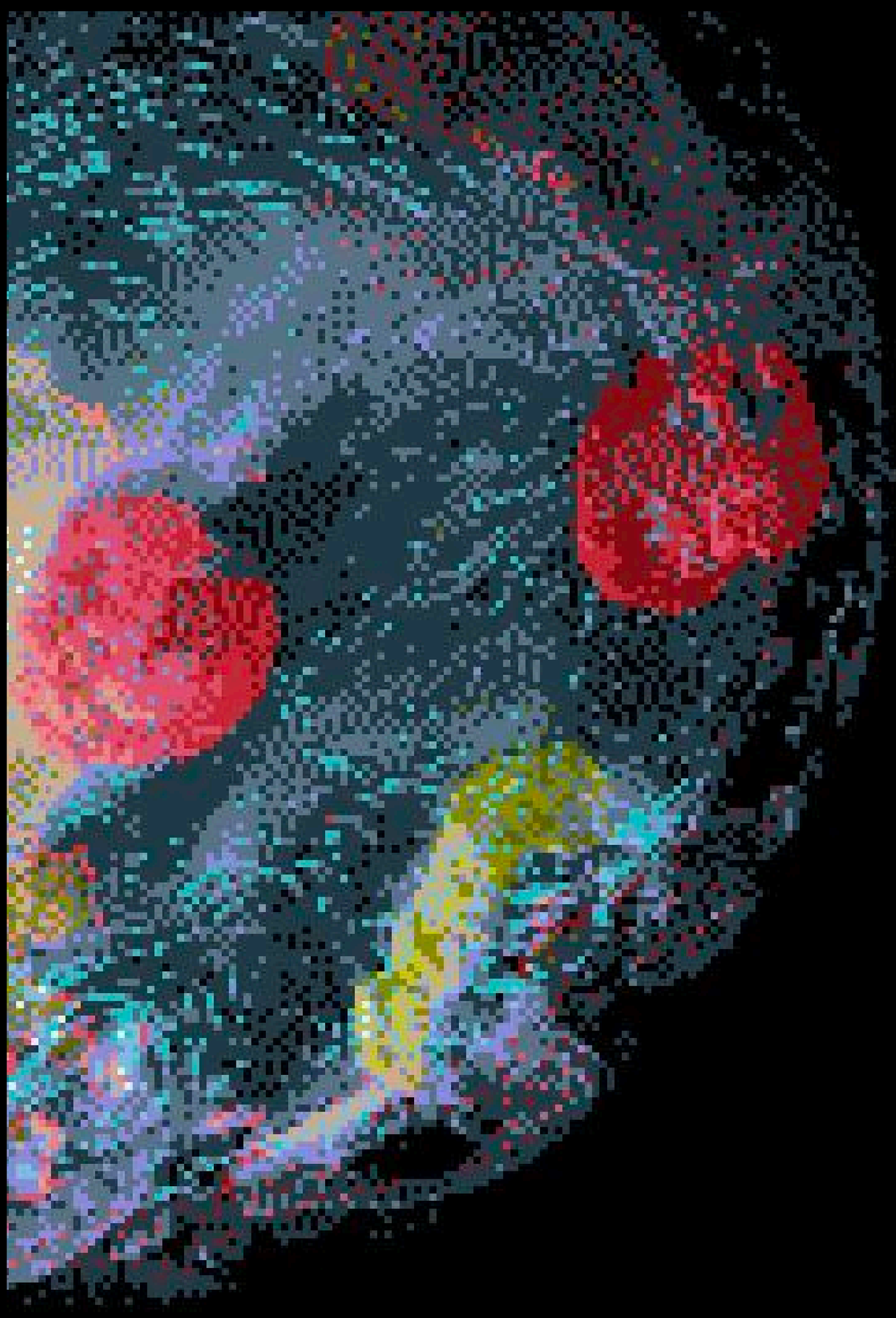
WEATHER COMMONS

ON THE PRACTICE AND POLITICS OF ATMOSPHERIC MODIFICATION

TBA21–Academy UNI Fall term:
October 14–November 23, 2026 | Curated by **FAST** (Eva Franch i Gilabert and Jose Luis de Vincente) and **TBA21–Academy** (Eduardo Castillo Vinuesa and Aleksandra Czerniak)



WHITE PAPER

Situated between inherited belief, legends, scientific experimentation, and technological projection, weather modification occupies an unstable territory in the collective imagination, one in which the lines between the possible, the factual, and the speculative are continuously negotiated.

It is at once a mythological territory of vernacular and folk practices across cultures; a set of methods and techniques grounded in scientific knowledge and technological innovation; a tool for geostrategic intervention increasingly relevant to national economic and security agendas; and the subject of multiple conspiracy theories that read vapor trails in the sky as evidence of clandestine demographic control. Both the existence and the efficacy of these techniques remain clouded in indeterminacy and ambiguity: Do they really work? Under whose authority? At what scale, and with what collateral effects?

The World Meteorological Organization counts more than fifty countries operating weather modification programs today—from suppressing hail and dispersing pollution, to enhancing rainfall to relieve droughts and temper wildfires increased by anthropogenic climate change. However, the atmosphere is indifferent to the borders drawn beneath it, and interventions in one territory may ripple far beyond their intended reach. No court yet exists in which the conflicts of the troposphere can be litigated. As atmospheric intervention shifts from the speculative toward the feasible and the prospect of deploying atmospheric and geoengineering interventions in the coming decades becomes increasingly possible and, perhaps, inevitable, Weather Commons[1] approaches the domain of clouds and breathable air neither as resource nor as emerging market but as a shared condition of existence, asking the question that gives the module its name: if the atmosphere is a commons, who has the right to change the weather?

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[1] The concept of ‘weather commons’ has previously been developed in recent research by Tsuyoshi Hatori, Christoph Rupprecht, Chris Berthelsen, Manon Simon and colleagues. See, for example, Hatori et al. (2025).

CONCEPTUAL FRAMEWORK

The desire to make weather is far older than the science that now claims to control it. Before it became a technical problem, weather-making was a ritualistic and cosmological endeavor: rain dances and rogation processions, the *amagoi* prayers of drought-stricken Japanese villages, church bells rung against approaching hailstorms, rockets fired into thunderclouds from the *coeteres* of the Ebre river delta. In the nineteenth century, these vernacular practices shaded into an entrepreneurial pluviculture—concussion theorists persuaded the US Congress to fund explosive rainmaking experiments on the conviction that battles brought rain, while itinerant "moisture accelerators" sold storms to desperate municipalities, leaving the line between charlatanry and proto-science vanishingly thin. Although today it is easy to dismiss this genealogy as mere superstition, Weather Commons reads it for what it encodes: weather-making has always been a claim about the relation between human societies and their skies—about who may address the atmosphere, through which mediations, and on whose behalf. The passage from ritual to aerosol is not a rupture from myth into science but the transfer of that claim into new instruments and authorities.



The 36-meter-long ryūjin, constructed from bamboo and straw, is carried during the Suneori Amagoi rainmaking ritual in Tsurugashima, Saitama Prefecture, Japan.

The scientific genealogy of weather-making begins in 1946, at the General Electric laboratories in New York, where Vincent Schaefer produced artificial snow for the first time by dropping dry ice into a chamber of supercooled water vapor. Just a few weeks later, the experiment moved from the lab to the field: on November 13, 1946, Schaefer scattered dry ice from an aircraft into a cloud field over Massachusetts. Shortly after, snow began to fall, marking the first time weather had been deliberately altered in the open air. Within the same month, atmospheric scientist Bernard Vonnegut discovers the properties of silver iodide to stimulate the production of ice crystals within clouds. Schaefer's and Vonnegut's methods came to be known as “cloud seeding”, which remains the principal weather modification technique today: small aerosol particles dispersed into a cloud provide the nuclei around which water vapor condenses and crystallizes into precipitation. The name is particularly accurate, since seeding cannot create clouds from thin air, only cultivate the moisture latent in formations already overhead. Therefore, its operation depends on specific and preexisting atmospheric conditions.

CONCEPTUAL FRAMEWORK

The first large-scale deployment of cloud seeding came a few years later, not as a civilian experiment, but as part of a military operation. Under the code name “Operation Popeye”, the United States conducted covert seeding operations during the Vietnam War, extending the monsoon season to flood roads and trigger landslides along the Ho Chi Minh Trail, the Viet Cong’s main supply route. When the program was exposed, the scandal raised profound ethical concerns, leading in 1976 to the ENMOD Convention, the first international treaty prohibiting environmental modification for hostile military use. ENMOD, however, didn’t address any other use or purpose of weather modification. Civilian and ostensibly peaceful programs remain outside any international legal framework, governed instead through national legislation, voluntary standards, and non-binding recommendations. And in a world where nearly 70% of the global economy is tied, directly or indirectly, to weather and climate variability—agriculture, energy, insurance, construction, logistics, tourism—the capacity to influence the weather has become, for a growing number of states, a matter of national priority.

Contemporary weather modification, however, involves far more than the mechanical dispersal of seeding agents. Because it operates on pre-existing conditions, every intervention requires a sophisticated scopic regime: radar and satellite imagery, sensor networks, cloud microphysics, numerical simulation, high-resolution modeling, data infrastructures, and increasingly machine learning. To properly seed the sky, one must first be able to understand and predict its behavior. Sensing, modeling, forecasting, and intervention form a continuous cybernetic loop in which the atmosphere is rendered legible in order to be rendered actionable. These predictive systems, born with the first digital computers and matured inside the Cold War, do not merely describe the weather, but act as interfaces for its making and unmaking. Weather modification is thus best understood not as a discrete technique but as a spatial practice, one sustained by a vast sensing and computational infrastructure through which atmospheric futures are modeled, selected, and enacted.



Vincent J. Schaefer attends to an artificial snow cloud inside a cold chamber at the General Electric Research Laboratory, Schenectady, New York, 1946. Credit: General Electric, courtesy of the AIP Emilio Segrè Visual Archives, Physics Today Collection.

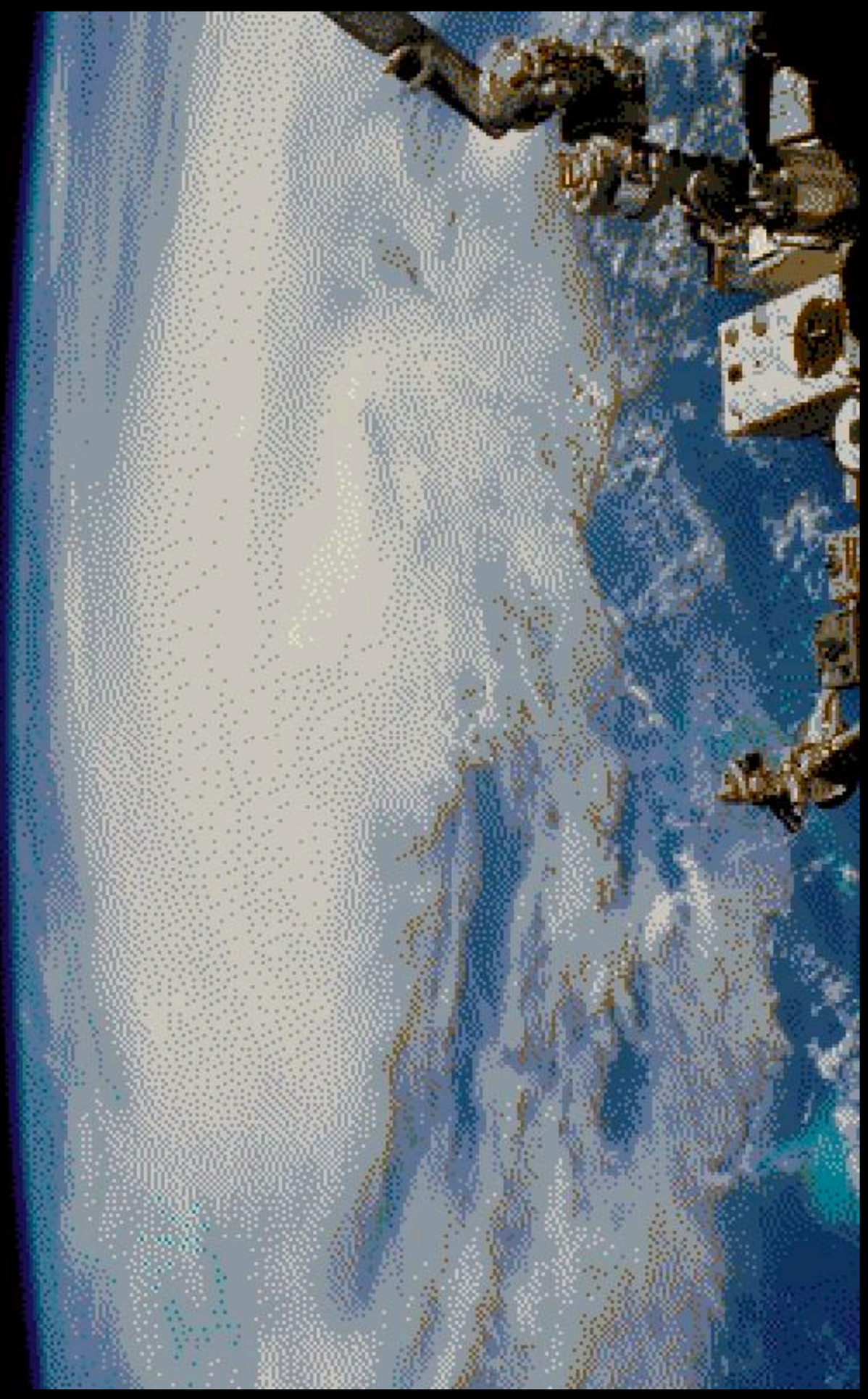
This infrastructural condition has a political economy of its own. Meteorology was among the first genuinely planetary data enterprises—the “vast machine”, in Paul N. Edwards's phrase, of stations, balloons, buoys, and satellites bound together by treaty into one of the longest-standing experiments in the free international exchange of environmental data. That settlement is now under visible strain. The public agencies that sustain the observational backbone of Earth systems monitoring operate under recurrent budgetary and political pressure, even as forecasting capacity migrates toward proprietary machine-learning models—trained, not incidentally, on decades of publicly funded observation—and commercial constellations privatize growing portions of the sensing layer itself. What is at stake is no longer just the sky but its data doppelgangers, the emerging category of epistemological actors we call *digital twins*.

CONCEPTUAL FRAMEWORK

Meanwhile, the geography of intervention keeps expanding. China operates the largest program on Earth, seeding rain across entire river basins and clearing skies for state ceremonies; Gulf states fly enhancement missions to thicken their water reserves; and Japan investigates the taming of typhoons before they can even make landfall. And what was once the exclusive province of states is increasingly becoming a market: a growing private sector now sells atmospheric intervention as a service—tailored rainfall for agriculture, insurance against a clouded harvest, clear skies on demand—turning weather into a managed asset, available to those who can afford it.

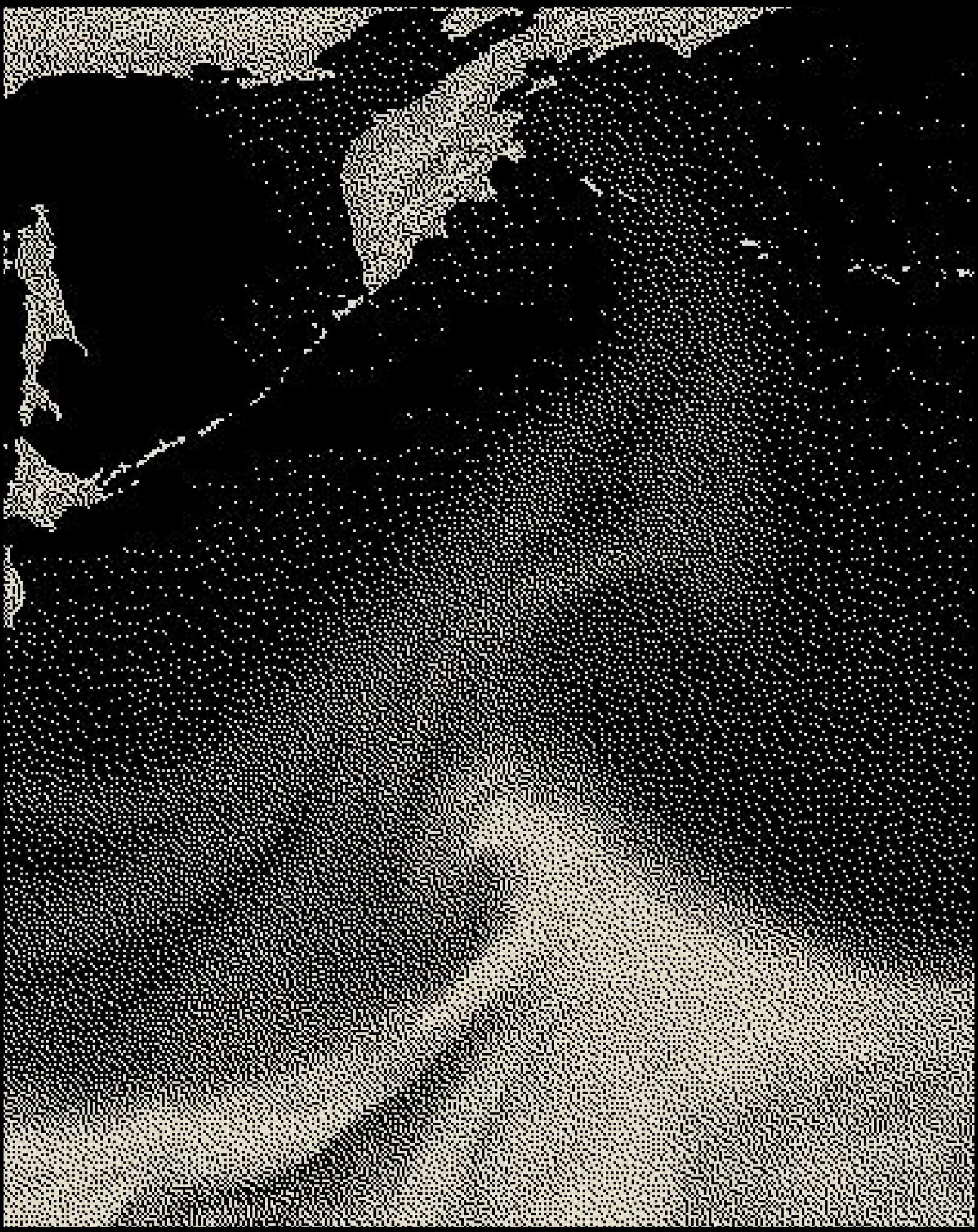
The atmosphere, however, exceeds every boundary through which political authority is organized. Air and water vapor move across jurisdictions; downwind, ecological, and transboundary effects remain uncertain and insufficiently studied; and no compulsory system of notification, consent, or collective assessment exists. The capacity to intervene is developing faster than the frameworks through which its consequences might be governed. What emerges is a familiar asymmetry: in this legal vacuum, those with the computational and predictive capacities hold the de facto authority to intervene, while those who live downwind—human and more-than-human alike—hold neither instruments nor standing.

Weather Commons begins from this gap. The module approaches the atmosphere neither as an unclaimed resource awaiting enclosure nor as an emerging market for planetary services, but as a commons: a shared condition of existence on which human and more-than-human life depends, and which no existing institution is equipped to hold accountable. To think of the atmosphere as commons is not a rhetorical gesture; it is at once a design problem, a legal problem, and an epistemic one. It requires forms of governance capable of operating across borders without converting the sky into property, and demands systems of legibility, scrutiny, consent, and responsibility that do not yet exist. The questions the module works through are therefore infrastructural before they are ethical: who possesses the instruments to observe the atmosphere, the data on which its prediction depends, the models through which to interpret it, the authority to intervene in it, and the power to decide which atmospheric futures are made possible, and for whom. These are the questions that will unfold across its five sessions—from the genealogies and mythologies of weather-making, through its conflicts, its scopic regimes, and its planetary remakings, to the architectures of an atmospheric governance still to be thought.



Tropical Storm Laura viewed from external cameras aboard the International Space Station, August 2020. Credit: NASA.

PROGRAM



GENEALOGIES AND MYTHOLOGIES OF WEATHER MODIFICATION

SESSION ONE
OCTOBER 14, 2026

This opening session traces the long genealogies and recurring mythologies of weather modification, from vernacular rainmaking rituals, divination practices, and folklore to the first scientific experiments in cloud seeding. Moving across historical and cultural contexts, it will examine how different societies have sought to petition, negotiate with, influence, or command atmospheric phenomena—and how the boundaries between ritual, science, and technology have been continually redrawn. Revisiting key episodes in the modern history of weather modification, the session will ask how their promises, failures, and imaginaries continue to shape contemporary narratives of geoengineering and climate intervention, establishing the shared conceptual ground for the sessions to come.

WITH
MODERATED BY

Sarah Strauss
Eva Franch i Gilabert



Sarah Strauss

Sarah Strauss is Professor of Anthropology in the Department of Integrative and Global Studies at Worcester Polytechnic Institute (WPI) in Massachusetts, where she was the inaugural director of the graduate program in Community Climate Adaptation. Strauss has degrees in comparative religion, public health, and cultural anthropology; her research focus lies at the intersection of environmental and health values and practices, especially those related to water, forests, climate change, and energy transitions. Her books include Positioning Yoga (2005), Weather, Climate, Culture (2004, edited with Ben Orlove) and Cultures of Energy (2013, edited with Stephanie Rupp and Thomas Love).



Eva Franch i Gilabert

Eva Franch i Gilabert is a Catalan architect, curator, educator, and researcher working across architecture, art, pedagogy, and public space. Based between Barcelona, Prague, and New York, she is co-founder of FAST, a transdisciplinary creative platform, Head of A2 – Future Architectures Platform at UMPRUM and Adjunct Professor at Columbia GSAPP. She previously directed the Architectural Association in London and Storefront for Art and Architecture in New York. Her work explores architecture as a research medium and civic catalyst, with recent projects addressing hydropolitics, environmental imaginaries, vernacular geoengineering, and more-than-human futures. Recent works include Water Parliaments, The Storm: architectures of vernacular geoengineering, and *100 Words for Water: A Projective Ecosocial Vocabulary*, a book by Lars Muller Publishers.

WARM WARS AND WEATHER IMPERIALISM

SESSION TWO
OCTOBER 21, 2026

This session examines the military and geopolitical histories of weather modification, from Operation Popeye and Cold War programs of environmental warfare to the contemporary emergence of atmospheric security. If the Cold War made the atmosphere a laboratory, a warming planet turns it into a theatre of operations: weather understood not only as a natural force but as strategic terrain, an instrument of power and a potential weapon. Particular attention will be paid to sovereignty and its atmospheric limits as well as to the colonial and imperial relations that pattern the uneven distribution of climatic risk. The session will also consider how uncertainty itself can be weaponized: how the difficulty of attributing extreme events or detecting atmospheric interventions complicates accountability, international law, and geopolitical conflict.

WITH

Karolina Sobecka,
Ala Roushan and Charles Stankievech

MODERATED BY

Aleksandra Czerniak



Karolina Sobecka

Karolina Sobecka is an artist and researcher interested in imaginaries of post-natural landscapes and histories of ecosystem ecology and their legacies in today's climate governance. Her projects often engage with scientists and practitioners working with ecology, economy and media. Karolina's artwork has been shown internationally, from the Queens Museum NY, to National Art Museum of China, to ZKM Karlsruhe, Transmediale Festival, and Haus Kulturen der Welt Berlin, and has received numerous awards, including from Creative Capital, New York Foundation for the Arts, and Princess Grace Foundation. Karolina has a PhD from Kunstuniversität Linz, in 2021-23 was a Visiting Predoctoral Fellow at the Max Planck Institute for the History of Science in Berlin, and a postdoctoral researcher at the Institute for Experimental Design and Media at HGK Basel.





Ala Roushan & Charles Stankievech

Ala Roushan and Charles Stankievech live and work between Toronto and Berlin. Their collaborations examine systems that seek to model and intervene in planetary conditions. Most recently, they were commissioned to create *A Shroud Woven of Solar Threads* tracing a prehistory of solar geoengineering through ancient Iranian Sun worship. This film is at the centre of their upcoming solo exhibition at Halle am Berghain (Oct 2026), presented by HOUSE in partnership with Autotelic Foundation. In 2024, they curated *Shaping Atmospheres*, an exhibition and symposium on contemporary solar politics. Previously, they held research positions at the University of Tokyo during the production of *Eye of Silence* 2023, an immersive installation that has since been exhibited at Kunst-Werke Berlin, Deichtorhallen Hamburg, Oakville Galleries, Rijksmuseum Twenthe, Centre for Contemporary Art Singapore, and Kunsthal Charlottenborg, among others. Roushan is Associate Professor at OCAD University, and Stankievech is Associate Professor at the University of Toronto.



Aleksandra Czerniak

Aleksandra Czerniak is a cultural worker and researcher focusing on simulations as well as technological and climate justice. With a background in both performance and art history, she is currently a Doctoral Candidate at Weibel Institute for Digital Cultures researching Digital Twins. She is based in Vienna and works as a Digital Program Manager at TBA21–Academy.

SCOPIC REGIMES OF WEATHER

SESSION THREE
OCTOBER 26, 2026

Scopic regimes of weather describe the historically, technologically, and culturally mediated ways in which the atmosphere is perceived, visualized, and made intelligible. From early meteorological instruments and synoptic maps to satellites, radar systems, sensors, and computational models, different apparatuses have constructed particular ways of seeing weather. These technologies do not simply represent atmospheric phenomena; they actively transform diffuse and dynamic processes into discrete forms of visual, scientific, and political knowledge. This session will examine how these regimes of observation shape what can be predicted, governed, and acted upon, as well as what remains invisible, uncertain, or excluded from dominant meteorological imaginaries.

WITH

MODERATED BY

Lucia Rebolino,
Luiza Crosman
Eduardo Castillo-Vinuesa



Lucia Rebolino

Lucia Rebolino is a media artist, architect, and research-based computational designer who weaves science and art into digital aesthetics. Trained in both architecture and computer science, she is currently a researcher with Forensic Architecture in London, focusing on environmental justice investigations, and an Adjunct Professor at Columbia University GSAPP in New York, where she tests computational tools across design disciplines. Her work on prediction and climate models has been featured in e-flux and exhibited at the 19th Venice Architecture Biennale, the Busan Museum of Art in South Korea, and Nieuwe Instituut in Rotterdam, among others. Lucia has developed a research-based artistic practice that explores technology-driven screen performances and has lectured at cultural and academic institutions including MoMA, Medialab Matadero, the Institute for Post-Natural Studies, the Royal College of Art, and ETH Zurich.



Eduardo Castillo Vinuesa

Eduardo Castillo Vinuesa is an architect, curator, and educator whose work explores the intersections of climate, technology, and geopolitics. Through a transdisciplinary practice that spans architecture, institutional design, filmmaking, and alternative curatorial strategies, he investigates how spatial and visual cultures shape contemporary forms of governance and ecological transformation. Associate Professor of Architecture at ETSAM-UPM, he has curated the Spanish Pavilion at the Venice Architecture Biennale, directed Medialab Matadero (2021–2024), and currently serves as Director of TBA21–Academy.



Luiza Crosman

Luiza Crosman is an interdisciplinary artist, writer and educator. She is interested in how the natural and artificial shape the world at different scales: from human subjectivity to planetary futures. Crosman exhibits and develops projects nationally and internationally. Between 2021 and 2022, she directed the CASA-ESCOLA Ool educational program at Casa do Povo. Her texts have been published in Revista Rosa, Weird Economies, Passepartout Journal, TANK, and Arts of the Working Class. She was a researcher at The Terraforming, Strelka Institute (2020) and at REALTY at Sommerakademie Paul Klee (2017–2019). She holds a degree in graphic design (PUC, 2008), a master's degree in Arts and Contemporary Culture (UERJ, 2014), and a postgraduate degree in Performativity Studies (apass, 2017).

REMAKING THE SKY

SESSION FOUR
NOVEMBER 3, 2026

How do art, architecture, and design engage with the possibility of altering weather and climate? This session approaches weather modification and geoengineering as fields of design: not only as technological projects, but as practices through which new atmospheres are imagined, represented, tested, and made politically conceivable.

Moving across scales—from clouds and landscapes to infrastructures, models, images, and planetary systems—the session examines how design gives form to interventions operating in the scale and scope of earth systems in specific territories as well as at a planetary scale. It asks what it means to design for, with, and increasingly through the weather, and how speculative and critical practices can expose the assumptions, ambitions, and uneven geographies embedded in attempts to engineer the atmosphere.

The session will examine the aesthetics and forms of representation, cartographic practices, and image-making through which weather modification projects are imagined, communicated, and made visible.

WITH

Design Earth,
Elise Hunchuck and Marco Ferrari

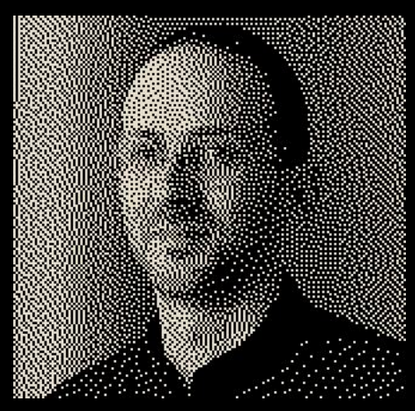
MODERATED BY

Jose Luis de Vicente



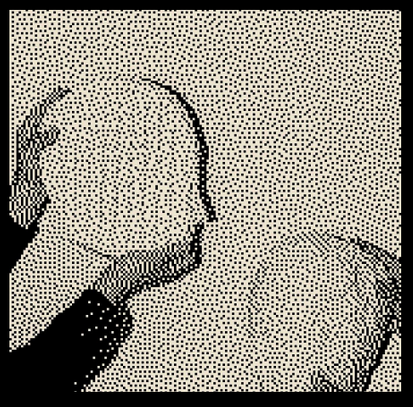
Elise Hunchuck

Elise Misao Hunchuck (b. Toronto, Canada) examines how risk is inscribed into the ground, following the stones, flood marks, and gauge readings by which communities record catastrophe and instruct those who come after. Trained in landscape architecture, philosophy, and geography (University of Toronto), she works across fieldwork, cartography, photogrammetry, and text. For the past decade, she has documented the tsunami stones of Japan's Tōhoku coast, an ongoing, if incomplete, atlas of some 300 stones along over 1500 miles of coastline. She is a Research Fellow at Akademie Schloss Solitude and will be a guest professor at the Institute for Art and Architecture at the Academy of Fine Arts Vienna from February 2027.



Marco Ferrari

Marco Ferrari is the cofounder of Studio Folder, an interdisciplinary design practice working on commissions in the fields of culture and the arts, and independent research projects that examine the politics and visualization of spatial data. Since 2012, Studio Folder has been developing visual identities, digital platforms, exhibitions, and art direction consultancy for international clients, while acquiring a comprehensive experience in the creation of information, statistical, and cartographic visualizations for physical spaces, digital, and printed media. The work of the studio has been published widely and exhibited internationally.



Design Earth

DESIGN EARTH is a research practice, founded by Rania Ghosn and El Hadi Jazairy in 2010. Their work engages the medium of the speculative architectural project to make public the climate crisis. DESIGN EARTH are recipients of the United States Artist Fellowship, Architectural League Prize for Young Architects + Designers, Boghossian Foundation Prize, and ACSA Faculty Design Awards for outstanding work in architecture and related environmental design fields as a critical endeavor.



Jose Luis de Vicente

Jose Luis de Vicente is a curator, cultural researcher and artistic director based in Barcelona and working internationally and co-founder of FAST, a design, research and curatorial platform at the intersection of architecture, environmental imagination and technologies for civic engagement. His work explores the space between social innovation, new ecological practices and the aesthetics and politics of computation. Previously De Vicente was director of DHUB, Barcelona's Design Museum, and founder and artistic director of Sónar+D, the culture and arts program of the acclaimed Sónar Festival. He has curated more than 25 exhibitions in institutions across the whole planet.

ATMOSPHERIC GOVERNANCE

SESSION FIVE
NOVEMBER 10, 2026

The closing session addresses the legal, political, and institutional frameworks through which weather modification and geoengineering might be researched, authorized, deployed, and contested. It examines existing international treaties, national regulations, and emerging governance proposals, asking whether they are adequate for interventions whose consequences cross borders, jurisdictions, and generations. Drawing on theories of the commons, the session considers whether the atmosphere can be governed as a shared planetary condition rather than a resource divided between sovereign states and private actors. What would a democratic and participatory governance of the atmosphere look like? Who should be entitled to make decisions about the sky, and how might affected communities, nonhuman entities, and future generations be represented within those decisions? Institutions equal to these questions do not yet exist; imagining them is itself a radical act—the governance of the atmosphere may need to be written as fiction before it can be written into law.

WITH

Manon Simon, Tsuyoshi Hatori,
and Christoph Rupprecht, followed by
discussion with the curatorial team



Manon Simon

Dr Manon Simon is a lecturer and post-doctoral research fellow at the University of Tasmania, Faculty of Law (Australia). Her PhD, “Governing Cloud Seeding in Australia and the United States: Lessons for Regional Solar Regional Solar Radiation Management” examined the extent to which existing weather modification laws can inform the development of governance for regional solar radiation. She is now working with the Australian Forum for Climate Intervention Governance (AFCIG) on the governance of solar radiation management and marine carbon dioxide removal. She also works with Japanese collaborators on the management of weather disasters as part of the Moonshot Goal 8.



Tsuyoshi Hatori

Tsuyoshi Hatori is a Professor in the Department of Environmental Design, Faculty of Collaborative Regional Innovation, Ehime University. Trained in civil and urban planning, he works on consensus building, social communication and governance in urban and regional planning and disaster risk management. Within Japan's JST Moonshot Goal 8 programme he leads the research theme on regional collaboration for the societal implementation of weather control, where the concept of weather commons was developed. He is also Principal Investigator of a research project on watershed governance, examining how reciprocity among communities across a watershed can support collaborative flood management in Japan. Recent publications include "Commoning the weather: weather commons for a post-1.5 °C world" (npj Climate Action, 2025) and "The mediating role of residential time perspective between regional decline and place attachment."



Christoph Rupprecht

Christoph Rupprecht is a geographer working on sustainability and cities from the perspectives of food, agriculture, green space, degrowth, multispecies/more-than-human thinking and solarpunk. An Associate Professor at the Department of Environmental Design, Faculty of Collaborative Regional Innovation at Ehime University, he’s also a founding member and Director at the non-profit organization FEAST. He currently leads the Multispecies Weather Commons project as part of the Moonshot Goal 8 and is a core member of the Pluriverse Project at the Research Institute for Humanity and Nature. Recent work includes the papers “Multispecies sustainability”, “Sustainable agrifood systems for a post-growth world”, “Commoning the weather: weather commons for a post-1.5 °C world” and the science fiction anthologies “Multispecies Cities” and “Solarpunk Creatures” (World Weaver Press).

WORKING GROUP

REALTIME WEATHER

NOVEMBER 5
— NOVEMBER 23, 2026

Realtime Weather is the collaborative unit and experimental working group of Weather Commons. Led by researchers and architects **Farzin Lotfi-Jam and Boone Mercado**, it will operate as a temporary research laboratory bringing together a small interdisciplinary group of practitioners to develop tools, methodologies, and forms of expertise to critically approach the technologies, contested claims, and political imaginaries surrounding weather modification.

Over the course of four sessions, participants will explore spatial-temporal datasets and models to investigate how environments are and have been monitored, modeled, forecast, and managed in realtime. Combining historical research with data modeling and time-based visualization, they will reconstruct and simulate these practices to examine their social and political consequences. Participants will use a novel AI-assisted software development framework to work with environmental datasets and develop experimental visualizations, simulations, interfaces, and other forms of spatial research

HOW WILL THE GROUP WORK?

1. Establishing shared research protocols, sources, and datasets.

2. Identifying specific problems, controversies, or contested claims within weather modification that require new investigative or representational approaches.

3. Developing rapid, AI-assisted prototypes, tools, interfaces, or research experiments.

4. Testing and critically examining the methods, assumptions, and potential consequences of the proposed tools.

5. Presenting the resulting work and considering how elements of the research might be developed further.

LED BY



Farzin Lotfi-Jam

Farzin Lotfi-Jam is an Assistant Professor of Architecture at Cornell University, where he directs the Realtime Urbanism Lab. The lab focuses on the use of spatial media and technologies in urban research, particularly the impact of digitalization and realtime data on urban environments. He also leads Farzin Farzin, a design studio operating at the intersection of architecture, computation, and media. His work is held in the collections of the Centre Pompidou and the Sharjah Art Foundation. He received the 2022 Architecture League of New York Prize and has recently been supported by the Alexander S. Onassis Foundation and the Graham Foundation. His publications include the co-authored book *Modern Management Methods: Architecture, Historical Value, and the Electromagnetic Image* (Columbia Books on Architecture and the City). His current book project, *Realtime: The Imperial Architecture of Now*, traces how realtime technologies in Southwest Asia and North America—from colonial telegraphs to digital twins—have served as instruments of imperial control over urban life.



Boone Mercado

Boone Mercado is a Master of Architecture candidate at Cornell University's College of Architecture, Art, and Planning, where he works with the Realtime Urbanism Lab. His research examines the infrastructure and environmental data and how weather, land, and territory are measured, modeled, and made legible through computation. Recent work includes research on data centers and their spatial politics.

RECOMMENDED READINGS

- **EDWARDS, PAUL N.** A *Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming.* MIT Press, 2010.

- **FURUHATA, YURIKO.** *Climatic Media: Transpacific Experiments in Atmospheric Control.* Duke University Press, 2022.
  -. "Of Dragons and Geoengineering: Rethinking Elemental Media." 001c, 2024, https://doi.org/10.1525/001c.10797.

- **GABRYS, JENIFER.** *Program Earth: Environmental Sensing Technology and the Making of a Computational Planet.* University of Minnesota Press, 2016.

- **HATORI, TSUYOSHI, CHRISTOPH RUPPRECHT, CHRIS BERTHELSEN, MANON SIMON, REI ITSUKUSHIMA, TAKUYA IWAHORI, KAZUKI KAGOHASHI, KUNIHIKO KOBAYASHI, TOMOHIKO OHNO, MASAMITSU ONISHI, TOMOKI TAKADA, NORIE TAMURA, KOSEI YAMAGUCHI, AND AOI YOSHIDA.** "Commoning the Weather: Weather Commons for a Post-1.5 °C World." Weather, Climate, and Society, 2025.

- **HUNCHUCK, ELISE MISAO, MARCO FERRARI, AND JINGRU (CYAN) CHENG.** "Prologue to the Sky River." *The Avery Review,* no. 53, June 2021.

- **REBOLINO, LUCIA.** "Contramodelando la máquina meteorológica." *Materia Arquitectura,* no. 28, 2025, pp. 122–139.
  -. "Unpredictable Atmosphere." Spatial Computing, e-flux Architecture, June 18, 2024.

- **ROBINSON, KIM STANLEY.** *The Ministry for the Future.* Orbit, 2020.

- **ROUSHAN, ALA, AND CHARLES STANKIEVECH.** "Shaping Atmospheres: From Terraforming Land to Geoengineering Air." *Afterall,* nos. 55–56, 2023. University of Chicago Press.

- **SIMON, MANON.** "Enhancing the Weather: Governance of Weather Modification Activities of the United States." *William & Mary Environmental Law and Policy Review,* vol. 46, no. 1, 2021, pp. 149–178.

- **STANKIEVECH, CHARLES.** "Warm War." *e-flux Journal,* no. 160, 2024, https://www.e-flux.com/journal/160/6776843/warm-war

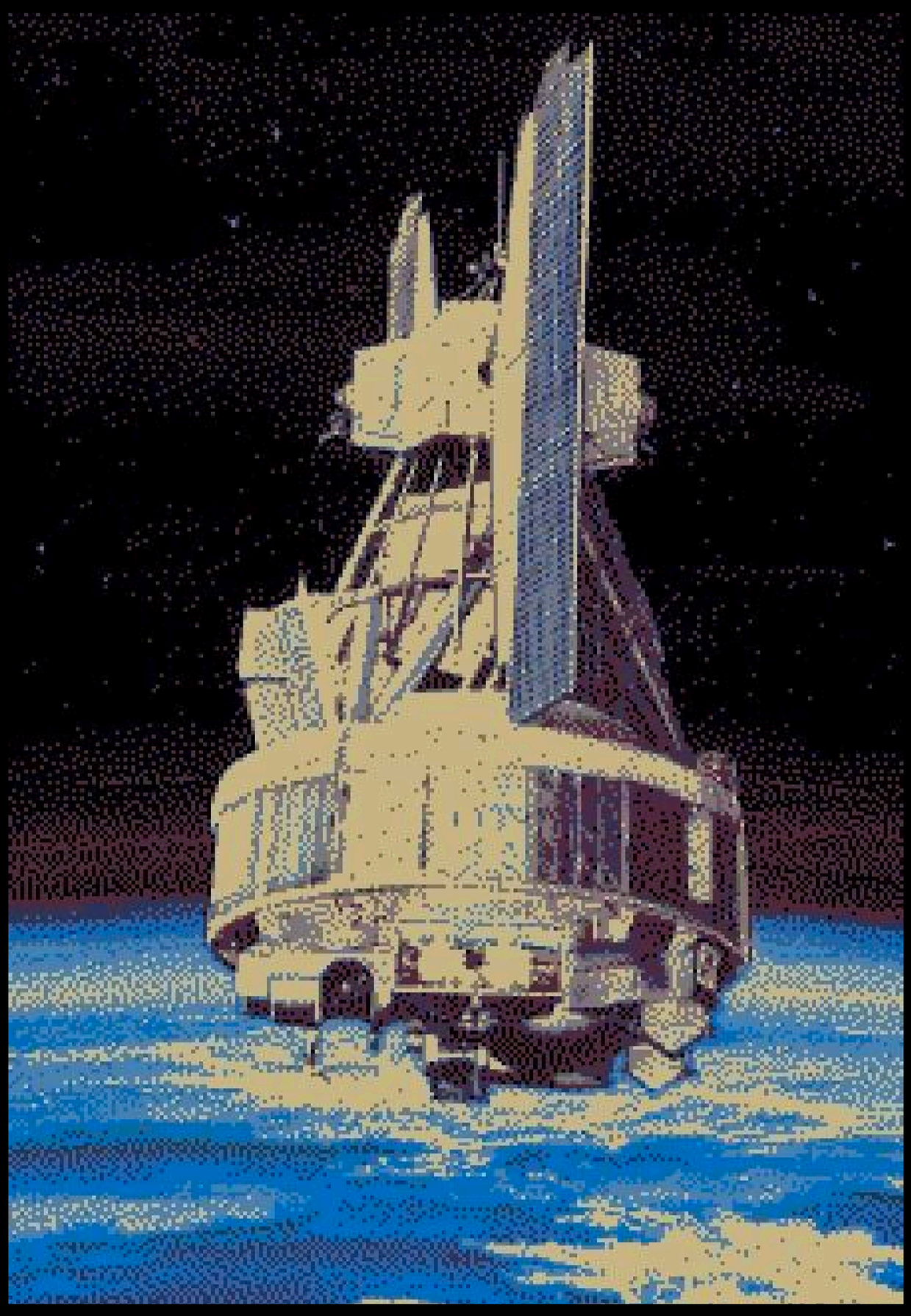
- **STRAUSS, SARAH, AND BENJAMIN S. ORLOVE, EDITORS.** *Weather, Climate, Culture.* Berg, 2003.

- **ZEE, JERRY C.** *Continent in Dust: Experiments in a Chinese Weather System.* University of California Press, 2022.

- **ZHANG, GARY ZHEXI.** "Catastrophe Time!" Strange Attractor Press, 2023.

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WHO IS BEHIND WEATHER COMMONS

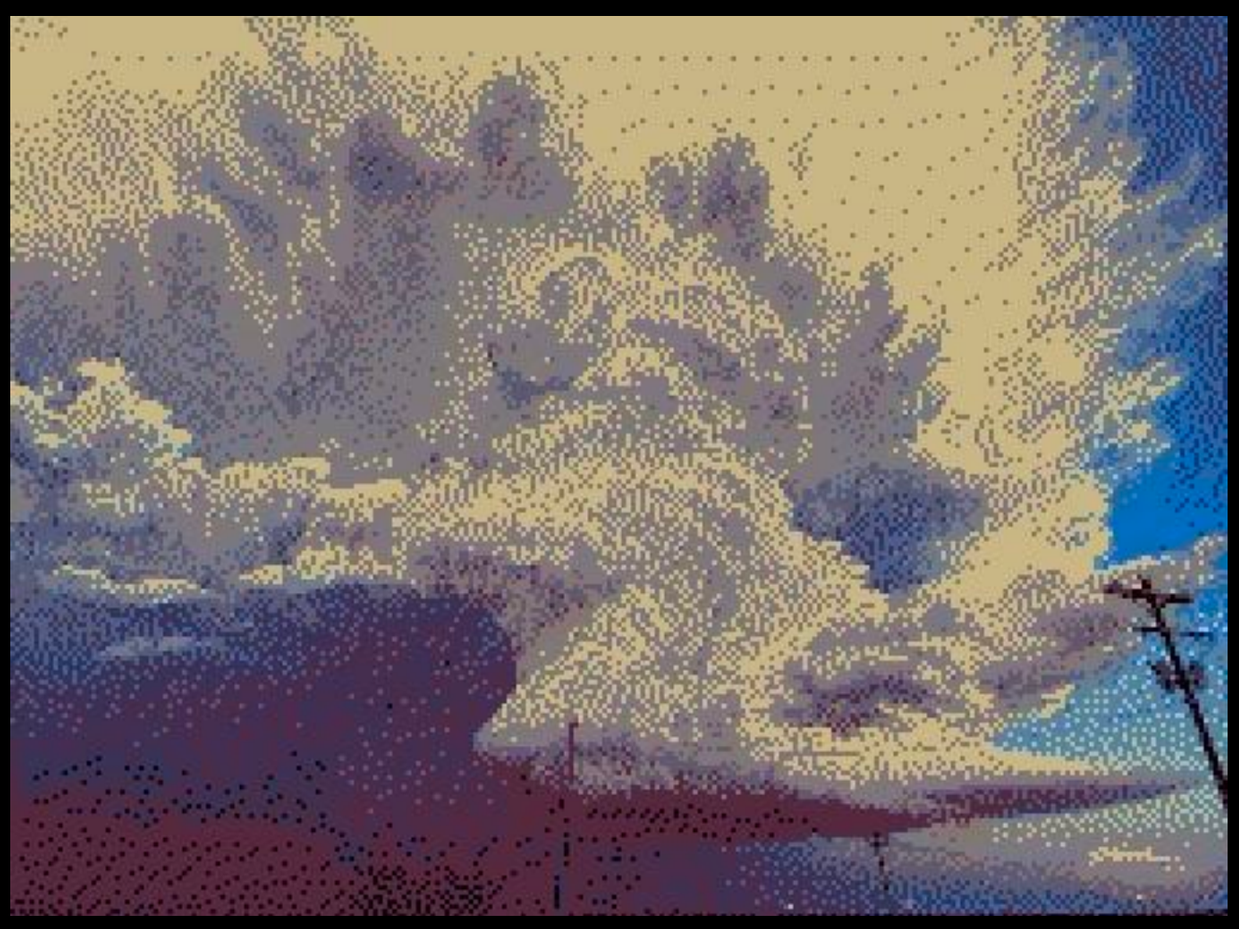


Artist’s rendering of TIROS-M, also known as ITOS-1, an early operational meteorological satellite launched in 1970. Credit: NASA.

TBA21–ACADEMY is TBA21’s research and advocacy arm, fostering deeper relationships with the Earth’s hydrosphere and its extended ecologies through the lens of art to activate new forms of care and collective action. Operating as an incubator for collaborative inquiry, research-based artistic production, and environmental advocacy, the Academy works through exhibitions, commissions, fieldwork, residencies, pedagogical programs, and assemblies, and catalyzes new forms of knowledge emerging from exchanges between art, science, policy, and civic engagement.

TBA21–Academy operates through three interconnected laboratories: Ocean Space in Venice, the Museo Nacional Thyssen-Bornemisza in Madrid, and Convivial LAB in Jamaica. Together, they function as situated field stations where art, research, and activism are grounded in specific territories and aquatic ecologies, developed in close collaboration with local communities while thinking at a planetary scale.

FAST is a transdisciplinary creative platform dedicated to addressing current and future planetary challenges through the convergence of culture, technology, architecture, art, and design. As a strategic unit, architecture studio, and R&D lab, we imagine and materialize hybrid, wide-ranging experiences and projects responding to and anticipating the rapidly shifting conditions of the 21st century. Founded by Eva Franch i Gilabert + Jose Luis De Vicente.



T B A — Thyssen-Bornemisza Art Contemporary Academy