



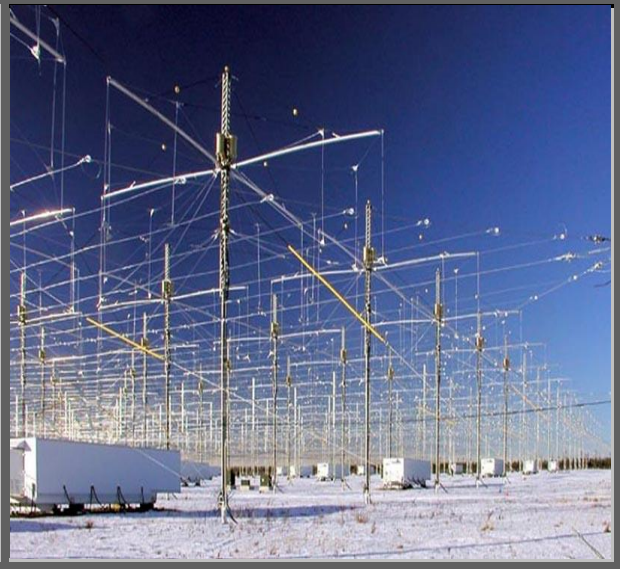
WEATHER MODIFICATION 2025: TIME TO START THE COUNTDOWN

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February 19, 2018

(Views expressed in the brief are those of the author, and do not represent those of ISSI)



In 1996, US armed forces were presented with the striking research titled “Owning the Weather in 2025” under *Project Air Force 2025*. This research outlined the strategy to use weather modification not only as a force multiplier to accomplish military objectives in battlefield, but also to achieve capability of altering “global weather patterns by influencing their determining factors” in the next 30 years.¹

At that time, this idea was just an extension of weather modification capability which US had already achieved. On October 13, 1947, US Navy in collaboration with Weather Bureau and General Electric seeded tropical storm named “The Cape Sable Hurricane” under *Project Cirrus* (February, 1947 – December, 1952). This first successful hurricane modification experiment caused damage of \$ 3.2 billion.² Although, the basic technology was invented by American atmospheric scientist Dr. Bernard Vonnegut in November 1946, but early weather modification experiments by US can be traced back to 1924.³

The first recognized use of weather warfare known as “Project Popeye” was carried out in Indochina region in 1963. During the Vietnam War, US Department of Defence (DOD) in collaboration with Central Intelligence Agency (CIA) carried out secret cloud-seeding operations to extend the duration

¹ Col Tamzy J. House et al., “Weather as a Force Multiplier: Owning the Weather in 2025,” *USAF Air University, Air Command and Staff College* (August, 1996): 3 – 6, accessed November 21, 2017, <http://csat.au.af.mil/2025/volume3/vol3ch15.pdf>.

² “Project Cirrus, First Hurricane Cloud Seeding Experiment,” *Weather Modification History*, accessed December 5, 2017, <https://weathermodificationhistory.com>.

³ Ronald B. Standler, “History and Problems in Weather Modification,” last modified January 21, 2003, <http://www.rbs2.com/w2.htm>.

of monsoon season in several parts of Vietnam and Laos. The principal objective was to impede the North Vietnamese radar equipments used for Surface-to-Air Missiles (SAM). This project not only created favorable conditions for US bombing missions, but also provided cloud cover for military infiltration and muddled the North Vietnamese lines of communication. The disastrous Mekong floods in 1966 are believed to have been the result of Phase II (1964) and Phase III (1966) of this US weather experimentation.⁴

Recognizing the danger of this new means of warfare which can result into “Environmental Pearl Harbor” in future, the United Nations General Assembly (UNGA) adopted a *Convention on the Prohibition of Military or any other Hostile Use of Environmental Modification Techniques (ENMOD)* on December 10, 1976. The guiding principle for this international treaty was to halt the arms race and achieve partial or complete disarmament towards preserving environment for the present and future generations. The text of the Convention was the product of rigorous negotiations at the Conference of the Committee on Disarmament, a predecessor of the Conference on Disarmament. The Convention defines environmental modification techniques as “any technique for changing – through the deliberate manipulation of natural processes – the dynamics, composition or structure of earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space.”⁵

It encourages each state party to participate in and facilitate “the exchange of scientific and technological information” for peaceful purposes. However, it also strictly prohibits them to participate and assist other state, group of states and organization in military use of environmental modification techniques to damage, destroy and injure other state party in long-term at wider level. Furthermore, the state party is required to take necessary steps at national level to prevent the violation of this treaty “anywhere under its jurisdiction.”⁶

Despite being party to ENMOD, US continued its scientific research for military use of weather modification techniques. It established crucially important research programme named *High Frequency Active Auroral Research Project (HAARP)* in 1993 to study the properties and behavior of

⁴ Foreign Relations of the United States, 1964–1968, Volume XXVIII, Laos, 1965–1967, ed. William C. Hamilton (Washington: Government Printing Office, 2010), Document 274, accessed November 22, 2017, <https://history.state.gov/historicaldocuments/frus1964-68v28/d274>; Seymour M. Hersh, “Rainmaking Is Used as Weapon by US,” *The New York Times*, July 3, 1972, <http://www.nytimes.com/1972/07/03/archives/rainmaking-is-used-as-weapon-by-us-cloudseeding-in-indochina-is.html>.

⁵ *Convention on the Prohibition of Military or any other Hostile Use of Environmental Modification Technique*, New York, December 10, 1976, *United Nations Treaty Series*, vol. 2, Chapter XXVI (Disarmament), p. 3, available from https://treaties.un.org/doc/Treaties/1978/10/19781005%2000-39%20AM/Ch_XXVI_01p.pdf.

⁶ *Ibid.*, 3 – 4.

the ionosphere.⁷ The programme is extremely controversial for its electromagnetic warfare capabilities ranging from mind control to global communication and weather control like generating tsunamis and earthquakes. Following severe criticism, US DOD temporarily shut down the research facility in May 2013, and later transferred it to the University of Alaska Fairbanks on August 11, 2015. HAARP resumed its research activities in 2017.⁸ The European Parliament's Foreign Affairs Subcommittee on Security and Disarmament conducted a hearing on HAARP in Brussels on February 5, 1998 and concluded that military research on environmental manipulation as a weapon is going on at Alaska-based HAARP system which is serious violation of the existing convention.⁹ On January 28, 1999, the European Parliament passed a *Resolution on the environment, security and foreign policy* which states that:

24. ... HAARP (High Frequency Active Auroral Research Project) by virtue of its far-reaching impact on the environment to be a global concern and calls for its legal, ecological and ethical implications to be examined by an international independent body before any further research and testing; regrets the repeated refusal of the United States Administration to send anyone in person to give evidence to the public hearing or any subsequent meeting held by its competent committee into the environmental and public risks connected with the HAARP programme currently being funded in Alaska;

25. Requests the Scientific and Technological Options Assessment (STOA) Panel to agree to examine the scientific and technical evidence provided in all existing research findings on HAARP to assess the exact nature and degree of risk that HAARP poses both to the local and global environment and to public health generally;¹⁰

The world's largest weather modification system is currently owned by the government of China in terms of operational, as well as research programmes. Every province of China except one has an operational and research weather modification setup.¹¹ But unlike US, the Chinese programme is an

⁷ "HAARP," Geophysical Institute University of Alaska Fairbanks, accessed February 9, 2018, <http://www.gi.alaska.edu/haarp> .

⁸ Ned Rozell, "HAARP again open for business," Geophysical Institute University of Alaska Fairbanks, accessed February 11, 2018, <http://www.gi.alaska.edu/alaska-science-forum/haarp-again-open-business> .

⁹ The European Parliament Resolution on the potential use of military-related resources for environmental strategies, 1999, O. J. C 0551/95 [hereinafter European Parliament Resolution].

¹⁰ Ibid.

¹¹ Roelof T. Brintjes, "Report from Export Team on Weather Modification Research for 2016/2017," World Meteorological Organization, accessed on February 14, 2018, https://www.wmo.int/pages/prog/arep/wwrp/new/documents/WMO_weathermod_2015-2017.pdf .

effort to fight against the changing weather patterns and to find ways for reduction of extreme natural disasters. In January 2017, the Chinese government approved a \$168 million plan to modify the weather of 960,000sq km area over the course of next three years. This programme is a highly connected digital control system with 1,856 devices including 4 new planes, 8 upgraded craft and 897 rocket launch devices to increase the precipitation up to 10%.¹² In 2016, the Chinese Ministry of Finance allocated \$29.76 million to its weather modification program. However, these are not new initiatives. China has already used the modification technology to ensure ideal weather conditions for Beijing Olympics in 2008.¹³

Weather modification has now become a giant business industry and approximately 34 private companies across the globe are earning huge revenues from selling weather. The world's largest firm is *Weather Modification Incorporated* which was established in 1961 to provide services of atmospheric assessment, meteorological evaluation, cloud seeding, weather radar systems, and environmental monitoring. This US based firm has carried out multi-million dollar research projects for governments of Canada, Australia, Greece, Antigua, Indonesia, Mali, Mexico, Morocco, Saudi Arabia, Spain, Thailand, Turkey and United Arab Emirates (UAE).¹⁴ In 2016, it earned \$40 million from cloud seeding contracts in South America and the Middle East.¹⁵ It also secured a \$ 4.5 million *Rainfall Enhancement Project* for a 100 square mile area of state of Maharashtra, India in 2015. This firm is working in India since 2003 and already completed three projects; *Andhra Pradesh Rainfall Enhancement Project*; *CAIPEEX - Cloud Aerosol Interaction and Precipitation Enhancement Experiment*; and *Varuna-Karnataka Rainfall Enhancement Project*.¹⁶ India is the world's fifth largest state with respect to investment in research and operational weather modification programmes.¹⁷

At present, 56 countries in the world have weather modification programmes. Pakistan being a party to ENMOD was also involved in peaceful weather modification programmes. It carried out eight *Rainfall Enhancement Experiments* during July 1- July 15, 2000 in Eastern part of Sindh province, out of which six were successful. After one month, similar experiments were carried out in Quetta, Baluchistan. In 2002, six more experiments were conducted in the area of Zhob in Baluchistan

¹² "China's radical \$168 million weather control system revealed: Scheme to boost rain and snow for an area double the size of France gets go ahead," Daily mail, last modified January 25, 2017, <http://www.dailymail.co.uk/sciencetech/article-4154194/China-s-radical-168-million-plan-control-weather.html>.

¹³ "China sets aside \$30 million for weather modification program," *Reuters*, July 14, 2016.

¹⁴ Amanda Little, "Weather on Demand: Making It Rain Is Now a Global Business," *Bloomberg Business week*, October 28, 2015, <https://www.bloomberg.com/features/2015-cloud-seeding-india/>.

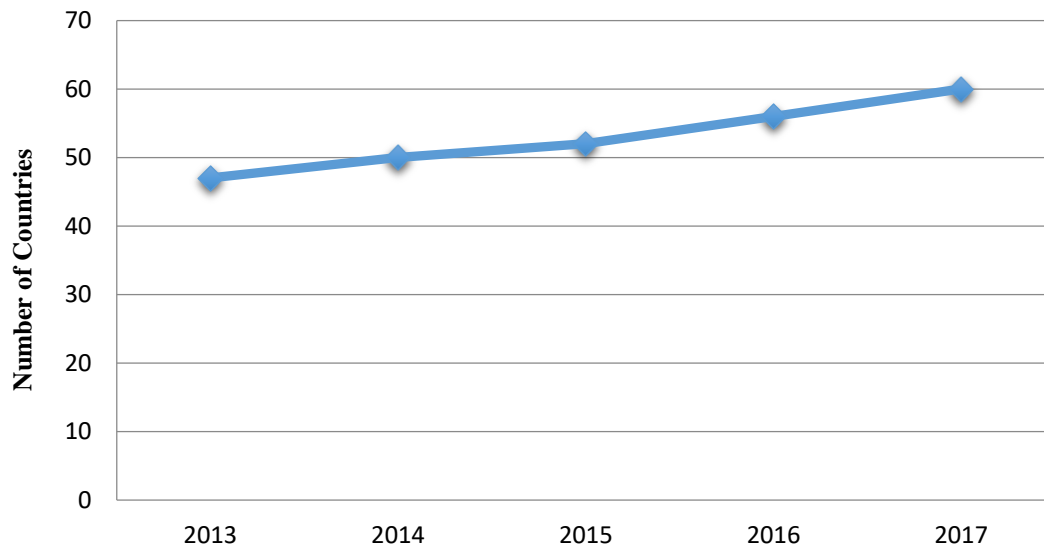
¹⁵ "Geoengineering has become a global business," *Geoengineering*, July 28, 2016, <http://www.geoengineering.news/2016-07-28-geoengineering-has-become-a-global-business.html>.

¹⁶ Clients and Projects, *Weather Modification Incorporated* accessed December 5, 2017, <http://www.weathermodification.com/index.php>.

¹⁷ "Report from Export Team on Weather Modification Research for 2016/2017," op.cit.

Province in September 2002. In the meantime, few experiments were also performed in cities of Murree and Mianwali.¹⁸ Currently, there is no operational research weather modification programme in Pakistan.

Figure 1: Number of Countries with Weather Modification Programs (2013 – 2017)



Source: World Meteorological Organization (WMO)

The shift from peaceful to military use of weather modification techniques is quite easy as compared to nuclear technology because of its easy and open availability. The inclination of countries towards research and operational weather modification programmes is increasing at a rapid pace which should be strictly supervised and managed. In 2013, the number of countries with weather modification programs was just 47, which reached 60 in 2017 (Figure 1). However, ENMOD practically failed to perform its assigned role in this respect due to following weaknesses:¹⁹

1. The threshold with respect to the intensity, scope and duration of these techniques [Article1] is so ambiguous and ill-defined that it is difficult to cross. Thus, making ENMOD practically ineffective.

¹⁸ Chaudhry et al., "Cloud Seeding Experiments on Warm Clouds in Pakistan," *Journal of Weather Modification* 36 (April, 2004), 35 – 39, accessed on February 14, 2018, www.weathermodification.org/publications/index.php/JWM/article/view/442 .

¹⁹ "ENMOD Treaty – Loophole – Does Not Restrict Corporations from Modifying the Weather for Profit," Word press, accessed on February 15, 2018, <https://walkernewsdesk.wordpress.com/2011/05/22/enmod-treaty-loophole-does-not-restrict-corporations-from-modifying-the-weather-for-profit/> .

2. It didn't completely outlawed the environmental modification experimentation. It seemed to be a deliberate error of parties because BTWC was finalized in the same time period by the same parties which strictly banned the production, stockpiling and transfer of biological agents.
3. Despite of existing weaponization of weather programmes and events of deliberate destruction of environment, not a single country has been convicted under ENMOD since its enforcement.
4. It allows state party to lodge a complaint with the UN Security Council against any environmental damage, but this damage must be proved and the complaint should include all the relevant and valid supporting evidences and information [Article 3] which is practically impossible for technologically less developed countries.²⁰
5. There is no liability mechanism.
6. Its "Review Conference Mechanism" (Article 8) is totally ineffective and since 1977, only two conferences took place in 1984 and 1992 without any concrete contribution. These review conferences should be convened after every five years [Article 8 (1)]

The modification of weather is a crawling threat which has been totally neglected from last four decades. Discussion on the military use of weather modification techniques by US is a taboo in international arena and usually termed as conspiracy theory or fake propaganda. Revision and implementation of ENMOD is an urgent need of time and if it's not being done, then the time is not far away that the global climate will be controlled by a single country to be used against humanity. If US possessed a capability to develop a tropical storm seven decades ago, one can only guess what kind of advance technology it might have in 2025?

²⁰ *Convention on the Prohibition of Military or any other Hostile Use of Environmental Modification Technique*, 6, op.cit.