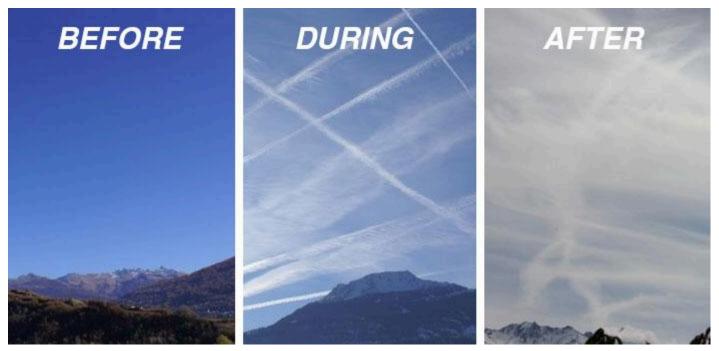


Geoengineering Related Patents



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United States Patent and Trademark Office

- 0462795 July 16, 1891 Method Of Producing Rain-Fall
- <u>1103490</u> August 6, 1913 Rain-Maker
- 1225521 September 4, 1915 Protecting From Poisonous Gas In Warfare
- <u>1338343</u> April 27, 1920 Process And Apparatus For The Production of Intense Artificial Clouds, Fogs, or Mists
- <u>1619183</u> March 1, 1927 Process of Producing Smoke Clouds From Moving Aircraft
- <u>1631753</u> June 7, 1927 Electric Heater
- <u>1665267</u> April 10, 1928 Process of Producing Artificial Fogs
- <u>1892132</u> December 27, 1932 Atomizing Attachment For Airplane Engine Exhausts

- 1928963 October 3, 1933 Electrical System And Method
- <u>1957075</u> May 1, 1934 Airplane Spray Equipment
- 2097581 November 2, 1937 Electric Stream Generator Referenced in 3990987
- 2409201 October 15, 1946 Smoke Producing Mixture
- 2476171 July 18, 1945 Smoke Screen Generator
- 2480967 September 6, 1949 Aerial Discharge Device
- 2550324 April 24, 1951 Process For Controlling Weather
- 2582678 June 15, 1952 Material Disseminating Apparatus For Airplanes
- 2591988 April 8, 1952 Production of TiO2 Pigments Referenced in 3899144
- 2614083 October 14, 1952 Metal Chloride Screening Smoke Mixture
- 2633455 March 31, 1953 Smoke Generator
- 2688069 August 31, 1954 Steam Generator Referenced in 3990987
- <u>2721495</u> October 25, 1955 Method And Apparatus For Detecting Minute Crystal Forming Particles Suspended in a Gaseous Atmosphere
- <u>2730402</u> January 10, 1956 Controllable Dispersal Device
- <u>2801322</u> July 30, 1957 Decomposition Chamber for Monopropellant Fuel Referenced in 3990987
- 2881335 April 7, 1959 Generation of Electrical Fields
- <u>2908442</u> October 13, 1959 Method For Dispersing Natural Atmospheric Fogs And Clouds
- 2986360 May 30, 1962 Aerial Insecticide Dusting Device
- 2963975 December 13, 1960 Cloud Seeding Carbon Dioxide Bullet
- 3126155 March 24, 1964 Silver lodide Cloud Seeding Generator

- <u>3127107</u> March 31, 1964 Generation of Ice-Nucleating Crystals
- <u>3131131</u> April 28, 1964 Electrostatic Mixing in Microbial Conversions
- <u>3174150</u> March 16, 1965 Self-Focusing Antenna System
- <u>3234357</u> February 8, 1966 Electrically Heated Smoke Producing Device
- <u>3274035</u> September 20, 1966 Metallic Composition For Production of Hydroscopic Smoke
- <u>3300721</u> January 24, 1967 Means For Communication Through a Layer of Ionized Gases
- 3313487 April 11, 1967 Cloud Seeding Apparatus
- <u>3338476</u> August 29, 1967 Heating Device For Use With Aerosol Containers
- <u>3410489</u> November 12, 1968 Automatically Adjustable Airfoil Spray System With Pump
- <u>3429507</u> February 25, 1969 Rainmaker
- 3432208 November 7, 1967 Fluidized Particle Dispenser
- 3441214 April 29, 1969 Method And Apparatus For Seeding Clouds
- <u>3445844</u> May 20, 1969 Trapped Electromagnetic Radiation Communications System
- <u>3456880</u> July 22, 1969 Method Of Producing Precipitation From The Atmosphere
- <u>3518670</u> June 30, 1970 Artificial Ion Cloud
- <u>3534906</u> October 20, 1970 Control of Atmospheric Particles
- 3545677 December 8, 1970 Method of Cloud Seeding
- <u>3564253</u> February 16, 1971 System And Method For Irradiation Of Planet Surface Areas

- <u>3587966</u> June 28, 1971 Freezing Nucleation
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- 3608810 September 28, 1971 Methods of Treating Atmospheric Conditions
- <u>3608820</u>– September 20, 1971 Treatment of Atmospheric Conditions by Intermittent Dispensing of Materials Therein
- 3613992 October 19, 1971 Weather Modification Method
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- <u>USRE29142</u> May 22, 1973 Combustible compositions for generating aerosols, particularly suitable for cloud modification and weather control and aerosolization process
- <u>3659785</u> December 8, 1971 Weather Modification Utilizing Microencapsulated Material
- <u>3666176</u> March 3, 1972 Solar Temperature Inversion Device
- <u>3677840</u> July 18, 1972 Pyrotechnics Comprising Oxide of Silver For Weather Modification Use
- <u>3722183</u> March 27, 1973 Device For Clearing Impurities From The Atmosphere
- <u>3769107</u> October 30, 1973 Pyrotechnic Composition For Generating Lead Based Smoke
- <u>3784099</u> January 8, 1974 Air Pollution Control Method
- <u>3785557</u> January 15, 1974 Cloud Seeding System
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- <u>3808595</u> April 30, 1974 Chaff Dispensing System

- <u>3813875</u> June 4, 1974 Rocket Having Barium Release System to Create Ion Clouds In The Upper Atmosphere
- <u>3835059</u> September 10, 1974 Methods of Generating Ice Nuclei Smoke Particles For Weather Modification And Apparatus Therefore
- <u>3835293</u> September 10, 1974 Electrical Heating Apparatus For Generating Super Heated Vapors
- <u>3877642</u> April 15, 1975 Freezing Nucleant
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- <u>3896993</u> July 29, 1975 Process For Local Modification of Fog And Clouds For Triggering Their Precipitation And For Hindering The Development of Hail Producing Clouds
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- <u>3899144</u> August 12, 1975 Powder contrail generation
- <u>3940059</u> February 24, 1976 Method For Fog Dispersion
- <u>3940060</u> February 24, 1976 Vortex Ring Generator
- <u>3990987</u> November 9, 1976 Smoke generator
- <u>3992628</u> November 16, 1976 Countermeasure system for laser radiation
- <u>3994437</u> November 30, 1976 Broadcast dissemination of trace quantities of biologically active chemicals
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- <u>RE29,142</u> February 22, 1977 Combustible compositions for generating aerosols, particularly suitable for cloud modification and weather control and aerosolization process

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- 4096005 June 20, 1978 Pyrotechnic Cloud Seeding Composition
- <u>4129252</u> December 12, 1978 Method and apparatus for production of seeding materials
- <u>4141274</u> February 27, 1979 Weather modification automatic cartridge dispenser
- 4167008 September 4, 1979 Fluid bed chaff dispenser
- <u>4347284</u> August 31, 1982 White cover sheet material capable of reflecting ultraviolet rays
- <u>4362271</u> December 7, 1982 Procedure for the artificial modification of atmospheric precipitation as well as compounds with a dimethyl sulfoxide base for use in carrying out said procedure
- 4402480 September 6, 1983 Atmosphere modification satellite
- <u>4412654</u> November 1, 1983 Laminar microjet atomizer and method of aerial spraying of liquids
- <u>4415265</u> November 15, 1983 Method and apparatus for aerosol particle absorption spectroscopy
- 4470544 September 11, 1984 Method of and Means for weather modification
- 4475927 October 9, 1984 Bipolar Fog Abatement System
- 4600147 July 15, 1986 Liquid propane generator for cloud seeding apparatus
- 4633714 January 6, 1987 Aerosol particle charge and size analyzer
- <u>4643355</u> February 17, 1987 Method and apparatus for modification of climatic conditions
- 4653690 March 31, 1987 Method of producing cumulus clouds

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- <u>4686605</u> August 11, 1987 HAARP Patent / EASTLUND PATENT Method and apparatus for altering a region in the earth's atmosphere, ionosphere, and/or magnetosphere
- <u>4704942</u> November 10, 1987 Charged Aerosol
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- 4744919 May 17, 1988 Method of dispersing particulate aerosol tracer
- <u>4766725</u> August 30, 1988 Method of suppressing formation of contrails and solution therefor
- <u>4829838</u> May 16, 1989 Method and apparatus for the measurement of the size of particles entrained in a gas
- <u>4836086</u> June 6, 1989 Apparatus and method for the mixing and diffusion of warm and cold air for dissolving fog
- 4873928 October 17, 1989 Nuclear-sized explosions without radiation
- <u>4948257</u> August 14, 1990 Laser optical measuring device and method for stabilizing fringe pattern spacing
- <u>1338343</u>– August 14, 1990 Process and Apparatus for the production of intense artificial Fog
- <u>4999637</u> March 12, 1991 Creation of artificial ionization clouds above the earth
- <u>5003186</u> March 26, 1991 Stratospheric Welsbach seeding for reduction of global warming
- <u>5005355</u> April 9, 1991 Method of suppressing formation of contrails and solution therefor
- <u>5038664</u> August 13, 1991 Method for producing a shell of relativistic particles at an altitude above the earths surface

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- <u>5104069</u> April 14, 1992 Apparatus and method for ejecting matter from an aircraft
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- 5156802 October 20, 1992 Inspection of fuel particles with acoustics
- 5174498 December 29, 1992 Cloud Seeding
- <u>5148173</u> September 15, 1992 Millimeter wave screening cloud and method
- <u>5242820</u> September 7, 1993 Army Mycoplasma Patent Patent
- <u>5245290</u> September 14, 1993 Device for determining the size and charge of colloidal particles by measuring electroacoustic effect
- <u>5286979</u> February 15, 1994 Process for absorbing ultraviolet radiation using dispersed melanin
- <u>5296910</u> March 22, 1994 Method and apparatus for particle analysis
- 5327222 July 5, 1994 Displacement information detecting apparatus
- <u>5357865</u> October 25, 1994 Method of cloud seeding
- <u>5360162</u> November 1, 1994 Method and composition for precipitation of atmospheric water
- <u>5383024</u> January 17, 1995 Optical wet steam monitor

- <u>5425413</u> June 20, 1995 Method to hinder the formation and to break-up overhead atmospheric inversions, enhance ground level air circulation and improve urban air quality
- <u>5434667</u> July 18, 1995 Characterization of particles by modulated dynamic light scattering
- <u>5441200</u> August 15, 1995 Tropical cyclone disruption
- <u>5486900</u> January 23, 1996 Measuring device for amount of charge of toner and image forming apparatus having the measuring device
- <u>5556029</u> September 17, 1996 Method of hydrometeor dissipation (clouds)
- <u>5628455</u> May 13, 1997 Method and apparatus for modification of supercooled fog
- <u>5631414</u> May 20, 1997 Method and device for remote diagnostics of oceanatmosphere system state
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- <u>5800481</u> September 1, 1998 Thermal excitation of sensory resonances
- <u>5912396</u> June 15, 1999 System and method for remediation of selected atmospheric conditions
- <u>5922976</u> July 13, 1999 Method of measuring aerosol particles using automated mobility-classified aerosol detector
- <u>5949001</u> September 7, 1999 Method for aerodynamic particle size analysis
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- 6045089 April 4, 2000 Solar-powered airplane
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- 6263744 July 24, 2001 Automated mobility-classified-aerosol detector
- <u>6281972</u> August 28, 2001 Method and apparatus for measuring particle-size distribution
- 6315213 November 13, 2001 Method of modifying weather
- 6382526 May 7, 2002 Process and apparatus for the production of nanofibers
- <u>6408704</u> June 25, 2002 Aerodynamic particle size analysis method and apparatus
- 6412416 July 2, 2002 Propellant-based aerosol generation devices and method
- <u>6520425</u> February 18, 2003 Process and apparatus for the production of nanofibers
- <u>6539812</u> April 1, 2003 System for measuring the flow-rate of a gas by means of ultrasound
- 6553849 April 29, 2003 Electrodynamic particle size analyzer
- 6569393 May 27, 2003 Method And Device For Cleaning The Atmosphere
- <u>0056705 A1</u> March 17, 2005 Weather Modification by Royal Rainmaking Technology
- 6890497 May 10, 2005 Method For Extracting And Sequestering Carbon Dioxide

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- 8048309 August 28, 2008 Seawater-Based Carbon Dioxide Disposal
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- 7645326 January 12, 2010 RFID environmental manipulation
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- <u>8079545</u> December 20, 2011 Ground based Manipulation and Control of Aerial Vehicle during nonflying operations
- <u>0117003</u> October 5, 2012 Geoengineering Method Of Business Using Carbon Counterbalance Credits – <u>alternate link</u>
- <u>8373962</u> February 12, 2013 Charged seed cloud as a method for increasing particle collisions and for scavenging airborne biological agents and other contaminants