

Weather Modification Techniques and HAARP Program



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Abstract:

In 2025, US aerospace forces can "own the weather" by capitalizing on emerging technologies and focusing development of those technologies to war-fighting applications. Such a capability offers the war fighter tools to shape the battlespace in ways never before possible. It provides opportunities to impact operations across the full spectrum of conflict and is pertinent to all possible futures. » Owning the weather was written in 1996. (Air University of the US Air Force, AF 2025 Final Report)

Despite the existence of an extensive literature on weather modification techniques for military purposes, the subject is considered taboo. so, in this paper we will analyze the history of this technique by given numerous of projects with focusing on a HAARP program because it was probably the most secret military project for USA undertaking and certainly the most germane to this paper.

Keywords: weather modification; HAARP, military sector; Project SkyfireFog projects

Résumé :

En 2025, les forces aérospatiales américaines peuvent « maîtriser la météo » en capitalisant sur les technologies émergentes et en concentrant le développement de ces technologies sur des applications de guerre. Une telle capacité offre aux combattants des outils pour façonner l'espace de combat d'une manière jamais possible auparavant. Il offre la possibilité d'avoir un impact sur les opérations dans tout le spectre des conflits et est pertinent pour tous les futurs possibles. » Posséder la météo a été écrit en 1996. (Air University of the US Air Force, AF 2025 Final Report)

Malgré l'existence d'une abondante littérature sur les techniques de modification du temps à des fins militaires, le sujet est considéré comme tabou. Ainsi, dans cet article, nous analyserons l'histoire de cette technique en fonction de nombreux projets, en nous concentrant sur un programme HAARP, car il s'agissait probablement du projet militaire le plus secret entrepris par les États-Unis et certainement le plus pertinent pour cet article.

Mots-clés : modification du temps, HAARP, secteur militaire, Projet brouillard de feu de ciel.

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Introduction:

In the 1970s, former National Security advisor Zbigniew Brzezinski had foreseen in his book "Between Two Ages" that:



"Technology will make available, to the leaders of major nations, techniques for conducting secret warfare, of which only a bare minimum of the security forces need be appraised... [T]echniques of weather modification could be employed to produce prolonged periods of drought or storm."

The World's climate can now be modified as part of a new generation of sophisticated "non-lethal weapons. Both the United States and Russia have the ability to manipulate the world's climate. In the United States, the technology is being perfected under the High-frequency Active Auroral Research Program (HAARP) as part of the ("Star Wars") Strategic Defence Initiative (SDI). Recent scientific evidence shows that HAARP is fully operational and has the potential to trigger floods, droughts, hurricanes and earthquakes. From a military perspective, HAARP is a weapon of mass destruction. It has the potential to represent a tool of conquest capable of selectively destabilizing agriculture and ecosystems across entire regions. While there is no evidence that this deadly technique was used, we certainly have to talk about it to address these issues, we divided this study into two main parts.

While there is no evidence that this deadly technique was used, we certainly have to talk about it, **so what is the relationship between the weather modification and the HAARP project in military sector?**

To address this issue, we divided this study into two main parts

1. Weather modification.
2. The High-frequency Active Auroral Research Project (HAARP).

1. Weather modification:

1.1. Definition:

Former French officer **Marc Flotman** described several types of "unconventional weapons" that use radio frequencies. He spoke of "weather warfare" and noted that the United States and the Soviet Union already had "the necessary knowledge to cause sudden climate change (hurricanes, droughts)". These technologies make it possible to "trigger atmospheric disturbances using extremely low frequency (ELF) radar waves". (Michel , 2002)

Attempts to control or modify the weather are almost as old as civilization itself, from the spells of ancient priests to the famous rain dance of the North American Indians to modern computer-aided experiments and models. However, despite their long history, the credibility of these techniques has always been rather low, mainly due to inherent problems in validating the results. However, considerable technological and scientific progress in weather modification has been made since the Second World War, to the point



where it deserves serious consideration, especially in light of the potentially catastrophic consequences of its use. (Angts , 1993, p. 1)

Indeed, when one considers the crucial role that weather has played in many battles, it is dear that the ability to modify the weather would provide a tremendous advantage to any force possessing even a rudimentary capability. Examples of the weather influencing the outcome of a battle range from Washington's crossing of the Delaware under cover of a snowstorm, to the winter snows halting both Napoleon's and Hitler's invasions of Russia. The air campaign of the Gulf War was also hampered in its early days by an unexpected and unusual amount of foul weather. (Angts , 1993, p. 3)

So there is no question that weather modification has tremendous military potential. However, in order to realize this potential, technology and technology must be practical. In order to properly assess this question of feasibility, it is necessary to start with the technical history of weather modification.

1.2. Technological history of weather modification:

Twenty years ago, General Electric scientists Irving Langmuir and Vincent Schaefer modified clouds by "seeding" them with dry ice particles. Soon after, collaborator Bernard Vonnegut demonstrated that the same effect could be achieved with smoke made from silver iodide crystals. This was the beginning of modern American history of weather and climate modification through cloud seeding.

On November 13, 1946, the American scientists experimentally confirmed a theory proposed in 1933 by Swedish meteorologist Tor Bergeron and German physicist Walter Findeisen that clouds would fall if they contained the right mixture of ice crystals and supercooled water drops. The Bergeron Findeisen theory was antedated by the work of the Dutch scientist, August Veraart. The enthusiastic reports by Veraart of his 1930 experiments with dry ice and supercooled water-ice in Holland were not well received by the Dutch scientific community, and thus were given no serious consideration elsewhere. (SPECIAL COMMISSION ON WEATHER MODIFICATION, 1965, p. 2)

Weather and climate modification, or "rainmaking" (the more popular and also more restricted concept), is not new in our time. Many methods of inducing or assisting rainfall have been proposed and tried in ancient and modern times. Before the turn of the 20th century, U.S. government granted two patents for rainfall methods, production of carbon dioxide by consuming "liquid carbon dioxide" and the shock caused by the explosion of dynamite. In 1946, evidence that scientific method can manipulate clouds to produce rainfall dates back to the study of fog particles by Langmuir and Schaefer during World War II.

Between 1951 and 1953, during congressional hearings prior to the formation of the Weather Control Advisory Committee, it was found that water users, particularly in Western countries, were spending \$3-5 million per year on commercial artificial cloud-



seeding activities during peak periods of cloud seeding activity, and that approximately 10% of the land area in the United States had been targeted for artificial cloud-seeding.

The weather modification events of the late 40's and early 50's in the United States encouraged cloud seeding programs in Australia, France and South Africa to increase precipitation and renewed the scientific interest in hail suppression that had been practiced in Alpine Europe since the mid 30's. The dozen nations experimenting with cloud seeding during the late 1940's more than doubled by 1951 to about 30 countries representing every continent. (SPECIAL COMMISSION ON WEATHER MODIFICATION, 1965, p. 3)

1.3. Weather modification projects:

- **Project Cirrus**

The military possibilities of this discovery led the armed services to support a broad theoretical, laboratory and field program in cloud modification from 1947 to 1952, known as Project Cirrus. Civilian and military implications were investigated by the Cloud Physics Project of the U. S Weather Bureau, Air Force and National Advisory Committee for Aeronautics from 1948 to 1951. The military services followed the termination of Project Cirrus in 1952 with a Department of Defense 5-year Artificial Cloud Nucleation Project. (SPECIAL COMMISSION ON WEATHER MODIFICATION, 1965, p. 3)

The Project Cirrus effort is to spray particles into the stratosphere to induce cloud droplets into becoming rain droplets. This would create, potentially, an artificial greenhouse effect. The major objective of the Project Cirrus program is to provide a proven demonstrable technology of weather modification to the military and scientific communities.

- **Project Skyfire**

Project Skyfire began in 1952 under the sponsorship of the U.S. Forestry Service. This Project which sought to prevent lightning from igniting forest fires. The basic principle was to try to cause artificial corona discharges between numerous tiny conductors introduced into the storm and thereby harmlessly dissipate its electrical potential.' Various agents were used, including silver iodide, dry ice crystals, and chaff. In comparing the results from 10 storms that were seeded against a control group of 18 unseeded storms, there appeared to be a 75 percent reduction in lightning strikes in the modified storms. (Angus, 1993, p. 10)

- **Fog projects**

One of the more significant warm **fog projects** was the installation of the Turboclair system at Orly airport near Paris in 1970. This system consisted of a series of jet engines installed in underground chambers along the upwind side of the runway. Tests showed that the system could improve the visibility in the approach and touchdown portions of the runway to at least the minimums required for operations. In the case of supercooled fog,



several experiments proved that dry ice seeding can be a cheap and effective dissipation technique. Thirteen American commercial airports were using it on an operation basis in 1973.' The USAF also conducted successful cold fog dispersion trials with a ground-based liquid propane dispensing system. (Angts , 1993, p. 10)

- **Popeye project**

Space does not permit a discussion of many of the numerous other experiments in the history of weather modification, but we can find other projects like the cloud seeding operations carried out by the U.S. military in Southeast Asia from 1968 to 1972 with the objective of inhibiting the logistical operations of the North Vietnamese along the Ho Chi Minh Trail. The operation came to be known by a variety of code names: **Popeye**, Intermediary, Compatriot, and Mdoorpool. It was highly classified at the time and known only to the President, a few high-ranking military officers, and the assigned aircrew. (Angts , 1993, p. 11)

Dr. Bernard Eastlund, while working as a consultant for Advanced Power Technologies Inc. (APTI) in the 1980s, patented devices capable of causing total disruption of communications, missile or aircraft destruction, deflection or confusion, and even weather modification. These patents were temporarily sealed under a US Secrecy Order, but E-Systems, a company home to many retired and currently employed CIA agents, quickly purchased them. In 1993, E-Systems received \$1.8 billion in classified contracts, and the patents are now held by Raytheon, the fourth largest US defense contractor and third largest aerospace company. (Scott , 2004, p. 1)

It is therefore evident that weather modification has a long and colorful history, but considerable doubts remain as to its effectiveness. Still, although the technology is in its infancy, enough legitimate research has been accomplished to allow some reasonable speculation on the feasibility of weather modification for military purposes.

✓ **The High-frequency Active Auroral Research Project (HAARP):**

a. Development of HAARP:

In the abstract of this paper, we started by a paragraph taken from One of the most important documents is titled '*Weather as a Force Multiplier: Owning the Weather in 2025*'. The study, completed in 1996, it is a chilling document. It is evident that the authors regard our environment as nothing more than a resource to be exploited for military purposes. They claim that by 2025 US forces can "own the weather" by "capitalizing on emerging technologies and focusing development of those technologies to warfighting applications." The authors describe weather modification as having "tremendous military capabilities" which "can provide battlespace dominance to a degree never before imagined," claiming the project would be "not unlike the splitting of the atom." The paper goes on to discuss how ionospheric research (The ionosphere is a region of the earth's atmosphere ranging from



about 30 /1200 miles above the surface of the earth.) is necessary to achieve goals in both enhancing US communication capabilities and as a method of disabling enemy communications. "By 2025, it may be possible to modify the ionosphere and near space, creating a variety of potential applications.

Since the early 1990s, the US Air Force has been sponsoring the world largest ionospheric modification project called HAARP (High-frequency Active Auroral Research Program). HAARP, located in the remote bush country of Gakona, Alaska, is a small version of the antenna discussed in the Eastlund patents. APTI initially won the contract to build HAARP. It is currently a part of the ongoing Strategic Defense Initiative (SDI), popularly known as "Star Wars". (Scott , 2004)

The HAARP facility is the outgrowth of more than 30 years of ionospheric heating research. A wealth of experimental studies conducted at ionospheric heating installations, such as the ones in Arecibo, Puerto Rico; Tromso, Norway; Fairbanks, Alaska; and several installations in the former USSR brought the understanding of the physics and the phenomenology of the HF-ionosphere interactions to a new plateau. (NAVAL RESEARCH LAB, 1990, p. 8)

The scientific field was ready to make the transition from pure research to applications in the civilian and military arenas. In February 1990, a major workshop sponsored by the Office of Naval Research and the Air Force Research Laboratory, and with representation from the National Science Foundation, took place in New London, Connecticut. The workshop, attended by more than 60 representatives from key science, technology, and application areas, defined the operational requirements of the next HF ionospheric transmitter and presented the rationale that led to the HAARP. (NAVAL RESEARCH LAB, 1990, p. 8)

In fact, the European Space Agency contracted Bernard Eastlund, and in 1998 he completed a paper on how to knock out tornadoes using HAARP instruments on the ground. That paper was peer-reviewed and presented in Italy and it was widely accepted, in fact, so much so, that NASA and FEMA contracted Bernard Eastlund to do further research on weather modification using satellite-based technology and this was published in late 1999, early 2000. (Begich, 2016, p. 3)

b. The components and characteristics of HAARP program:

The primary component of HAARP is the Ionospheric Research Instrument (IRI), a phased array of 180 HF tower antennas spread across 33 acres and capable of radiating 3.6 MW into the upper atmosphere and ionosphere. The array is fed by five 2500 kW generators, each driven by a 3600 hp diesel engine (4 + 1 spare). Transmit frequencies can be chosen anywhere in the range 2.8 to 10 MHz and since the antennas are part of an array, the transmitted beam can take many shapes, can be scanned over a wide angular range (down to 30° deg. Elevation angle) and multiple beams can be formed and steered. The facility



employs 30 transmitter shelters each with six pairs of 10 KW transmitters (6 x 2 x 30 x 10) to achieve the 3.6 MW transmit power. The facility is located at 62.39° N, 145.15° W in the subarctic which is an ideal location for a wide range of scientific experiments. The location is just south of the auroral region which allows active experiments outside of the aurora. During substorms HAARP's location is under the aurora or inside the auroral oval. The high latitude location is also ideal for experiments generating low frequency waves which propagate along magnetic field lines high into the magnetosphere. (Robert , 2015, p. 2)

Initiated in 1989 with congressional earmarks (~\$180M), HAARP was completed around 2009 with additional investments of \$110M from the Air Force Research Laboratory (AFRL), the Office of Naval Research (ONR) and Defense Advanced Research Program Agency (DARPA) and represents a total investment of ~\$290M. HAARP is currently owned by the AFRL Space Vehicles Directorate (AFRL/RV) in Albuquerque NM. There are two other ionospheric heaters in the world, EISCAT in Norway and Sura in Russia. The National Science Foundation is currently building a fourth heater in Arecibo Puerto Rico. (Robert , 2015, p. 3)

Characteristics of HAARP:

HAARP has a number of characteristics that make it unsurpassed in the world including:

- ✓ Effective radiated power (ERP) = power x antenna gain;
- ✓ Steerability of the beam and ability to create multiple beams;
- ✓ Frequency range and ability to select frequency;
- ✓ Polarization control ;
- ✓ Modulation control ;
- ✓ Location – relative to the aurora and on high latitude magnetic field lines;
- ✓ Accessibility of the site from either Anchorage or Fairbanks Alaska. (Robert , 2015, p. 3)

Basically, HAARP is a device which beams super-powerful radio waves to the ionosphere, heating those areas, thereby lifting them. The electromagnetic waves bounce back to the earth and penetrate everything, even a person. Some of the planned uses of this technology :

- ✓ A military tool to replace the electromagnetic pulse effect of thermonuclear devices;
- ✓ To replace the extremely low frequency (ELF) communications network system;
- ✓ To replace the over-the-horizon radar system;
- ✓ To provide a wide area of earth penetrating tomography;
- ✓ To provide a method of wiping out communications over an extremely large area, while keeping military communications systems operational;
- ✓ To be a tool for geophysical probing, to find oil, gas, and mineral deposits. (Artur , 2019, p. 2.3)



b. Military uses for HAARP program:

HAARP publicity gives the impression that it is mainly an academic project with the goal of changing the ionosphere to improve communications for our own good. However, other US military documents put it more clearly: HAARP aims to learn how to “exploit the ionosphere for Department of Defense purposes”. It can be used for : (Begich, 2016, p. 3)

- Enhancing wartime communications. The ionosphere is critical for global and wireless communications. With HAARP you can wipe out the communications of your adversaries over an extremely large area, while keeping the military’s own communications systems working.
- Missile Defense HAARP can be used to detect incoming low-level planes and cruise missiles, making other technologies obsolete. This technology also allows “over the horizon radar” which is very important.
- Earth penetrating tomography is one of the primary uses of HAARP. HAARP can act like a broadcast antenna and sends a signal back to the earth in the ELF (extremely low frequency) range, that can pass through the earth and sea for several kilometers for communication with submarines or determining underground nuclear facilities, tunnels, and defining mineral strata.

Is HAARP a danger project?

Some researchers have raised questions about the possible involvement of HAARP in major disasters like the earthquake in Haiti, Indonesian tsunami, and hurricane Katrina. Could these have been HAARP experiments gone awry? Might they even have been caused by rogue elements which gained control of this devastating technology. Of course, disasters like this happen regularly on a natural basis, yet if you begin to research, there is some high strangeness around some of these disasters. The evidence is inconclusive, yet with the known and unknown major destructive capabilities of this weapon, serious questions remain. (Fred , 2018)

We have two opinions about the impact of this technology the first see that HAARP should not be used at all since it has "global and environmental implications" and because it affects the electromagnetic field of the Earth. In other hand, the second opinion say that “HAARP cannot control the weather, because this idea is one conspiracy theory:

Dr. Nicholas Begich, co-author of the book *Angels Dont Play This HAARP*, depicts HAARP as "a super-powerful radio wave beaming technology that lifts areas of the ionosphere by focusing a beam on them and then heating them. Electromagnetic waves then bounce back onto earth and penetrate everything - living and dead." This ability allows for better communication with submarines and wide-area Earth-penetrating tomography (similar to radar) that can be used to locate underground missile sites, bunkers and oil reserves. Through his research he has come to the conclusion that HAARP has the potential to jam global communication systems, change weather patterns over large areas, interfere with



wildlife migration patterns and negatively affect human health. It is also capable of potentially triggering targeted floods, droughts, hurricanes and earthquakes. (Scott , 2004)

Dr. Rosalie Bertell, author of *Planet Earth: The Latest Weapon of War* and founder of the International Institute of Concern for Public Health, while writing on the background of HAARP says, "It would be rash to assume that HAARP is an isolated experiment which would not be expanded. It is related to fifty years of intensive and increasingly destructive programs to understand and control the upper atmosphere. It would be rash not to associate HAARP with the space laboratory construction which is separately being planned by the United States;½The ability of the HAARP/Spacelab/rocket combination to deliver very large amount of energy, comparable to a nuclear bomb, anywhere on earth via laser and particle beams, are frightening. The project is likely to be "sold" to the public as a space shield against incoming weapons, or, for the more gullible, a device for repairing the ozone layer".

Michel Chossudovsky, professor of economics at the University of Ottawa and Director of the Center for Research on Globalization, says that "there are very clear statements by the US Air Force to the effect that weather modification technology is available, HAARP is fully operational and could be used in actually military situations. It is evident weather warfare does constitute an instrument of the Air Force; they even identify the scenarios of its use." He said his interest in the topic was sparked by the fact that it is possible to change climate and disrupt electricity over large areas of the Earth, effectively destabilizing portions of the globe and paralysing national economies. This can be done without the enemy even knowing the source of it. The health and economic prosperity of entire regions could potentially be devastated through climatic manipulations without the deployment of a single troop or the firing of any munitions. (Scott , 2004)

Former HAARP Chief Scientist Chris Fallen said in a 2017 news article published on the University of Alaska Fairbanks website that HAARP attracts more attention than the average scientific research facility, likely because of its focus on an obscure area of the atmosphere called the ionosphere. This has led to misunderstandings about the purpose of the HAARP facility, he explained. "HAARP cannot control the weather, contrary to one conspiracy theory. It has too little power and affects a different part of the atmosphere. Neither can it manipulate our brains, as alleged by another theory. Generally, space physicists focus on regions more than 60 miles (nearly 97 kilometers) above our heads, where HAARP's radio waves are 100 times weaker than those from mobile phones." (Gaia article, 2020)

In a 2018 U.S. News article, McCoy said that HAARP is "not a weapon, and it couldn't be". "The way high-frequency radios work is that the atmosphere is transparent to those signals. If we made this (facility) 10 times bigger and tried, we still couldn't affect the weather. Minds Electrical signals in the mind are very low-frequency. HAARP is very large-frequency; the waves are meters-long. So, there's no way they could control minds," he explained. (Gaia article, 2020)



In 2013 AFRL/RV decided that they no longer needed the facility, and by prior arrangement, were prepared to remediate the site. In response to a letter writing campaign and petition by the scientific community, the Secretary of the Air Force directed that the demolition be postponed until May, 2015 to allow time for another federal agency, a consortium of academic or research institutions, or the University of Alaska, to build a plan to sustain the facility and preserve its capability to enable fundamental ionospheric research. (Robert , 2015, p. 9)

In June 2014, DARPA completed a phase of the Basic Research on Ionospheric Characteristics and Effects (BRIOCHE) campaign and soon after the facility was placed in cold-storage. Transmitter tubes were removed from the transmitter shelters and moved into the heated main building to minimize heating costs for the winter. The diesel generators were winterized and many of the diagnostics were transported to AFRL at Kirtland AFB. Since then, negotiations have progressed well and the UAF-GI is working with AFRL/RV on a cooperative research and development agreement (CRADA) to transition ownership of the facility to the University of Alaska to allow the UAF-GI to bring it back on line for continued ionospheric, thermospheric and magnetospheric research. The UAFGI taken ownership in the fall of 2015. The UAF-GI is working to develop a plan to reduce the operating costs of the facility and is actively seeking customers, both domestically and internationally, to come to HAARP to do active experiments at the world's premier upper atmospheric active research facility. (Robert , 2015, p. 9).

Conclusion:

Finally, military weather modification is not a fantasy-it is a fact. Armed forces have used offensive and repressive techniques in a variety of conflicts from World War II to the Vietnam War. The success of these actions is debatable, the ethics somewhat dubious, and their practicality questionable, but they have still

In the above context, climate manipulation (whether accidental or deliberate) under the HAARP program will inevitably exacerbate these changes by weakening national economies, destroying infrastructure and potentially triggering the bankruptcy of farmers over vast areas. Of course, governments and the UN should address the potential impact of HAARP and other "non-lethal weapons" on climate change

Sum up, the whole issue of intentional weather modification deserves more international attention than it has recently. Existing treaties are inadequate, ill-defined and riddled with loopholes. Any form of offensive weather manipulation for military purposes should be prohibited and the military use of suppression techniques strictly limited.

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