GEOENGINEERING
Weather Modification
and
Weaponizing Nature

A Presentation by Jim Lee of ClimateViewer News

CLIMATEVIEWER.COM
CLIMATEVIEWER.ORG
WEATHERMODIFICATIONHISTORY.COM
Global warming alarmists and climate scientists would have you believe that the latest extreme weather events can surely be blamed on rising CO$_2$ levels while never mentioning the effects of daily weather experiments overhead.

WeatherModificationHistory.com
Coming soon
“No, weather is NOT climate…even when it’s warm outside. But in case there’s a climate cultist in your life that insists otherwise, here are some facts about global warming, climate change, climate disruption, global weirding and vaguely-defined “extreme” weather that you can use to talk some sense into them.”

www.corbettreport.com/weather-is-not-climate/
James Corbett, The Corbett Report
100 Years Of Weather Control

and nobody knew...
Did you know?
Weather Warfare was banned October 5, 1978

ENMOD
“Environmental Modification Convention”
aka
Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques
Charles Mallory Hatfield – 1915-1916

The Moisture Accelerator
Created a secret mixture of 23 chemicals in large galvanized evaporating tanks that he claimed, attracted rain.
Charles Mallory Hatfield – 1915-1916

Contracted to fill Lake Morena reservoir in San Diego, California.

Never paid $10,000 contract due to $3.5 million flooding.
The Birth of Cloud Seeding
November 13, 1946

Vincent Schaefer, Irving Langmuir, and Bernard Vonnegut
First Hurricane Modification Attempt
October 13, 1947

PROJECT CIRRUS

The US Army, Navy, Weather Bureau, and General Electric scientists seed the first tropical storm ever on October 13, 1947 with 180 pounds of dry ice dropped by aircraft.

The Cape Sable hurricane formed, abruptly changed color and direction (120 degrees), and slammed into Savannah Georgia causing 1 death and $3.2 million in damages.

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Irving P. Krick Invents
Ground-based Cloud Seeder - 1949

Irving P. Krick - Inventor of the Ground-based Cloud Seeding Station

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Cloud Seeding Projects 1952 – 1965

Figure 1
Randomized cloud seeding field experiments in the United States.
Jet Aircraft's "Artificial Clouds" Block Sun – 1958

Darn Sky Riders

Jet Trails Dim Sun, Palm Springs Gripses

WASHINGTON, Dec. 6, 1958 (UPI)—The air force is long since resigned to the fuss about noise from its jets. Now comes Palm Springs, Calif., with a new complaint—that jet trails overhead are so thick they are beginning to blot out the sun.

Jimmy Cooper, manager of the Palm Springs Chamber of Commerce, outlined this 'most serious and urgent problem' in a telegram to Representative D.S. Saund (D-Calif.), who has asked the air force what can be done.

"As you know," Cooper wired Saund, "our entire economy is dependent upon the tourist trade, which is predicated on our bright sunshine and warm climate. Recently our sky has resembled a mob of embersky riders performing an aerial circus."

"The contrails are not disappearing but are breaking down into a haze and creating a cloudlike appearance in the sky."

"With the unlimited expansion of barren, uninhabited land in the West, does such activity have to be centered over a resort area, which is offering the visitor cloudless skies and unlimited sunshine?"

The air force, so far, is flabbergasted. No doubt in time it will recover its aplomb sufficiently to give Saund the usual answer to all congressional inquiries—

Shill Ousted by Minister

TOPEKA, Kan., Dec. 6 (AP)—Maurice D. Tulloch, who gave up the life of a Baptist minister to become a shill in a Las Vegas gambling casino, was stripped of his ministerial standing yesterday.

The action was taken by the executive committee of the Kansas Baptist convention.

The air force, so far, is flabbergasted. No doubt in time it will recover its aplomb sufficiently to give Saund the usual answer to all congressional inquiries—

The newspaper quoted what it said were fact that demonstrate that "certain circles in Iran, following the lead of external sources, are aiming at a deterioration of Soviet-Iranian relations and the ending of mistrust between the two states."
Navy creates/destroys artificial clouds with Carbon Black dust - 1958

Blue Skies Or Stormy Weather

Navy Scientist Creates Clouds, Breaks Them Up

New Technique May Make Rain

WASHINGTON, Sept. 23 (AP) - The navy said today it has created clouds and destroyed others by seeding them with ordinary carbon black.

A woman scientist who discovered the new method said experiments over southern Georgia produced a series of clouds at a cost of 18 cents a cloud.

Much experimentation must be done before the value of the new technique can be determined. It could open the way to cheap and reliable means of making rain, or of breaking up storm clouds, or of dissipating fog.

The technique was developed by Dr. Florence W. Van Straten, who livened up a desk job with the chief of naval operations by theorizing along new lines as to how rain is formed.

Earlier cloud-seeding methods using more expensive dry ice and silver iodine have been confined to super-cooled clouds. The carbon method, Dr. Van Straten said, apparently works with clouds at any temperature.

In the Georgia experiments, a navy airplane dropped carbon black in both solid and liquid suspension form into clouds and into clear skies. Additional studies using radar-tracked balloons currently are under way over Chesapeake Bay.

Results indicate that when the carbon is sprayed or sprinkled into a clear sky it causes clouds to form, and when it is introduced into clouds it clears them up. Whether it actually produces rain in this process has not been determined definitely.

"We dropped carbon black, suspended in liquid, over a track a mile long and produced a solid line of clouds one mile long," Dr. Van Straten told a reporter.

"When we dropped 1/4-pound dry packages of carbon black, we produced single clouds with each drop."

The navy team seeded seven clouds with carbon, and dissipated each of them in from 21/2 to 20 minutes.

"Each cloud turned gray and then rapidly disappeared," Dr. Van Straten said.

"Aside from the cost of the airplanes, we spent less than $5 on the experiments in Georgia."

Carbon black, used in printer's ink and automobile tires, is nothing more than soot. It is available cheaply, in commercial quantities, as a by-product of the burning of natural gas.

FOLLOW US ON FACEBOOK WEATHER MODIFICATION HISTORY
Project Skyfire - 1960-1967

Preventing forest fires with Cloud Seeding
Project West Ford

October 21, 1961 - September 5, 1963

Creating an Artificial Ionosphere

480,000,000 copper dipole antennas launched into orbit.

Some are still up there.
Project Storm Fury
August 17, 1962 - 1983

NOAA
Hurricane mitigation
cloud seeding experiments
“Create an artificial ion cloud in interplanetary space for studying the state of the interplanetary medium .. sounding rocket experiments”

Fig. 1. Schematic view of a plasma injection experiment. (From Cornwall [1972].)
Artificial Strontium and Barium Clouds in the Upper Atmosphere - 1964

“So far seven different experiments have been carried out with sounding rockets in the Sahara and in Sardinia.”
“as long as the program was called Solar Energy by the United States, it could not be considered a weapons project.”
Commercial Airlines To End “Smoke Pollution of the Skies” 1970

Lawsuit by Illinois and New Jersey vs. Airline industry, Settled out of court by Secretary of Transportation Volpe. Install “Burner Cans,” reduce particulate emissions by 70%
Cloud Seeding Used As Weapon

30 Years After Invention
Operation Popeye
Weather Warfare over Vietnam

“Make mud, not war”
March 20, 1967 - July 5, 1972

WC-130E with Silver Iodide dispenser rack

USAF 54th Weather Reconnaissance Squadron (3 planes total)
Operation Popeye
Weather Warfare over Vietnam

GOALS

• Softening road surfaces

• Causing landslides along roadways

• Washing out river crossings

• Maintain saturated soil conditions beyond the normal time span.
Operation Popeye first came to public light in March 1971, when reporter Jack Anderson published a story based on a secret 1967 memo from the Joint Chiefs of Staff to President Johnson. The memo read: “Laos operations – Continue as at present plus Pop Eye to reduce the trafficability [sic] along infiltration routes & Authorization requested to implement operational phase of weather modification process previously successful tested and evaluated in some area”.
Weather Warfare Politics
Weather modification meets full disclosure
Benjamin Forman, a senior Department of Defense lawyer, reiterated [Secretary of Defense Melvin] Laird’s denial later that year:

“We have not, as Secretary Laird has previously said, ever engaged in weather modification activities in Northern Vietnam.”

Discussing the need for ENMOD
Weather Modification Reporting Laws

- **Weather Modification Reporting Act of 1972** – *Public Law 92-205* “AN ACT To provide for the reporting of weather modification activities to the Federal Government”
  
  *15 CFR Part 908* – “Maintaining Records and Submitting Reports on Weather Modification Activities”

- **National Weather Modification Policy Act of 1976** – *Public Law 94-490* “AN ACT To authorize and direct the Secretary of Commerce to develop a national policy on weather modification, and for other purposes”
  
  *15 U.S. Code Chapter 9A* – “Weather Modification Activities or Attempts; Reporting Requirement”
**Weather Modification Reporting Forms**

Complete in accordance with instructions on reverse and forward copy:

TO: National Oceanic and Atmospheric Administration Office of Oceanic and Atmospheric Research 1315 East-West Highway SSMC-3 Room 11216 Silver Spring, MD 20910

Form Approved: OMB No. 0648-0025 Expires 12/31/2007

NOAA FORM 17-4

U.S. DEPARTMENT OF COMMERCE
(4-81) NAT'L OCEANIC AND ATMOSPHERIC ADM.

INITIAL REPORT ON WEATHER MODIFICATION ACTIVITIES (P.L. 205, 92ND. CONGRESS)

---

1. PROJECT OR ACTIVITY DESIGNATION, IF ANY

2. DATES OF PROJECT
   a. DATE FIRST ACTUAL WEATHER MODIFICATION ACTIVITY IS TO BE UNDERTAKEN
   b. EXPECTED TERMINATION DATE OF WEATHER MODIFICATION ACTIVITIES

4. (a) SPONSOR
   NAME
   AFFILIATION
   STREET ADDRESS
   CITY
   STATE
   ZIP CODE
   PHONE NUMBER

4. (b) OPERATOR
   NAME
   AFFILIATION
   STREET ADDRESS
   CITY
   STATE
   ZIP CODE
   PHONE NUMBER

---

5. TARGET AND CONTROL AREAS (See Instructions)

   TARGET AREA
   LOCATION
   SIZE OF AREA
   SQ.MI.

   CONTROL AREA
   LOCATION
   SIZE OF AREA
   SQ.MI.

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6. DESCRIPTION OF WEATHER MODIFICATION APPARATUS, MODIFICATION AGENTS AND THEIR DISPERAL RATES, THE TECHNIQUES EMPLOYED, ETC. (See Instructions)
# Weather Modification Reporting Forms

**NOAA FORM 17-4A**  
U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
Form Approved OMB No. 0648-0025  
Expires 12/31/2007

## INTERIM ACTIVITY REPORTS AND FINAL REPORT

This report is required by Public Law 92-205; 85 Stat. 735; 145 U.S.C. 330b. Knowing and willful violation of any rule adopted under the authority of Section 2 of Public Law 92-205 shall subject the person violating such rule to a fine of not more than $10,000, upon conviction thereof.

Complete in accordance with instructions on reverse and forward one copy to:  
National Oceanic and Atmospheric Administration  
Office of Oceanic and Atmospheric Research  
1315 East-West Highway SSM C-3 Room 11216  
Silver Spring, MD 20910

<table>
<thead>
<tr>
<th>Month</th>
<th>Number of Modification Days</th>
<th>Number of Modification Days Per Major Purpose</th>
<th>Hours of Apparatus Operation by Type</th>
<th>Type and Amount of Agent Used</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>(a)</td>
<td>(b)</td>
<td>(c)</td>
</tr>
<tr>
<td>MOTH</td>
<td></td>
<td>INCREASE PRECIPITATION</td>
<td>ALLEVIATE</td>
<td>OTHER</td>
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<td></td>
<td></td>
<td>HAIL</td>
<td>FOG</td>
<td>AIRBORNE</td>
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<td>GROUND</td>
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<td>April</td>
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<tr>
<td>May</td>
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</tbody>
</table>
ENMOD Weather Warfare Ban

Signatories to ENMOD 1978

Opened for signature May 18, 1977
Signed October 5, 1978
ENMOD Weather Warfare Ban

“Each State Party to this Convention undertakes not to engage in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State Party”

REQUIRES HOSTILE INTENT
Weather Modification: Programs, Problems, Policy, and Potential

May 1978
784 page accounting of weather modification activities in the USA
Summary of Weather Modification Activities Reported in 1979

Table 6.--Summary of reported data for CY 1979

<table>
<thead>
<tr>
<th>Activity</th>
<th>Federal</th>
<th>Nonfederal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Modification days (cumulative)</td>
<td>147</td>
<td>1,091</td>
<td>1,238</td>
</tr>
<tr>
<td>(b) Modification days (increase precipitation)</td>
<td>113</td>
<td>974</td>
<td>1,087</td>
</tr>
<tr>
<td>(c) Modification days (hail suppression)</td>
<td>0</td>
<td>133</td>
<td>133</td>
</tr>
<tr>
<td>(d) Modification days (fog dispersal)</td>
<td>34</td>
<td>56</td>
<td>90</td>
</tr>
<tr>
<td>(e) Modification days (research)</td>
<td>54</td>
<td>22</td>
<td>76</td>
</tr>
<tr>
<td>(f) Airborne apparatus operation (hours)</td>
<td>355</td>
<td>2,043</td>
<td>2,398</td>
</tr>
<tr>
<td>(g) Ground-based apparatus operation (hours)</td>
<td>984</td>
<td>14,621</td>
<td>15,605</td>
</tr>
<tr>
<td>(h) Dry Ice (kg)</td>
<td>1,530</td>
<td>15,933</td>
<td>17,463</td>
</tr>
<tr>
<td>(i) Silver iodide, dispensed (kg)</td>
<td>224</td>
<td>678</td>
<td>902</td>
</tr>
<tr>
<td>(j) Liquid propane (gal)</td>
<td>11,077</td>
<td>0</td>
<td>11,077</td>
</tr>
<tr>
<td>(k) Polyelectrolyte (kg)</td>
<td>0</td>
<td>641</td>
<td>641</td>
</tr>
</tbody>
</table>
ENMOD Has No Teeth

• ENMOD is just an agreement (paper)
• No way to detect weather warfare
• No way to prove case
• No way to enforce punishment

#WTF
Where Are We Today?
The Blue Gold Rush

“Fresh water has been dubbed “Blue Gold” in many publications as potable water will be to this century what oil was to the last century.”
Cloud Seeding is Big Business

Weather on Demand: Making It Rain Is Now a Global Business
Welcome to the strange world of cloud seeding.
By Amanda Little | October 28, 2015
From Bloomberg Businessweek

Would YOU pay £100,000 to guarantee a sunny wedding? Travel company offers 'cloud bursting' service to banish rain for couples' big day
- Oliver's Travels say service will guarantee blue skies on the special day
- The technique is also known as cloud seeding and is widely used in China
- Method involves firing rockets filled with silver iodide crystals into clouds
- Particles freeze water droplets causing the clouds to burst and then vanish
- The technique was used ahead of 2008 Beijing Olympics opening ceremony to keep stadium dry
- It was also reportedly used by the Duke and Duchess of Cambridge before their 2012 wedding

Countries are spending millions to control the weather — here's why
- China spent millions on a shady project to control the weather ahead of the Beijing Olympics — and dozens of other countries are doing it too
- This summer, China set aside £1.5bn to develop a controversial project that involves shooting salt and mineral-flavored bullets into the air.
Cloud Seeding Projects Worldwide

climatiewviewer.org/3D/
“The Hurricane Modification Workshop was initiated by Under Secretary Jay Cohen, DHS S&T, to investigate the possibility of minimizing the tremendous loss of life, property, and economic stability by reducing the destructive forces of a hurricane. This may be accomplished by modifying its track, speed, winds, and rain.”
US Military Violating ENMOD
1994 FOIA – USAF Phillips Lab, USN China Lake

NON LEthal WARFARE PROPOSAL

TITLE: WEATHER MODIFICATION

TYPE OF EFFORT: S&T

PROPOSED BY: Code C2741 (Warhead Development Branch) NAWCWPNS, China Lake, CA 93555-6001

CAPABILITY & USES: (1) To impede or deny the movement of personnel and material because of rains-floods, snow-blizzards, etc.
(2) To disrupt economy due to the effect of floods, droughts, etc.

TECHNICAL DESCRIPTION: By way of background, weather modification was used successfully in Viet Nam to (among other things) hinder and impede the movement of personnel and material from North Viet Nam to South Viet Nam. Since that time military research on Weather Modification has dwindled in the United States but not necessarily in the Soviet Union (Russia). Commercial weather modification is an active industry.

The approach of this proposal is to (1) determine the current state-of-the-art technology in weather modification; (2) determine the applicability of current weather modification techniques and devices to military application and utilization; and (3) generate a E&MD Program Plan(s) to modify (or develop as necessary) weather modification techniques and devices suitable for military application. Current industrial techniques and devices are not likely to be suitable for military application or meet military requirements.

The successful completion of the proposed effort and the follow-on E&MD program(s), will give the U.S. military a viable, state-of-the-art weather modification capability again.

RISK & LIMITATIONS: The risk is low in that this initial proposed study effort/investigation and its assumed E&MD follow-on involve the modification of commercial techniques and devices to meet military applications and not the development of new technology.

The application of weather modification requires suitable meteorological conditions and, therefore, has that operational limitation.

I know of no countermeasures.

PROJECT PLAN:

<table>
<thead>
<tr>
<th>ACTIVITY/FY</th>
<th>FY-1</th>
<th>FY-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine State-of-Art</td>
<td>1/2 man-year/$65K</td>
<td>3/4 man-year/$105K</td>
</tr>
<tr>
<td>Investigate Applicability to Military Utilization</td>
<td>3/4 man-year/$100K</td>
<td>3/4 man-year/$105K</td>
</tr>
<tr>
<td>Generate Follow-on Proposals [E&amp;MD(s)]</td>
<td>1/2 man-year/$70K</td>
<td>1/2 man-year/$70K</td>
</tr>
<tr>
<td>TOTALS</td>
<td>1 1/4 man-year $165K</td>
<td>1 1/4 man-year $175K</td>
</tr>
</tbody>
</table>

Rough estimate of total cost to operational capability: $23.5M. Life cycle costs have not been estimated.

Organization Point of Contact:
US Military Violating ENMOD
1995-1997 – AF2025, WXMOD Test Technology Symposium ’97

Weather as a Force Multiplier: Owning the Weather in 2025
by Col Tamzy J. House, Lt Col James B. Near, Jr., LTC William B. Shields (USA), Maj Ronald J. Celentano
Maj David M. Husband, Maj Ann E. Mercer, Maj James E. Pugh, August 1996

CLOUD SEEDING

• WEATHER MODIFICATION USING CARBON BLACK (1)
  – Increase Precipitation
    » Muddy dirt roads to decrease tractability
    » Flood fields and small rivers
    » Decrease troop comfort level
    » Decrease tractability by snow or freezing rain when the
      temperature conditions are right
  – Decrease Precipitation
    » Dry out roads/fields for improved tractability
    » Don’t fresh water to troops in semi-dry regions

CLOUD SEEDING (cont.)

• WEATHER MODIFICATION USING CARBON BLACK (2)
  – Increase Cirrus Cloud Cover
    » Deny visual satellite or high altitude reconnaissance
    » Decrease light level for night time operations
  – Dissipate Fog
    » Uncover targets for visual raids
    » Provide visual inspection of damage
    » Provide visual reconnaissance
    » Open airfields for landing/recovery
Cloud Ionizers – Electric Rainmaking

CLEAR SKY MANAGER has been tested on various occasions such as in Russia (Vladivostok, October 2003) as well as put into practice with success in DUBAI in the period September 2006-January 2007.
Cloud Ionizers – Electric Rainmaking

Electromagnetic Weather Control is Here!

The proprietary weather modification system operates by utilizing ‘resonance’ signals to divert oceanic atmospheric-rivers into areas experiencing severe drought.

“Fresh water has been dubbed “Blue Gold” in many publications as potable water will be to this century what oil was to the last century.

While large efforts and money are being allocated for localized weather modification, SciBlue is looking to use the tropospheric rivers to deliver rain to parched areas of the world now and possibly abatement operations of severe weather in the near future.”

David Kutchinski, CEO Scibluce, Inc
US. Air Force Company
La Junta, Colorado, USA

aquiless is offering sovereign states an augmented rainfall capability as part of its new regional ‘tool-box’ - to strengthen economies, replenish dry-land agriculture and improve food security - David Miles CEO

https://climateviewer.com/2015/05/28/how-texas-stole-californias-rain/
https://climateviewer.com/2014/02/02/blue-gold-rush-future-water-wars-using-rivers-troposphere/
Cloud Ionizers – Electric Rainmaking

WMO DOCUMENTS ON WEATHER MODIFICATION
Updated in the meeting of the Expert Team on Weather Modification Research
Abu Dhabi, 22-24 March 2010

WORLD METEOROLOGICAL ORGANIZATION

“Weather Modification technologies that claim to achieve such large scale or dramatic effects do not have a sound scientific basis (e.g. hail canons, ionization methods) and should be treated with suspicion.”

EXECUTIVE SUMMARY OF THE WMO STATEMENT ON WEATHER MODIFICATION

INTRODUCTION

The activities of the WMO in the area of weather modification are aimed at research projects, and at providing guidance about best practices for operational projects.

It should be realised that the energy involved in weather systems is so large that it is possible to create cloud systems that rain, alter wind patterns to bring water vapour into a region, or completely eliminate severe weather phenomena. Weather Modification technologies that claim to achieve such large scale or dramatic effects do not have a sound scientific basis (e.g. hail canons, ionization methods) and should be treated with suspicion.

Purposeful augmentation of precipitation, reduction of hail damage, dispersion of fog and types of cloud and storm modifications by cloud seeding are developing technologies which are striving to achieve a sound scientific foundation.

Operational programmes in fog dispersion, rain and snow enhancement and hail suppression are taking place in many countries around the world. The primary aim of these projects is to obtain...
“Others are engaging even in an eco-type of terrorism whereby they can alter the climate, set off earthquakes, volcanoes remotely through the use of electromagnetic waves.”

Secretary of Defense William Cohen
Ionospheric Heaters

High Power Auroral Stimulation Observatory (HIPAS)
30 miles Northeast of Fairbanks, Alaska (64.872, -146.638)

Arecibo Observatory Enhanced HF Ionospheric Heating Instrument
Arecibo Observatory, Arecibo, Puerto Rico (18.344, -66.752)

Sura Ionospheric Heating Facility
Vasilsursk, Nizhny Novgorod Oblast, Russia (56.143, 40.068)

Tromsø Ionospheric Heater
Ramfjordmoen, Near Tromsø, Norway (69.583, 19.211)
HAARP IRI – Gakona, Alaska

High Frequency Active Auroral Research Program (HAARP)

3.6 million watts @ 2.8-10 MHz
> 5 billion watts ERP

CLIMATEVIEWER.COM/HAARP/
“we don’t think there is any downside to not having them [Van Allen belts]” says Dr. Jacob Bortnik, UCLA. “That’s the most any of us can really say at the moment.”

TETHER Panel Recommendation: Use HAARP facility in Alaska as a “wind tunnel” to determine the feasibility and engineering specifications of a mitigation system.

- Observe amplified and triggered waves
  - At conjugate region (Southern Pacific)
  - Near HAARP upon reflection in the south
- Observe ionospheric effects of precipitated electrons with HAARP diagnostics
HF Ionospheric Heaters as “VIRTUAL” ULF/ELF/VLF Antennae

Two techniques:
1. Current modulation – Polar Electrojet (PEJ) Antenna – Requires the presence of an electrojet current – not applicable at mid-latitude

Auroral or Equatorial Electrojet Current

Hall Region

- Natural Currents Flow in the Auroral and Equatorial Ionosphere at 80-100 km
- The HF signal (modulated at ELF/VLF) heats and thereby changes the local conductivity of the ionosphere
- The electrojet current is then caused to vary at the same ELF/VLF rate
- Propagating ELF/VLF signals are radiated by this ‘virtual antenna’

ELF / VLF < 20kHz

Radiated ELF Signal is Related to the Power of the HF Transmitter

E-Region

100 km
Polar Electrojet PEJ Heating
E Region
DOES NOT REQUIRE EJET – CAN BE IMPLEMENTED ANYWHERE AND ANYTIME

Based on Modulated F-Region Heating

\[ \Delta J = \frac{B \times \nabla \delta p}{B^2} \exp(i\omega t) \]

Magnetosonic (MS) Wave

Step 1:

Step 2: E field of MS wave drives Hall current in E-region resulting in secondary antenna resembling PEJ

F-region cooling response does not allow frequencies higher than 60-70 Hz

Injects MS & SAW upwards and ELF in the Earth-Ionosphere Waveguide

Papadopoulos et al. GRL 2011a,b
Eliasson et al., JGR 2012
**SUMMARY**

- ELF produced by HAARP with *NO Electrojet – A Major Breakthrough* based on discoveries in recent HAARP campaigns under MURI/ONR and BRIOCHE/DARPA programs
  - Predictable and repeatable ELF generation up to 50 Hz on daily basis
  - $M_{eff} \approx 4 \times 10^9$ A-m$^2$
  - Validated technique: plasma currents driven by HF heating in the F/E layers
  - Technology transferable to low latitude regions with robust F & no E’Jet
- An efficient Ionospheric ELF source that can be positioned in theater on a mobile platform
  - Data rate >> FELF system
    - Higher source strength
  - High TRL level for transitioning
Implications - Barge or Shipboard Option

Combination of low HF power and high HF frequency requirements allow for mobile option

Strawman HF Array

- HF frequency 8-10 MHz
- Linear polarization
- Twenty 25-kW solid state transmitters
- Ship provided power

- Can provide theater and strategic sub communications
- Enhance Blue-Green laser tactical communications by providing info as to transmit and receive locations
**ELF Mobile Array Performance**

- Optimal area for Mobile Array along Magnetic Equator (green band, within 2° from dip equator)
- Power requirements depend on location
  - Example: Korea - Yellow Sea
    - 800 KW system can provide data rates in the tens of bit/sec
    - Signal as large as 5 pT at 40 Hz or more at range of 3500 km
    - Typical background noise at 40-80 Hz is 200-500 ft/Hz^{1/2}
Project LUCY in the Sky with Diamonds
“noctilucent clouds formed from the breakdown of methane in a circular zone above the HAARP transmitter”

The Technology

Methane in the air is decomposed in between radio transmitters that each use slightly different radio frequencies.

Figure 4. Schematic representation of two beamed parabolic radio transmitters using slightly different frequencies, the radio interference pattern of which is designed to decompose methane in a plume rising into the Arctic atmosphere from unstable surface and submarine methane hydrates.

DON'T CROSS THE STREAMS!!
GEOENGINEERING
AKA
CLIMATE ENGINEERING
AKA
CLIMATE INTERVENTION
Terminology

Solar Radiation Management (SRM)
Stratospheric Aerosol Injection (SAI)
Marine Cloud Brightening (MCB)
Thermal Radiation Management (TRM)
Short Wave Climate Engineering (SWCE)
Terminology – Google Scholar Results

• geoengineering [25,200 results]
• weather modification [20,900 results]
• weather control [4,130 results]
• climate modification [5,310 results]
• climate engineering [2,460 results]
• climate intervention [119 results]
• ecological alteration [366 results]
• albedo modification [531 results]
• albedo enhancement [1,580 results]
• solar radiation management [1,470 results]
• stratospheric aerosol injection (SAI) [173 results]
• stratospheric aerosol geoengineering (SAG) [84 results]
Can Dr. Evil Save Us From Global Warming?

Global Warming and Ice Ages:
I. Prospects for Physics-Based Modulation of Global Change

E. Teller
L. Wood
R. Hyde

This paper was prepared for submittal to the
22nd International Seminar on Planetary Emergencies
Erice (Sicily), Italy
August 20-23, 1997

August 15, 1997

Albedo Enhancement by Stratospheric Sulfur Injections –
A Contribution to Resolve a Policy Dilemma
by Paul J. Crutzen (Nobel prize winner)

“Building trust between scientists and the general public would be needed to make such a
large-scale climate modification acceptable, even if it would be judged to be advantageous.

Finally, I repeat: the very best would be if emissions of the greenhouse gases could be reduced
so much that the stratospheric sulfur release experiment would not need to take place.

Currently, this looks like a pious wish.”
Geoengineering SRM Funding

The Fund for Innovative Climate and Energy Research

“FICER”

All your weather are belong to me
Geoengineering SRM Lobbyists

Ken Caldeira  Alan Robock  Ben Kravitz  David Keith
The Silver Lining Project - Marine Cloud Brightening
Geoengineering SRM Projects

The Stratoshield "Hose to the Sky"
Geoengineering SRM Projects

Stratospheric Particle Injection for Climate Engineering SPICE
In other words, if the public comes to see geoengineering as, as one attendee put it, "a crazy idea cooked up by rich Anglo Saxons to dominate the climate," then they will all be rightfully tarred and feathered.

As for the U.S. Department of Defense — forget about it. To this group, such involvement prompts nightmares of a new military-industrial-geoengineering complex.
Geoengineering Will Kill People

“It is likely that any SRM geoengineering intervention will create **winners and losers** and some nations may always be against any intervention whatsoever.”

“In any given year there are floods, droughts, heatwaves, etc. but during this field trial a fraction of these events would be attributed (rightly or wrongly, partially or fully) to the intervention. Two questions arise:”

“Could it be determined if any changes in the climate (outside of the target area) had occurred as a result of the intervention during a 10 year trial?”

“How would aggrieved nations or peoples seek reparations for perceived negative impacts (scientifically proven or otherwise)?”

- *Pete Irvine, PhD student. School of Geographical Sciences, University of Bristol.*
Geoengineering Will Kill People

- the solar geoengineering led to serious side-effects, e.g., reduced rainfall over the semi-arid area south of the Sahara desert

- When when solar geoengineering stopped, the climate rapidly rebounded

- we cannot tell how much cooling was caused by solar geoengineering and how much resulted from natural climate variability, e.g. volcanic eruptions”

- Integrated Assessment of Geoengineering Proposals
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, with the exception of small scale scientific research studies that would be conducted in a controlled setting – Convention for Biological Diversity, Climate-related Geoengineering and Biodiversity, 2012

“The U.S. is not a party to the 1992 accord and thus was NOT officially involved in the geoengineering decision.”
“Within the **Paris agreement** there’s an implicit assumption that there will need to be greenhouse gases removed,” said Phil Williamson, a scientist at the U.K.’s University of East Anglia, who worked on the report. “**Climate geoengineering is what countries have agreed to do**, although they haven’t really realized that they’ve agreed to do it.”
Geoengineering Is Already Happening

“The emissions and the climate change that we’re causing with that is already a massive experiment on our world that we don’t really know the outcome of. So I don’t think we should start another set of experiments and go into geoengineering. I think we should get our act together and reduce our emissions.”

U.N. Assistant Secretary-General Janos Pasztor
Geoengineering Is Already Happening

“ARTIFICIAL CLOUDS” – Ship Tracks

MODIS Terra Corrected Reflectance
3-6-7 band - January 30, 2013
BUNKER FUEL - “The real issue lies with the heavy fuel oil the ships run on and the almost complete lack of regulations applied to the giant exhaust stacks of these container ships.”
Geoengineering Is Already Happening

“ARTIFICIAL CLOUDS” – Contrail Cirrus

A case study of the radiative forcing of persistent contrails evolving into contrail-induced cirrus

March 20, 2009
“Chemtrails”

**TIMELINE**
Jet Fuel Additives
By: Jim rezn8d Lee

- **1962** DuPont Stadis 450
- **1970** DuPont Jet Fuel Additive Number 5 (JFA-5)
- **1988** Conversion from JP4 to JP8 begins
- **1994** +100 Additive Tests begin
- **1996** Conversion to JP8 Complete
- **October 1997** +100 Additive in 1000 USAF Jets
- **1997** Chemtrail Conspiracy Begins
- **1992** Stratospheric Weisbach seeding patent
- **1995** Owning the Weather in 2025
- **March 1997** Weather Modification Test Tech Symposium
- **August 1997** Teller’s Geoengineering Proposal

**Stadis 450 DINNSA** = Dinonylnaphthylsulfonic acid
**Barium Fuel Additive** = Anti-Static Agent used since 1962

Table ES-1. Elements detected in jet fuel.

<table>
<thead>
<tr>
<th>Element</th>
<th>Jet A (ppb)</th>
<th>JP5* (ppb)</th>
<th>JP8 (ppb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>ND</td>
<td>2144</td>
<td>9360</td>
</tr>
<tr>
<td>Barium</td>
<td>3</td>
<td>9</td>
<td>38</td>
</tr>
</tbody>
</table>
Terminology – Credibility is Crucial

- Chemtrails
- Persistent Contrails
- Spreading Contrails
- Contrail Cirrus
- Contrail Induced Cloudiness
- Aviation Induced Cloudiness
- Aviation Induced Cirrus
- Induced Cirrus Cloudiness
- Man-made clouds
- **Artificial Clouds**

- Sky Brightening
- Ice Haze
"I'm talking about a sub-visual contrail-generated haze of ice, which we do not classify as a cloud but gives blue sky more of a whitish tint."

Chuck Long, a CRES researcher at NOAA/ESRL's Global Monitoring Division
“Sulfuric Acid from Aviation and Ship Tracks may be higher today than Geoengineering SRM would require in 2020

“25,000 metric tons of sulfuric acid to cut global warming in half after one year.” – David Keith

“1990 global aviation’s annual contribution to the atmospheric sulfur budget by aircraft of 2.0 E7 kg H2SO4 (20,000 metric tons). …by 2010 Aviation emissions could had [sic] been up 110%”

“So perhaps those in the GE community who are genuinely opposed to geoengineering should revise their premises and call for research into GE with the purpose of ending this ‘unintended’, but failed and still ongoing experiment.” – Oscar Escobar
Activists Take On Artificial Clouds At US EPA Hearing on Jet Pollution – September 2015

July 25, 2016 – BREAKING: EPA To Limit Greenhouse Gases From Airplanes
September 3, 2016 – China, U.S. and Europe pledge support for global aviation emissions pact
September 12, 2016 – Greens move to dismiss EPA lawsuit over airplane emissions
Artificial Cloud Experimentation

Stratospheric sulfate injections with commercial aircraft

- Commercial aircraft could be used to deliver sulfate into stratosphere by increasing fuel sulfur content and the flight altitude of inter-continental flights
- The sulfur content of the fuel should be increased to about 50 times the current level to have a significant cooling effect
- The cooling effect would be confined to the Northern Hemisphere

Figure 2. Global mean of all-sky aerosol forcing at the surface when intercontinental flight routes are in the lower stratosphere and the sulfur content of the fuel is 50 times the current level. [3]

Cirrus cloud seeding

- Suggested seeding material:
  - Bismuth tri-iodide, BiI₃
  - Cheap'ish and non-toxic.

- Seeding via commercial airliners?
- Advantage: seeding aerosol residence time is relatively short in the troposphere.
- Drawback: does not address ocean acidification issue.

Department of Geosciences
University of Oslo

A new model
Contrail Cirrus Simulation and Prediction (CoCIP)

Input: Aircraft (BADA)
Movements (Eurocontrol, OAD, DFS)
Meteorology (NWP results, ECMWF, DWD)

Output: Contrail, life cycle, cover, radiation
- Cirrus Simulation insitu, Lidar, Satellite
- Sensitivity studies
- Prediction Climate impact
- From regional to global
- Comparable to observations

(Schumann, 2009)
Geoengineering Is Already Happening
Could We Detect “Rogue Geoengineering?”

“I got a phone call from two men who said we work as consultants for the CIA and we’d like to know if some other country was controlling our climate, would we know about it?
“I told them, after thinking a little bit, that we probably would.”
Alan Robock
Geoengineering Is Already Happening
Could We Detect “Rogue Geoengineering?”

A: It depends ...
On SRM magnitude and duration
On a sustained observing system


At www.arl.noaa.gov/CVCAnalysis_Pubs.php

Dian J. Seidel – NOAA, speaking January 6, 2015 at the 20th Conference on Planned and Inadvertent Weather Modification
Geoengineering/ENMOD Solution

Verification

and

Transparency

The Clarity Clause
Clarity: A Sustained Observing System

Citizen-Powered Sensor Network
Clarity: A Sustained Observing System

- Detect Atmospheric Conditions
- All-sky camera (streaming video)
- **Aerosol detection**, analysis, and live display (nanoparticles, radioactivity, chemical composition)

Citizen-Powered Sensor Network
Clarity: Transparency

1. Create a “multilateral registry of cloud seeding, geoengineering, and atmospheric experimentation events with information and data collection on key characteristics” and publish hourly updates on activities to a publicly available website.

2. Require nations/states/persons to notify the multilateral registry (at least) 24 hours prior to initiation of atmospheric experimentation/modification to ensure public notice and liability should said experimentation/modification cause monetary, environmental, or physical losses.
Thank you!

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Contact:  jim@climateviewer.com

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