SOS

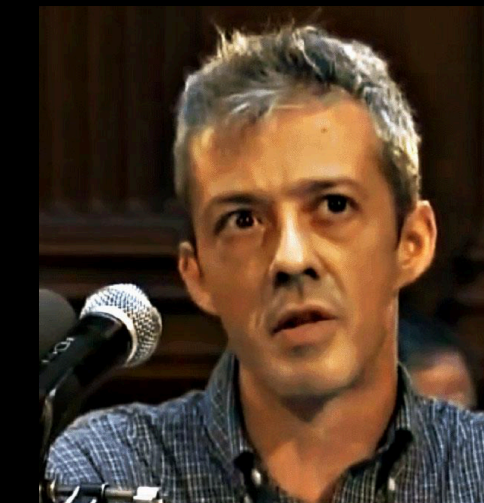## SAVE OUR SKIES

TEAM, ADVISERS, CONTRIBUTORS

Reinette Senum
Founder
Save Our Skies

Jim Lee,
Geoengineering Expert
SOS Advisor
ClimateViewer.com

Kathryn Saari
SOS Skywatcher
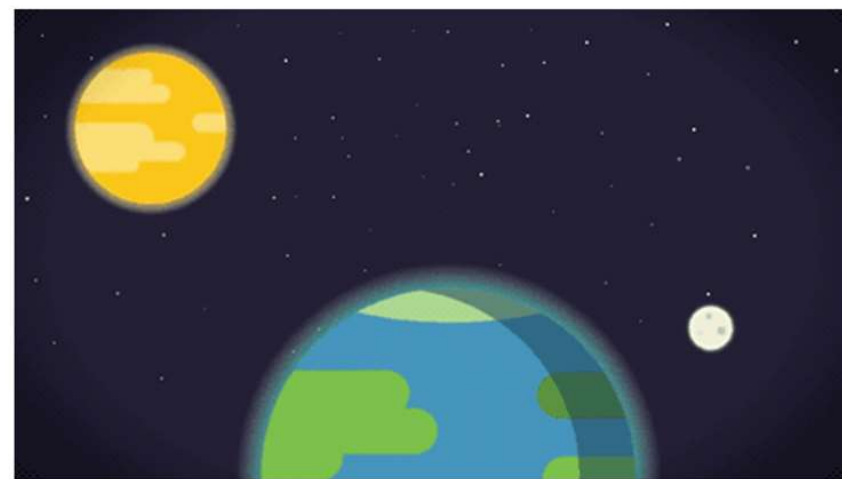Tuolumne County
Supervisor Candidate
Districts 4

Jeff "Ray"
SOS Skywatcher
Meteorologist

# Let's start with all the different terminology and search results on the topic:

Terminology

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

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**
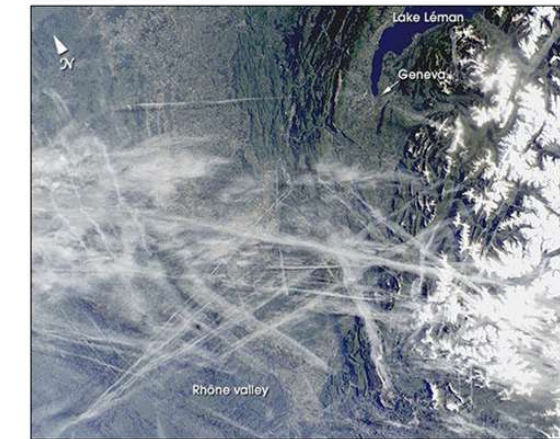
All same thing…

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]

https://climateviewer.com/2015/03/06/re-branding-geoengineering-climate-intervention-and-gatekeeping/

SAVE OUR SKIES

Weather Modification Print & Journal Reporting Began in mid-1800s

https://climateviewer.com/newspapers/

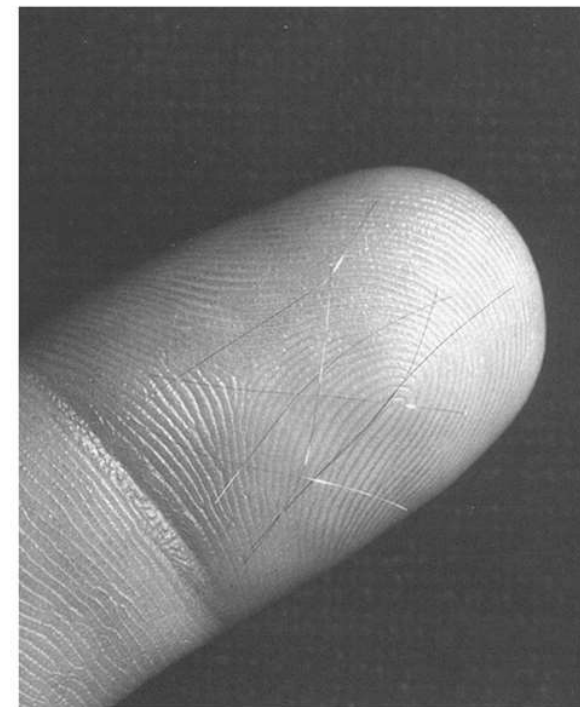# Artificial weather is far more sophisticated than most people realize.

Project West Ford
October 21, 1961 - September 5, 1963

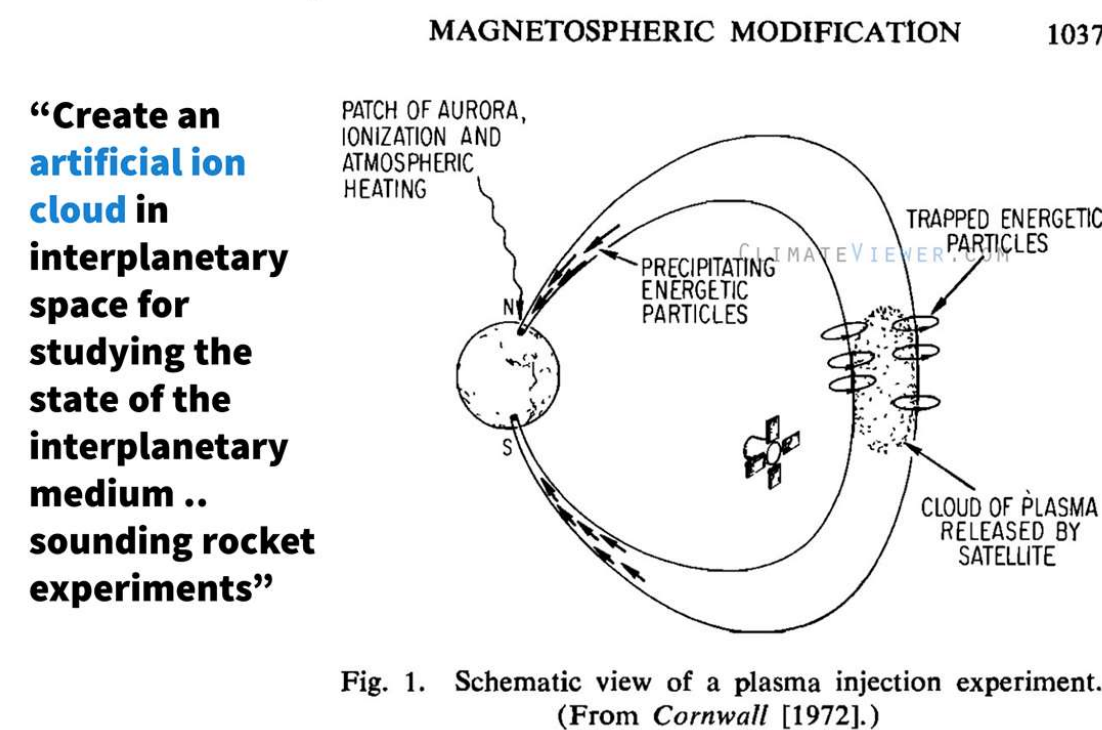**Creating an Artificial Ionosphere**
480,000,000 copper dipole antennas launched into orbit.

Some are still up there.

http://en.wikipedia.org/wiki/Project_West_Ford
http://space.skyrocket.de/doc_sdat/westford.htm

Plasma Seeding Begins – May 1963
Space Weather Modification

MAGNETOSPHERIC MODIFICATION   1037

"Create an **artificial ion cloud** in interplanetary space for studying the state of the interplanetary medium .. sounding rocket experiments"

PATCH OF AURORA, IONIZATION AND ATMOSPHERIC HEATING

PRECIPITATING ENERGETIC PARTICLES

TRAPPED ENERGETIC PARTICLES

CLOUD OF PLASMA RELEASED BY SATELLITE

Fig. 1.   Schematic view of a plasma injection experiment.
(From *Cornwall* [1972].)

http://www.sciencedirect.com/science/article/pii/0032063365901807
http://www.igpp.ucla.edu/public/mkivelso/Publications/019-RS008i011p01035.pdf

Artificial Strontium and Barium Clouds
in the Upper Atmosphere - 1964

ARTIFICIAL STRONTIUM AND BARIUM CLOUDS
IN THE UPPER ATMOSPHERE

"So far seven different experiments have been carried out with **sounding rockets** in the Sahara and in Sardinia."

http://www.igpp.ucla.edu/public/mkivelso/Publications/019-RS008i011p01035.pdf
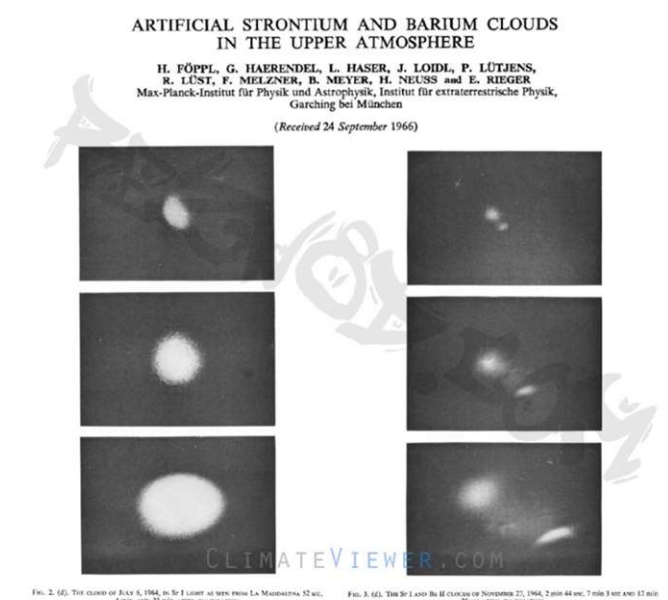
These examples are from the mid 1960s.

The US has a long history of geoengineering.

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)

The following information about the 3 WC-130A aircraft comes from Tom Robison's on line article *WHISKEY CHARLIE*. Tom is a former Met/ARE troop with both the 55th and 54th WRS. He is probably the foremost authority on all things WC-130, and most things dealing with weather reconnaissance (including atmospheric sampling).

"Few aviation writers and historians seem to be aware that there were three WC-130As. These three were originally trash-haulers, borrowed from TAC in late 1966 for use in Operation "Popeye", the rain-making mission in Southeast Asia, set to begin the following year. The intent of the mission was to create enough year-round rain to keep the Ho Chi Minh trails impassable with mud. Tests were conducted over Laos in 1966, and the operational missions began in March of 1967 from Udorn RTAFB, Thailand. They were flown by crews of the 54th WRS, rotated on a regular basis from Guam. In addition, 54th crews were sometimes called upon to conduct synoptic weather reconnaissance from Udorn over various areas of Southeast Asia, out to and including the Bay of Bengal.

The A-models were modified for weather reconnaissance, probably at WRAMA, with the AN/AMR-1 system. They were not configured for atmospheric sampling. Two were kept at Udorn, with the third rotating to and from Guam for maintenance, repair, and crew changes, from June 1967 through late 1970. When the third one was not enroute to/from Thailand, it was used for normal weather reconnaissance activities from Guam. In late 1970 the A's were replaced with three 1958 B-models, and the rain-making mission continued through mid-1972 with whichever B- or E-models were available from the 54th. After re-conversion to transport, the A's were transferred to Air Force Reserve units. During their

23

Commercial Airlines To End
"Smoke Pollution of the Skies" 1970

U.S. To Clamp Down On Jet Pollution
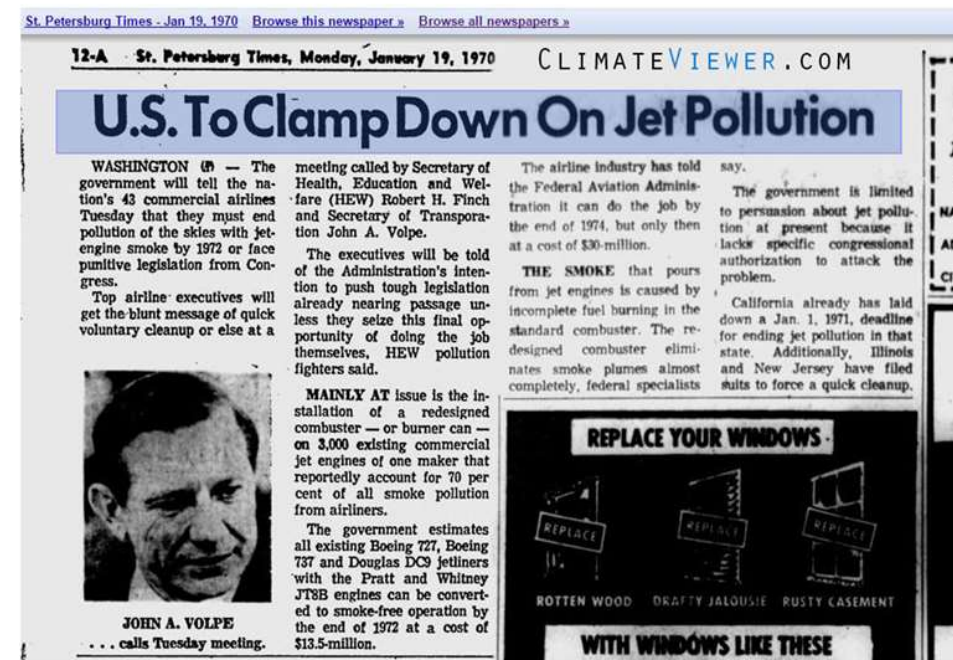
Lawsuit by **Illinois and New Jersey vs. Airline industry**,
Settled out of court by Secretary of Transportation Volpe.
Install **"Burner Cans,"** reduce particulate emissions by 70%

Illinois and New Jersey officials will not settle pollution suits against the nation's major airlines out of court, despite Tuesday's agreement between the airlines and the federal government to lean up the jet aircraft exhaust. The government will tell the nation's 43 commercial airlines Tuesday that they must end pollution of the skies with jet engine smoke by 1972 or face punitive legislation from Congress. Mainly at issue is the installation of a redesigned combuster – or burner can – on 3,000 existing commercial jet engines of one maker that reportedly account for 70 percent of all smoke pollution from airliners. … thus the familiar "black belch" will be seen no more. A jet air plane in one landing and takeoff drenches the environment with as much soot as 2,500 automobiles produce in a entire day… soot, gases of carbon monoxide, aldehydes (irritants in smog), hydrocarbons, and nitrogen oxides. 10,000 tons of particulate matter (three airports)

https://news.google.com/newspapers?nid=1982&dat=19700121&id=roJGAAAAIBAJ&sjid=zywNAAAAIBAJ&pg=2670%2C3106142&hl=en
https://news.google.com/newspapers?nid=888&dat=19700119&id=DUtSAAAAIBAJ&sjid=1XsDAAAAIBAJ&pg=6939%2C7171728&hl=en
https://news.google.com/newspapers?nid=1298&dat=19720912&id=M3MQAAAAIBAJ&sjid=R4sDAAAAIBAJ&pg=7178%2C1305490&hl=en
https://news.google.com/newspapers?nid=1964&dat=19710917&id=GMUiAAAAIBAJ&sjid=WrcFAAAAIBAJ&pg=806%2C244201&hl=en

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"

http://www.gpo.gov/fdsys/pkg/STATUTE-85/pdf/STATUTE-85-Pg735.pdf –
http://web.archive.org/web/20130118170030/http://uscode.house.gov/download/pls/15C9A.txt – Public Law 92-205, Sec. 1, Dec. 18, 1971, 85 Stat. 735
http://cfr.regstoday.com/15cfr908.aspx – 15 CFR 908 — "Maintaining Records and Submitting Reports on Weather Modification Activities"
http://web.archive.org/web/20121119043808/http://www.corporateservices.noaa.gov/~noaaforms/eforms/nf17-4.pdf – NOAA Form 17-4 "Initial Report on Weather Modification Activities" Expired 2008
http://web.archive.org/web/20130218182517/http://www.corporateservices.noaa.gov/~noaaforms/eforms/nf17-4a.pdf – NOAA Form 17-4a "Interim Activity Reports and Final Report" Expired 2007
http://www.gpo.gov/fdsys/pkg/STATUTE-90/pdf/STATUTE-90-Pg2359.pdf Public Law 94-490 94th Congress "AN ACT To authorize and direct tlie Secretary of Commerce to develop a national policy on weather modification, and for other purposes" 1976
https://www.law.cornell.edu/uscode/text/15/chapter-9A – 15 U.S. Code Chapter 9A – "Weather Modification Activities or Attempts; Reporting Requirement"

But in spite of weather warfare bans, the US continues unabated…..

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

US Military Violating ENMOD
1994 FOIA – USAF Phillips Lab, USN China Lake

Jim Lee, "US military discusses future of Weather Warfare despite ENMOD ban," November 16, 2013.
https://climateviewer.com/2013/11/16/us-military-discusses-future-of-weather-warfare-despite-enmod-ban/

The U.S. Navy proposal to develop new weather modification weapons, Code C2741 (Warhead Development Branch) NAWCWPNS, China Lake, California, April 1994, https://www.scribd.com/doc/256210692/Weather-Modification-US-Navy-FOIA-Non-Lethal-Warfare-Proposal-1994 ;

U.S. Air Force proposal to develop a theater-scale weather modification system using carbon black, Phillips Laboratory (AFMC) Geophysics Directorate. https://www.scribd.com/doc/184741384/Weather-Modification-Using-Carbon-Black-Phillips-Laboratory-AFMC-Geophysics-Directorate

Tamzy J. House et al. "Weather As A Force Multiplier: Owning the Weather in 2025," Air Force 2025, August 1996; see page 34, Figure 5-2, "A Systems Development Road Map to Weather Modification in 2025."
http://csat.au.af.mil/2025/volume3/vol3ch15.pdf

Cloud Seeding is Big Business

Weather on Demand: Making It Rain Is Now a Global Business

Countries are spending millions to control the weather — here's why

Would YOU pay £100,000 to guarantee a sunny wedding? Travel company offers 'cloud bursting' service to banish rain for couples' big day

http://www.bloomberg.com/features/2015-cloud-seeding-india/
http://capitaldom.com/countries-are-spending-millions-to-control-the-weather-heres-why
http://www.businessinsider.com/china-sets-aside-millions-to-control-the-rain-2016-7
http://www.dailymail.co.uk/travel/travel_news/article-2926736/Would-pay-100-000-guarantee-sunny-wedding-Travel-company-offers-cloud-bursting-service-banish-rain-couples-big-day.html
http://www.oliverstravels.com/blog/guarantee-perfect-wedding-weather-olivers-travels/?olv=sGmkd0
https://www.theguardian.com/sustainable-business/2015/mar/11/rain-free-weddings-company

Homeland Security Hurricane Control

Hurricane Modification Workshop

Boulder
February 6-7, 2008
David Skaggs Research Center
Downstairs/Multipurpose Room
GC402

HOW TO HALT A HURRICANE

"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**."

https://climateviewer.com/2013/11/08/hurricane-hacking-the-department-of-homeland-security-enters-the-weather-modification-business/

Homeland Security Hurricane Control

1. Mr. William Laska – Department of Homeland Security
2. Dr. Edward Hume – Johns Hopkins University Applied Physics Laboratory
3. Dr. Joe Golden – National Oceanic and Atmospheric Administration
4. Dr. William Cotton – Colorado State University
5. Dr. Bob Kurzeja – Savannah River National Laboratory
6. Dr. Alan Blumberg – Stevens Institute of Technology
7. Dr. Jerald Carithers – University of Southern Mississippi
8. Dr. William Woodley – Woodley Weather Consultants
9. Dr. Jay Hobgood – Ohio State University
10. Dr. Moshe Alamaro – Massachusetts Institute of Technology
11. Dr. Stephen Salter University of Edinburgh
12. Dr. Daniel Rosenfeld – Hebrew University
13. Dr. Mark DeMaria – National Oceanic and Atmospheric Administration
14. Dr. Edward Walsh – National Oceanic and Atmospheric Administration
15. Dr. Isaac Ginis – University of Rhode Island
16. Dr. John Latham – University Corporation for Atmospheric Research
17. Dr. Patrick Fitzpatrick – Mississippi State University
18. Dr. Sundararaman Gopalakrishnan – National Oceanic and Atmospheric Administration
19. Ms. Paula Lantzer – Department of Homeland Security
Not Pictured: Dr. Roelof Bruintjes – National Center for Atmospheric Research

Cloud Seeding and weather manipulation are serious business.

"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

GEOPHYSICAL WARFARE

IMAGE BY JIM LEE OF CLIMATEVIEWER.COM
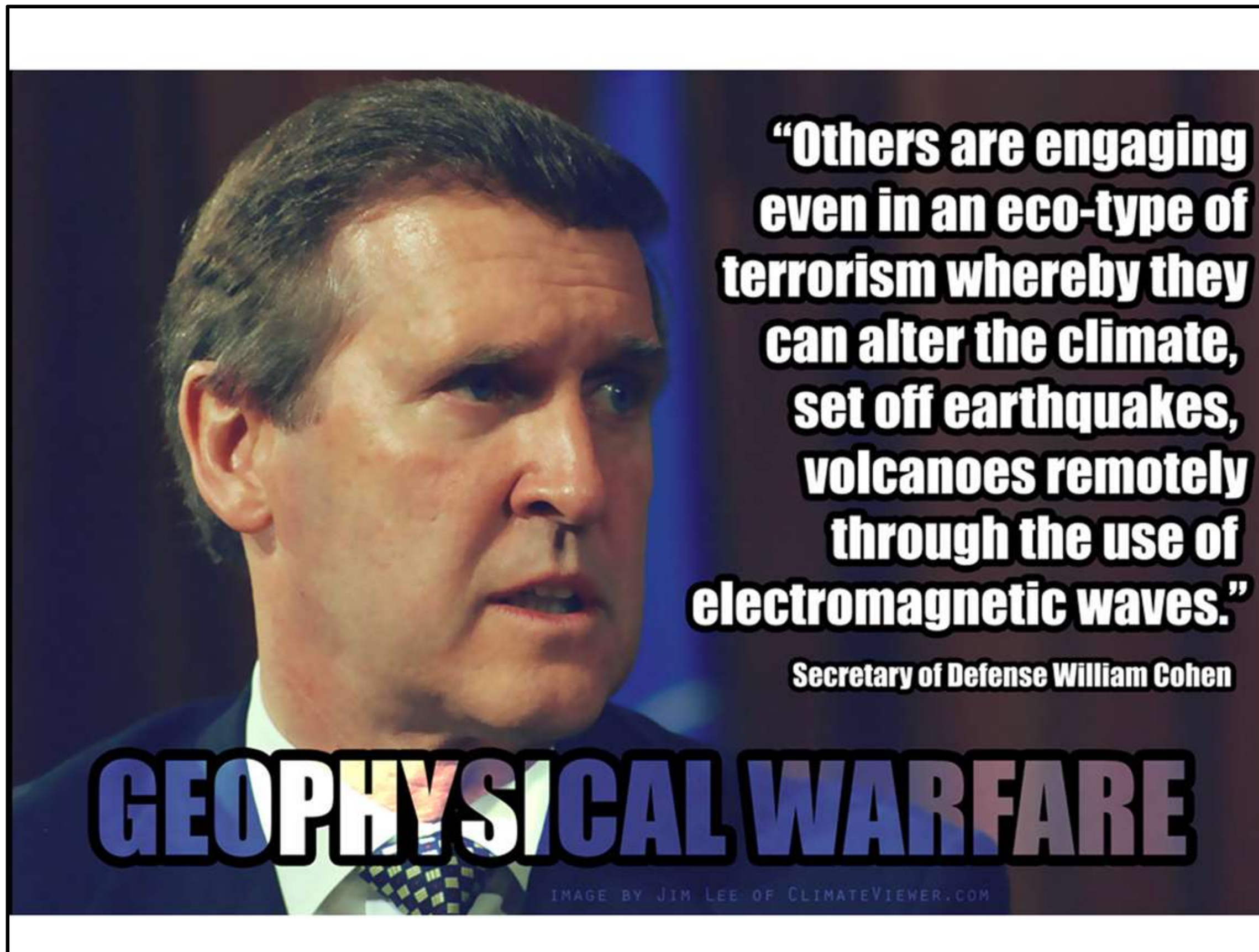
And, yes, it can be weaponized.

"Terrorism, Weapons of Mass Destruction, and U.S. Strategy "
Sam Nunn Policy Forum – April 28, 1997 University of Georgia, Athens, Georgia.
http://www.fas.org/news/usa/1997/04/bmd970429d.htm

Then there are those behind the agenda....
And they know the harm it can do:

Geoengineering SRM Funding

The Fund for Innovative Climate and Energy Research

"FICER"

All your weather are belong to me

https://climateviewer.wordpress.com/2013/10/09/bill-gates-funds-geoengineering-studies/

Grants for (geoengineering programs) research are provided to the University of Calgary from gifts made by **Mr. Bill Gates** *from his personal funds. The activities of the* **Fund for Innovative Climate and Energy Research** *fall outside the scope of activities of the Bill & Melinda Gates Foundation. FICER is not a Foundation project and has no relationship with it.*
The fund has supported research in a wide range of areas. Some examples include:
1. understanding carbon dioxide emissions associated with international trade in goods and services;
2. developing technologies to capture carbon dioxide out of the air; and
3. climate modeling to understand possible environmental consequences of solar radiation management

Geoengineering SRM Lobbyists

Ken Caldeira **Alan Robock** **Ben Kravitz** **David Keith**

climateviewer.com

SRM AUTHORS

FUNDING SRM
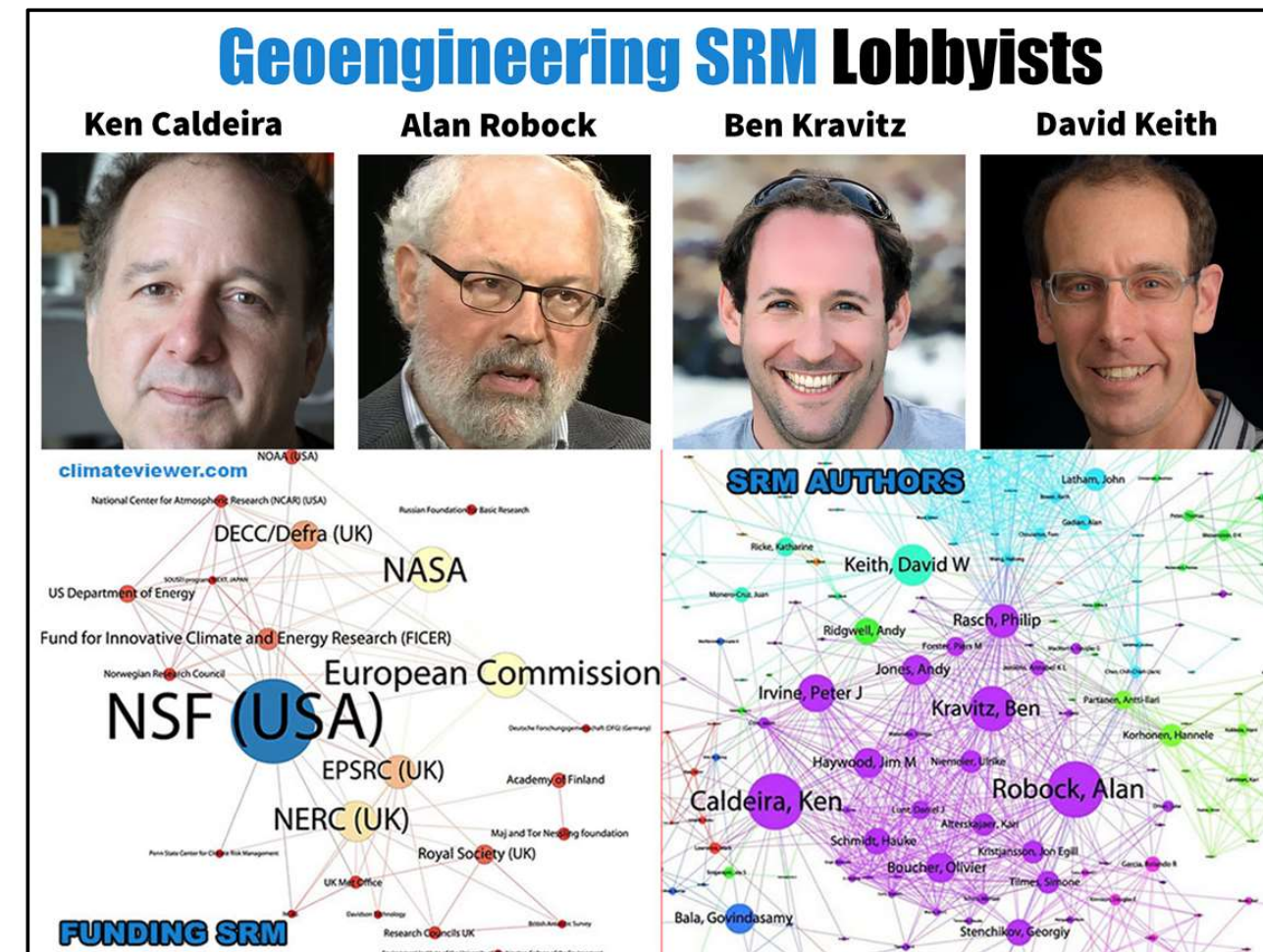
Oldham P, Szerszynski B, Stilgoe J, Brown C, Eacott B, Yuille A. 2014. **Mapping the landscape of climate engineering**. *Phil. Trans. R. Soc. A 372, 20140065*
(doi:10.1098/rsta.2014.0065) [PMC free article][PubMed]
http://dx.doi.org/10.1098/rsta.2014.0065
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4240957/
http://www.ncbi.nlm.nih.gov/pubmed/25404683

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.

https://groups.google.com/d/msg/geoengineering/ipdLpbnXHeU/tAXDtadrNR0J

Let's Talk Jet Fuel & Cirrus Clouds

How to Make a Cirrus Cloud

- Water vapor
- Particulate matter
- Cosmic rays…. but high-bypass turbofan 747s do this with chemiions

Inadvertent geoengineering- aircraft contrail induced cirrus clouds, including ship tracks.

1 Boeing 747 emits
up to 100 quadrillion
ultra-fine soot particles
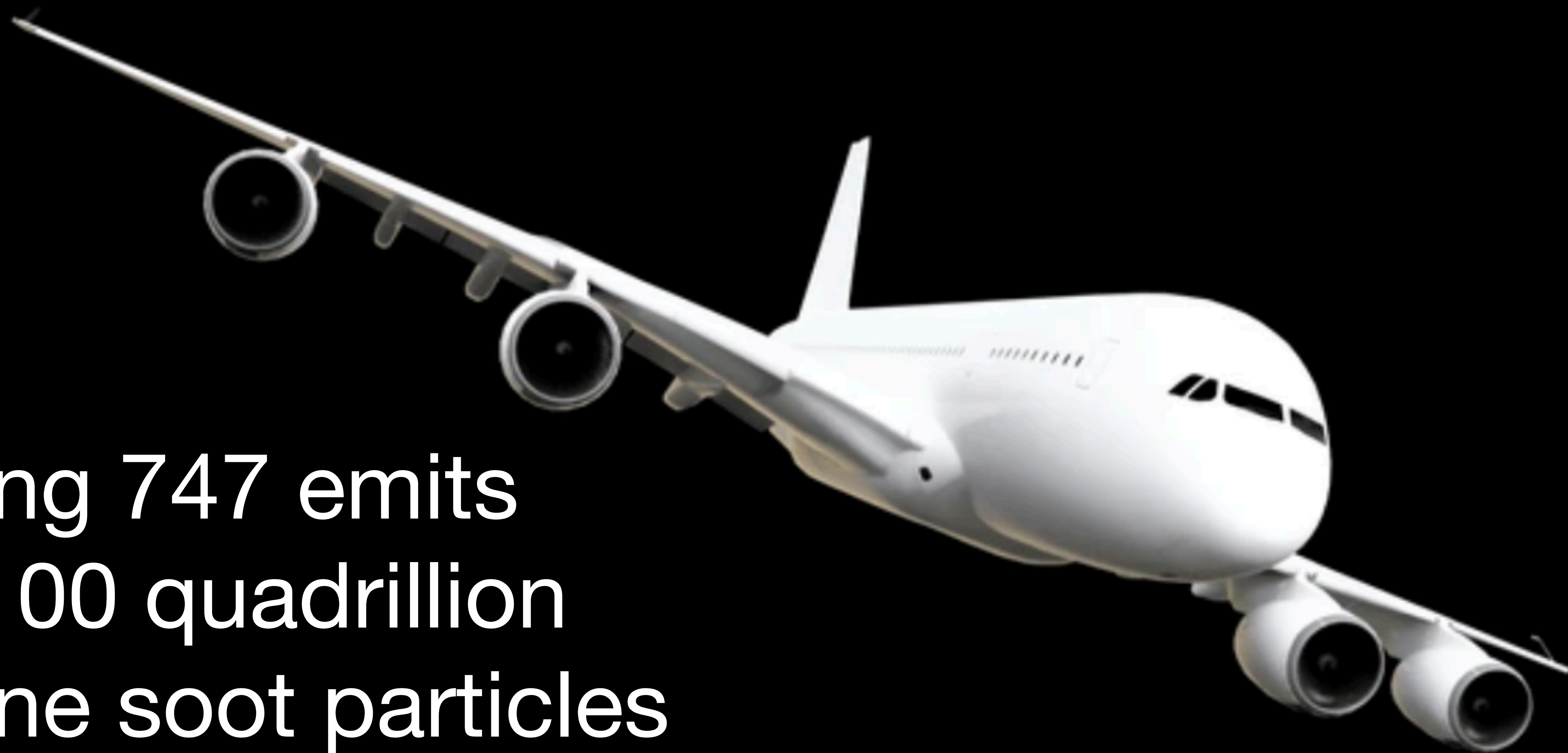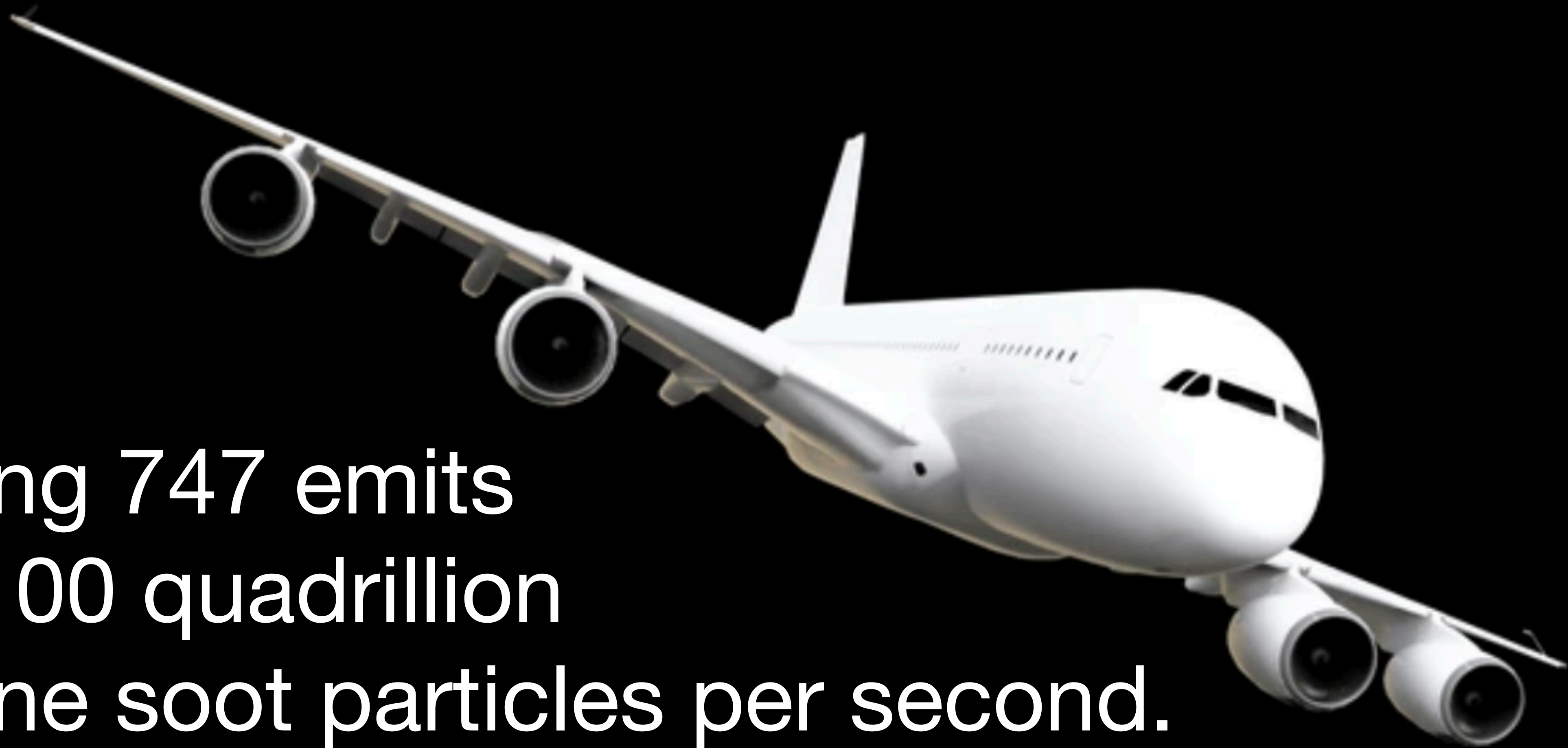
1 Boeing 747 emits
up to 100 quadrillion
ultra-fine soot particles per second.
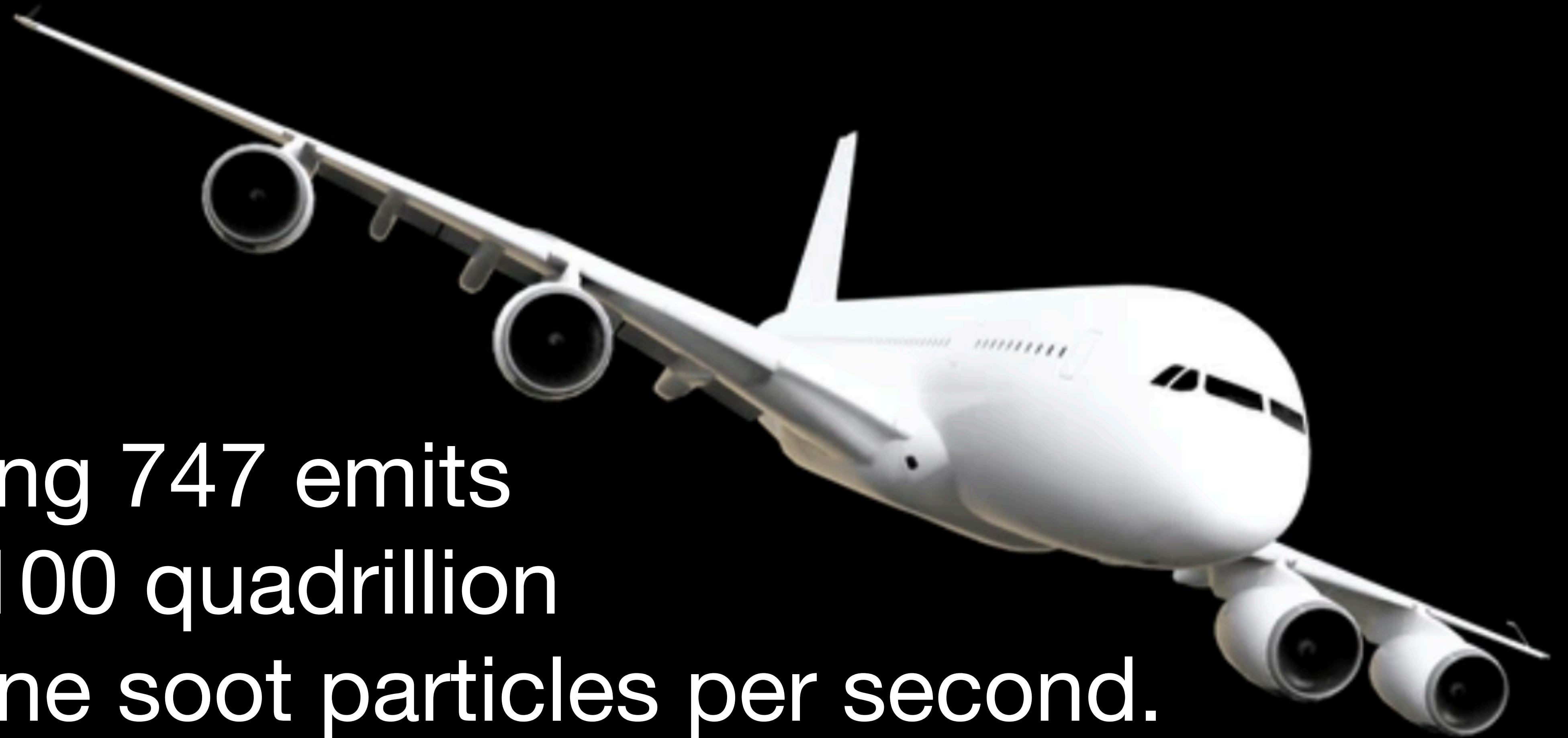
1 Boeing 747 emits
up to 100 quadrillion
ultra-fine soot particles per second.

Electron Scanning microscope.

Contains formaldehyde
& benzene 1K over legal limits.

Contains Chemiions; create positive ions and free electrons — ionized graphene soot loaded with heavy metals.

World			
Download data			
Countries ▲ ▼	Jet fuel consumption, 2021 ▲ ▼	Global rank ▲ ▼	Available data ▲ ▼
USA	1369.88	1	1980 - 2022
China	800	2	1980 - 2021
Russia	215.37	3	1992 - 2021
Hong Kong	138.29	4	1980 - 2021
Japan	134.35	5	1980 - 2022
North Korea	0	184	1980 - 2021
St. Vincent & ...	0	185	1980 - 2021

Definition: The indicator estimates the volume of jet fuel consumed within a country expressed in thousand barrels per day. Jet fuel is a refined petroleum product used in jet aircraft engines and it includes kerosene-type jet fuel and naphtha-type jet fuel.

1,369,880 Barrels Per Day.

World ▼	Download data		
Countries ▲ ▼	**Jet fuel consumption, 2021** ▲ ▼	**Global rank** ▲ ▼	**Available data** ▲ ▼
USA	1369.88	1	1980 - 2022
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Definition: The indicator estimates the volume of jet fuel consumed within a country expressed in thousand barrels per day. Jet fuel is a refined petroleum product used in jet aircraft engines and it includes kerosene-type jet fuel and naphtha-type jet fuel.

1,369,880 Barrels Per Day. 10,000 Particles in Every Cubic Centimeter.

https://globe.adsbexchange.com/
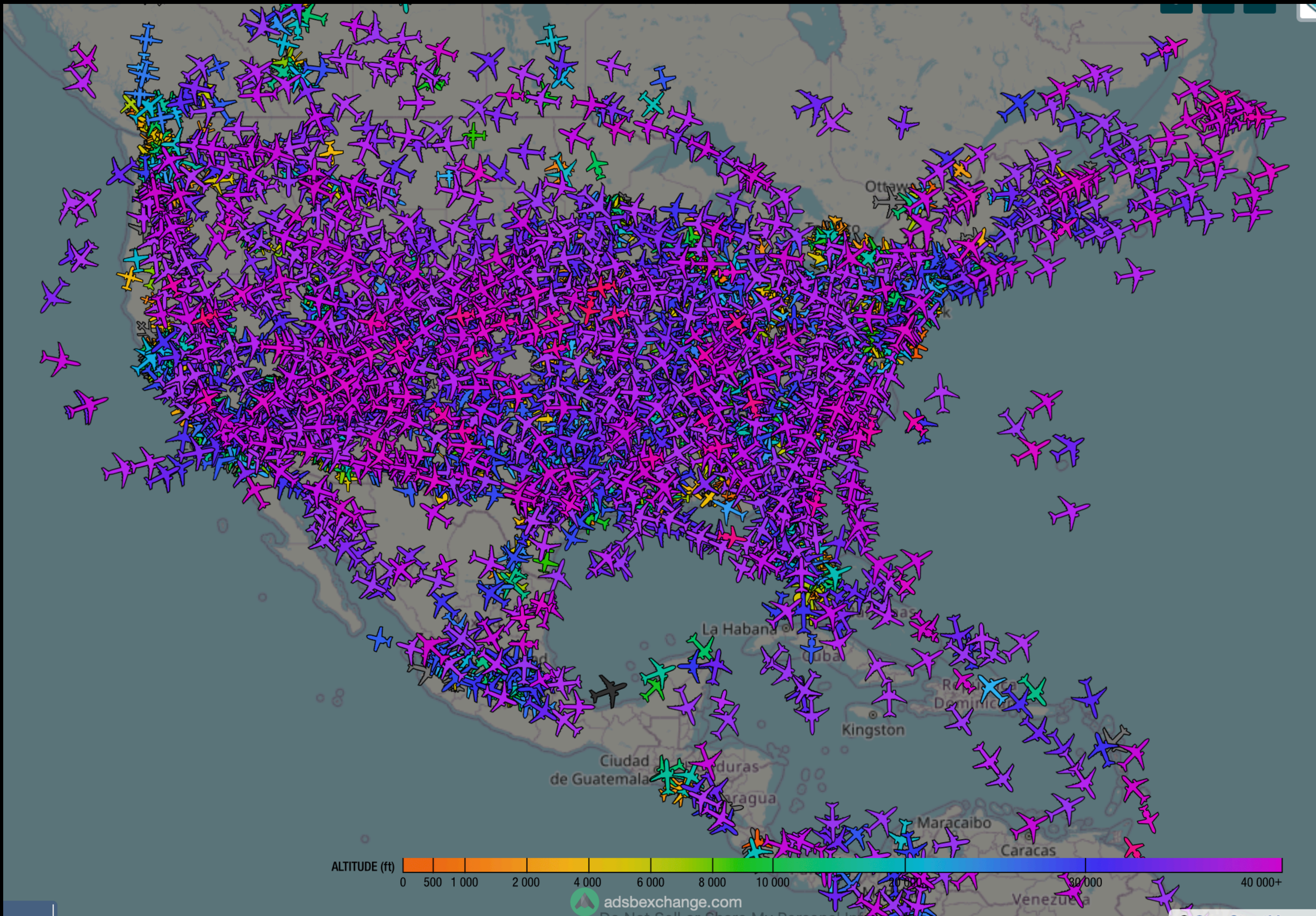
In 2004
23 million flights
per year

In 2019
39 million flights
per year

ALTITUDE (ft)
0   500 1 000   2 000   4 000   6 000   8 000   10 000   30 000   40 000+

adsbexchange.com

Carbon Black & Black Carbon

[SUNSHADE #1: THE VOLCANO EFFECT]
Sulfur in the Stratosphere

DOPED JET FUEL
GEOENGINEERING

Past volcanic eruptions have cooled the earth substantially by injecting sulfur dioxide (SO_2) gas into the upper atmosphere. Atmospheric scientists have proposed that SO_2—already emitted in vast quantities into the lower atmosphere by burning fossil fuels—could have the same cooling effect if it were lofted into the stratosphere.

Light is scattered by clouds of sulfate droplets

DEPLOYMENT BY BALLOON
Lighter-than-air craft would require very little energy to raise a cargo of SO_2 at least six miles high.

DEPLOYMENT BY PLANE
Running on "dirty," high-sulfur fuel at cruising altitudes, airplanes could add plenty of SO_2 to the stratosphere.

ClimateViewer.com/cirruscloudsmatter/

BIOFUELS FOR CONTRAIL CONTROL

ADDING ALUMINUM NANO-PARTICLES TO JET FUEL

Why add nanoparticles? The idea, says lead author R. B. Anand, an associate professor of mechanical engineering at the National Institute of Technology in Tiruchirappalli, India, is that because of their high surface-to-volume ratio, the nanoparticles—which, in the study, had an average diameter of 51 billionths of a meter—have more reactive surfaces, allowing them to act as more efficient chemical catalysts, thus increasing fuel combustion. The presence of the particles also increases fuel–air mixing in the fuel, which leads to more complete burning. In the study, Anand and co-author J. Sadhik Basha first used a mechanical agitator to create an emulsion consisting of **jatropha biodiesel (a fuel derived from the crushed seeds of the jatropha plant), water, and a surfactant, then blended in different proportions of alumina nanoparticles.**

In addition to outperforming regular biofuel, the nanoparticle-spiked fuels produced significantly lower quantities of nitrogen oxide and carbon monoxide gases, and created less smoke. The researchers are now testing other types of nanoparticles, including hollow carbon nanotubes, and investigating the effects of nano-additives to engine lubrication and cooling systems. One obstacle to the application of this kind of nanotechnology is the high cost of nanoparticle production, says Anand—who also cautions that **nanoparticles "should be used judiciously," because they tend to "entrain into human bodies."**

Sadhik Basha, J., and R. B. Anand. **"Role of nanoadditive blended biodiesel emulsion fuel on the working characteristics of a diesel engine."** *Journal of Renewable and Sustainable energy* 3.2 (2011): 023106.
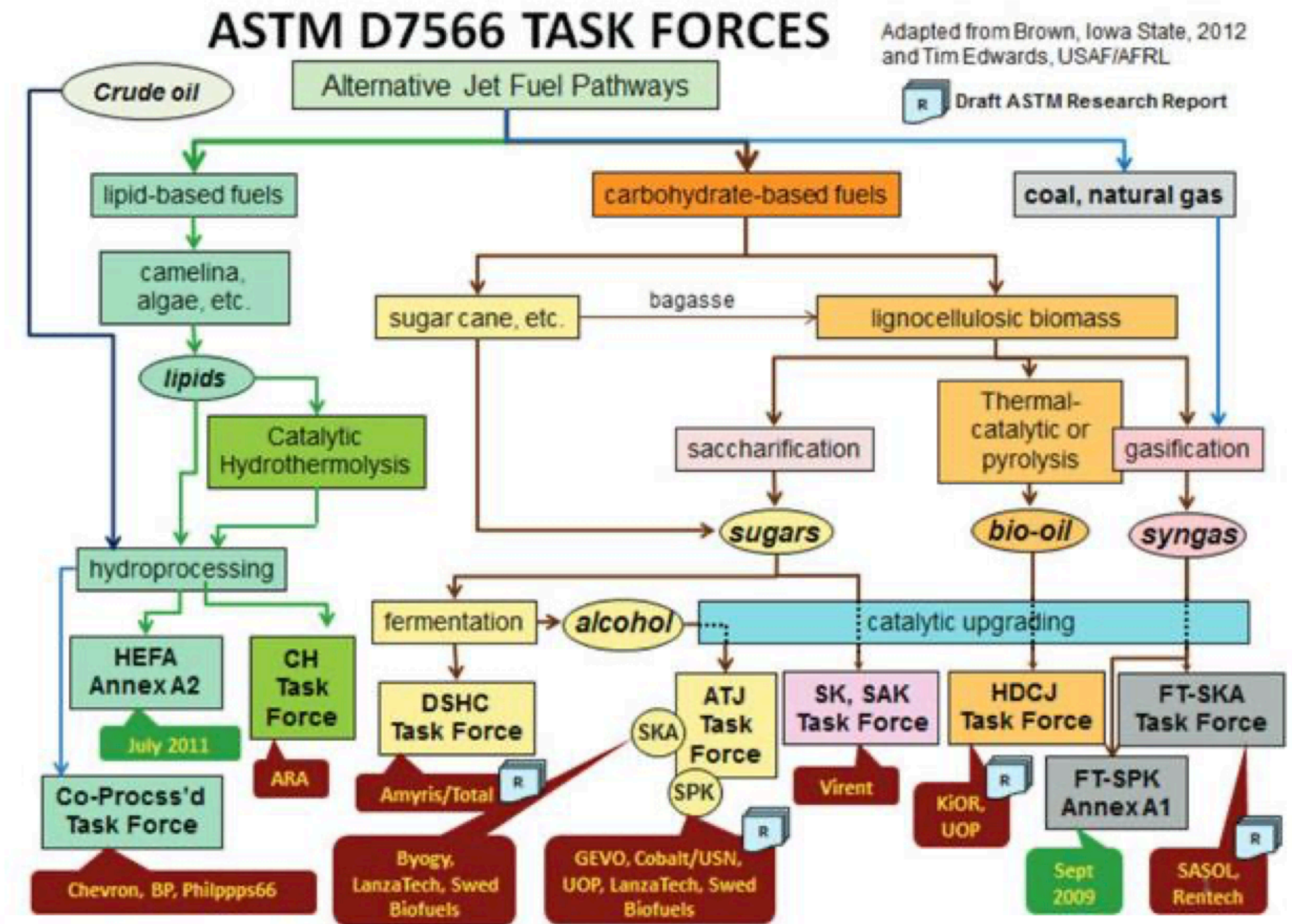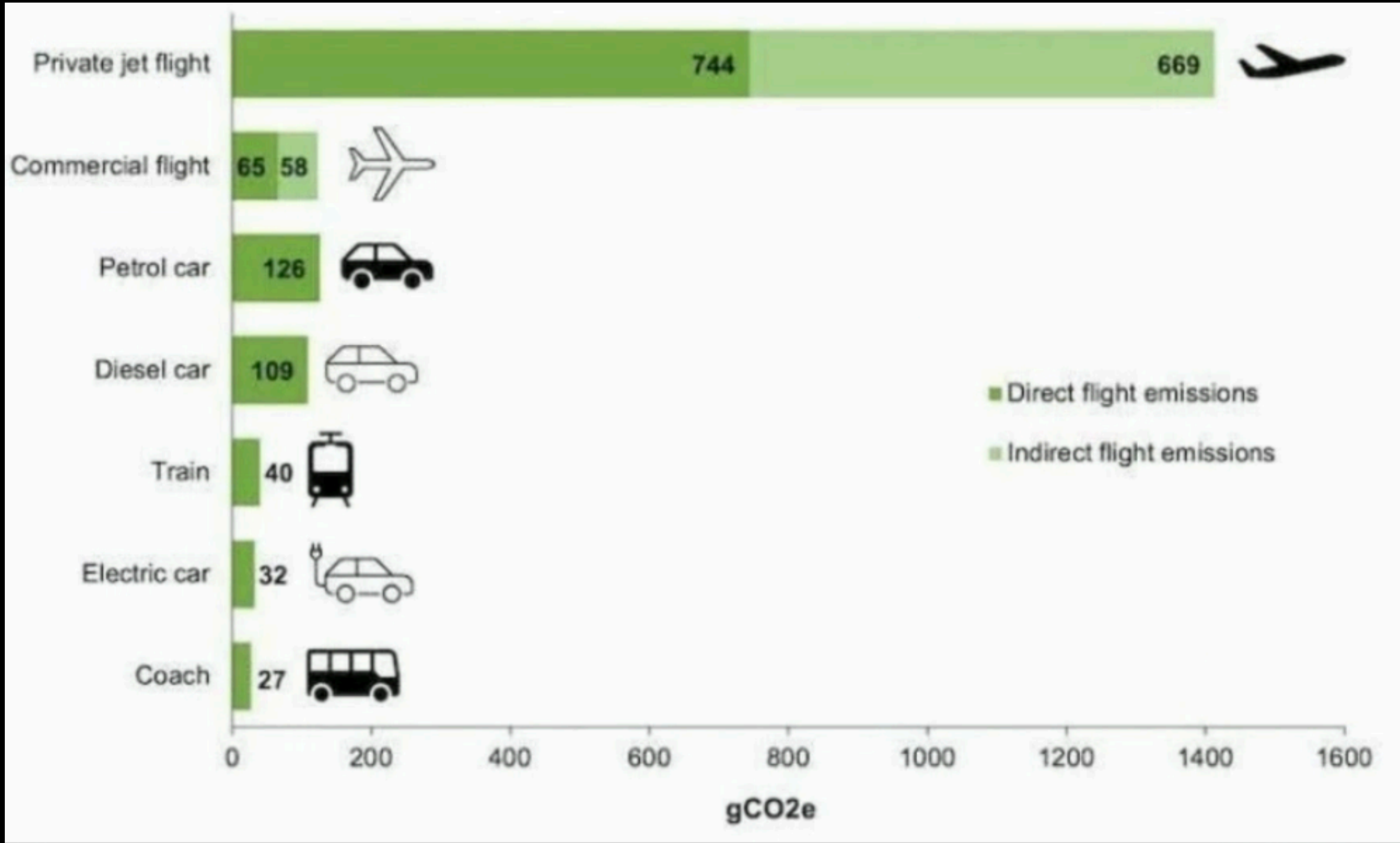

Figure 13 – ASTM Alternative Fuel Task Forces

40

KEY ADDITIVES APPROVED IN AVIATION TURBINE SPECIFICATION

ADDITIVE TYPE / Chemical or Brand Name	AFQRJOS Jet A-1 (JOINT CHECK LIST)	ASTM (Jet A)	DEF STAN 91-91 (Jet A-1)	DEF STAN 91-86 (F-44)	DEF STAN 91-88 (F-40)	IATA (JET A-1)	MILSPEC 5624U (JP-4/JP-5)	MILSPEC 38219D (JP-7)	MILSPEC 83133E (JP-8 (+100))	CAN-CGSB 3.24 (F-34/F-44)	GE D50TF2	P&W SB. No. 2016
ISSUING AGENCY →												
ANTI-OXIDANT	R	O	R	R	R	R	R	R	R	O/R	O	R
2,6-Ditertiary-butyl phenol	•	•	•	•	•	•	•	•	•	•	•	•
2,6-Ditertiary-butyl-4-methyl phenol	•	•	•	•	•	•	•	•	•	•	•	•
2,4-Dimethyl-6-tertiary-butyl phenol	•	•	•	•	•	•	•	•	•	•	•	•
Mix 75%(min) 2,6-Ditertiary-butyl phenol	•	•	•	•	•	•	•	•	•	•	•	•
25%(max) Teriary and Tritertiary butyl phenols	•	•	•	•	•	•	•	•	•	•	•	•
Mix 72%(min) 2,4-Dimethyl-6-tertiary-butyl phenol	•	•	•	•	•	•	•	•	•	•	•	•
28%(max) Methyl and Dimethyl teriary-butyl phenols	•	•	•	•	•	•	•	•	•	•	•	•
Mix 55%(min) 2,4-Dimethyl-6-tertiary-butyl phenol	•	•	•	•	•	•	•	•	•	•	•	•
15%(min) 2,6-Ditertiary-butyl-4-methyl phenol	•	•	•	•	•	•	•	•	•	•	•	•
30%(max) Methyl and Dimethyl tertiary-butyl phenols	•	•	•	•	•	•	•	•	•	•	•	•
STATIC DISSIPATOR ADDITIVE	R	O	R		R	R	R/A		R	R	O	R
Stadis 450		•	•		•	•	•		•	•	•	•
Sigbol												•
ANTI-ICING ADDITIVE	A	A	O	R	R	A	R	R	R	O/A	O	O
Ethylene glycol monomethyl ether										•		•
Ethylene glycol monomethyl ether & Methyl Alcohol												•
Diethylene glycol monomethyl ether	•	•	•		•	•	•	•	•	•	•	•
CORROSION INHIBITORS		A	O	R	R	A	R	R	R	A	O	O
Apollo PRI-19		•	•	•	•					•	•	•
Hitec 580		•	•	•	•	•	•		•	•	•	•
Nalco 5403		•	•	•	•	•	•		•	•	•	•
DCI-4A		•	•	•	•	•	•		•	•	•	•
DCI-6A			•	•	•	•	•		•	•	•	•
Nalco 5405						•	•		•	•	•	•
Spec-Aid 8Q22						•	•		•	•	•	•
Unicor J						•	•		•	•	•	•
Tolad 351						•	•		•	•	•	•
Tolad 4410			•	•	•	•	•		•	•	•	•
RPS-613						•	•		•	•	•	•
Hitec 515											•	
Tolad 245											•	
Mobilad F-800												•
PWA-536									•			
METAL DEACTIVATOR	O	O	O	O	O	O	A	A	A	O	O	O
N,N'-Disalicylidene-1,2-propanediamine	•	•	•	•	•	•	•	•	•	•	•	•
N,N'-Disalicylidene-1,2-cyclohexanediamine											•	
THERMAL STABILITY ADDITIVE		A							A		O	O
Spec-Aid 8Q462									•		•	•
AeroShell Performance Additive 101									•		•	•
Turboline FS100C											•	•
Turboline FS100											•	•
JFA-5												•
LEAK DETECTION ADDITIVE		O	O							O	O	O
Tracer A		•	•							•	•	•
BIOCIDE		E				O					O	O
Biobor JF						•					•	•
Kathon FP 1.5						•					•	•

Private jet flight: 744 (Direct flight emissions), 669 (Indirect flight emissions)
Commercial flight: 65, 58
Petrol car: 126
Diesel car: 109
Train: 40
Electric car: 32
Coach: 27

Direct flight emissions
Indirect flight emissions

gCO2e

Those telling us to eat bugs, live in 15-minute cities, and to stop growing our food, produce this much emissions compared to the those flying commercially.

Weather and Climate Collections

Search this Guide | Search

Weather and Climate

- Daily Synoptic Weather Maps
- Foreign Climate Data
- George Washington Carver and Tuskegee Weather Data
- Hurricane Reports
- Monthly Weather Review
- Report of the Chief of the Weather Bureau
- U.S. Daily Weather Maps
- U. S. Weather Bureau Circular Letters
- U.S. Army Signal Corps/Weather Bureau Annual Reports
- Weather Bureau Topics and Personnel
- Weather Modification Project Reports
- Why The Weather

Weather Modification Project Reports

Publication History & Scope

In the late 1940's and 1950's many deemed "the deliberate or the inadvertent alteration of atmospheric conditions by human activity", also known as weather modification, as a promising science of the future. Currently, the most common form of weather modification is cloud seeding, which increases rain or snow, usually for the purpose of increasing the local water supply. Weather modification can also have the goal of preventing damaging weather, such as hail or hurricanes, from occurring.

As part of Public Law 92-205 (1972), all non-Federal weather modification activities must be reported to the U.S. Secretary of Commerce, via the NOAA Weather Program Office. Below is a list of these reports and is updated on a quarterly basis.

As required by that law, NOAA submitted a Report to Congress in 1979, available via the NOAA Library.

Show 10 entries   Search:

Search Project Designa	Search Project Number	Search Project Date Ra	Search Activity
2021TPWMA_FinalReport	2021TXB-2	3/1/2021 - 11/15/2021	Augment snowpack
2021WTWMA_FinalReport	2021TXWT-2	3/1/2021 - 11/15/2021	Augment snowpack
Alta/Snowbird	03 - 1206	10/15/2003 - 12/24/2003	Augment snowpack
Alta/Snowbird	05 - 1260	10/15/2004 - 12/24/2004	Augment snowpack
Alta/Snowbird	06 - 1307	10/15/2005 - 12/24/2005	Augment snowpack
Alta/Snowbird	07 - 1346	10/17/2006 - 12/24/2006	Augment snowpack
Alta/Snowbird	07 - 1384	10/15/2007 - 12/24/2007	Augment snowpack
Alta/Snowbird	08 - 1422	10/15/2008 - 12/24/2008	Augment snowpack
Alta/Snowbird	10 - 1485	10/15/2009 - 12/24/2009	Augment snowpack
Alta/Snowbird	11 - 1501	10/15/2010 - 12/24/2010	Augment snowpack

Showing 1 to 10 of 983 entries

Previous 1 2 3 4 5 … 99 Next

These are non-federal programs only.

Look up "Precipitation Enhancement."

You will find over 100,000 search results.

The Different Types of
Weather Modification Programs

ARTIFICIAL MIRROR/LENS

ARTIFICIAL AURORA

THERMOSPHERE

93 Miles
150 Kilometers

MESOSPHERE

53 Miles
85 Kilometers

31 Miles
50 Kilometers

STRATOSPHERE

39k Feet
12 Kilometers

TROPOSPHERE

93-310 Miles
150-500 Kilometers

F LAYER

56-93 Miles
90-150 Kilometers

E LAYER

IONOSPHERE

37-56 Miles
60-90 Kilometers

D LAYER

SOUNDING ROCKETS (LEFT) & SATELLITES (ABOVE)
Sprays Trimethyl-Aluminum (TMA)
Barium, Lithium, Sulfur-Hexaflouride (SF-6)

SOOT CARRIES METALS & SULFUR INTO STRATOSPHERE
Creates Cirrus Clouds, Aviation Soot detected at 18km (10,000 per cubic cm)
Soot is filled with: Chromium, Iron, Molybdenum, Sodium, Calcium, and Aluminum,
Vanadium, Barium, Cobalt, Copper, Nickel, Lead, Magnesium, Manganese, Silicon,
Titanium, and Zirconium.

OZONE LAYER 20-30 Kilometers (12 to 19 miles)

IONOSPHERIC HEATER
HAARP - 2.8-10Mhz
3.6 MILLION WATTS

SEA-BASED X-BAND RADAR (SBX-1)
8.0 to 11.2 GHz, Range 3000 miles (4,800 Kilometers)
90 Thousand Watts (450 kW peak)

ARPA Long-Range Tracking and Instrumentation Radar
ALTAIR - VHF (253-163 MHz) and UHF (414-440 MHz)
Range 70,277 miles (113,100 km)
6.4 MILLION WATTS PEAK

Image by Jim Lee, **ClimateViewer.com/haarp/**
Radar map available at **ClimateViewer.org**

Image by Jim Lee, **ClimateViewer.com**

WMH
WEATHERMODIFICATIONHISTORY.COM

THERMOSPHERE

93 Miles
150 Kilometers

MESOSPHERE

53 Miles
85 Kilometers

STRATOSPHERE

31 Miles
50 Kilometers

TROPOSPHERE

39k Feet
12 Kilometers

ARTIFICIAL MIRROR/LENS

ARTIFICIAL AURORA

NOCTILUCENT CLOUD

AIR GLOW

NACREOUS CLOUD

OZONE LAYER

IONOSPHERE

1. **Ionospheric Heater**
MICROWAVE, NOCTILUCENT, PLASMA CLOUDS, ELF/VLF

2. **Sounding-Rockets**
CHEMICAL RELEASE, NACREOUS, NOCTILUCENT CLOUDS

3. **Satellite** CHEMICAL RELEASE, DEW, IONOSPHERIC HEATER, ELF/VLF GENERATION

4. **Lasers**
RAIN CCN, IONIZATION, CHANNEL LIGHTNING

5. **Cloud Seeding**
CHEMICAL RELEASE, RAINFALL, HAIL, CLOUD CLEARING

6. **Cloud Ionizers**
ELECTRIC RAINMAKING WITH IONS

7. **Stratospheric Aerosol Injection**
GEOENGINEERING SOLAR RADIATION MANAGEMENT (SRM)
CHEMICALS CREATE SUNSHADE: SULFUR, ALUMINUM, TITANIUM,
DIAMOND DUST, CALCIUM, BISMUTH TRI-IODIDE.

8. **Ship Tracks**
MARINE CLOUD BRIGHTENING (MCB), STRATOCUMULUS

9. **Contrail-Induced Cirrus**
CIRRUS CLOUD CREATION, TRAPS HEAT, MELTS POLES

10. **Water Vapor Pollution**
CLOUD CREATION VIA: SMOKESTACKS, COOLING TOWERS,
WSAC, TMS-65, J2X ROCKET, JET ENGINES

Red Numbers: Considered Inadvertent, Accidental, or Pollution...
unless intentional.   Objects not to scale. Not included: steering atmospheric rivers

WEATHER MODIFICATION TECHNOLOGIES 2018

SUN
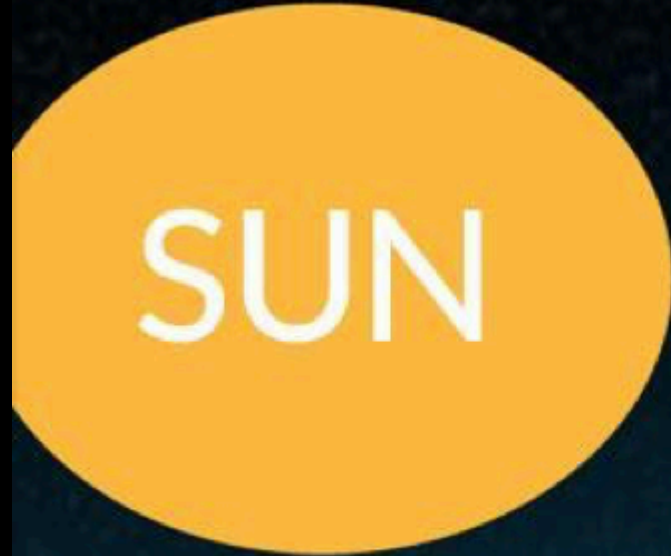
"If the time and place of seeding is selected with care, the climate effect of cirrus thinning can be enhanced. For that, only the long-wave warming effect of cirrus clouds should be targeted, and their solar effect should be avoided. This can be achieved if seeding is limited to high-latitude winters or to nighttime seeding." Climate Change and Geoengineering: Artificially Cooling Planet Earth by Thinning Cirrus Clouds

Solar Radiation Management

SRM

INCOMING SOLAR RADIATION

Soot is a cloud seed that self-levitates
Soot transports Sulfur into Stratosphere
Sulfur and Soot destroy the Ozone Layer
Metals in soot make cirrus clouds
Cirrus clouds cool during daytime (SRM)
Cirrus clouds trap heat at night (ERM)

31 Miles
50 Kilometers

OZONE LAYER

Carbon Black Dust (Soot)
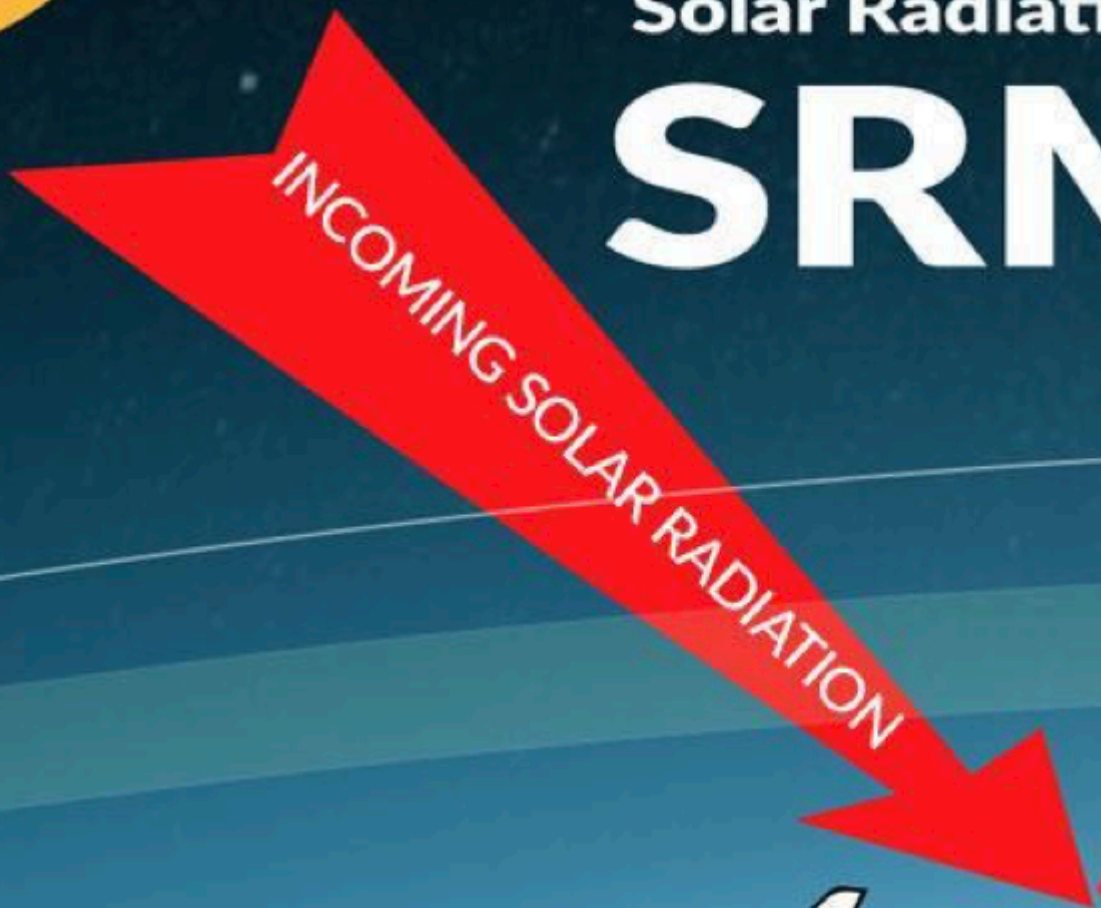
STRATOSPHERIC AEROSOL INJECTION (SAI)

39k Feet
12 Kilometers

EARTH RADIATION MANAGEMENT

ERM

OUTGOING SOLAR RADIATION

"We would like to have MORE Contrail-induced Cirrus Clouds during day and NONE during night" - Dr. Rangasayi Halthore FAA Aviation Climate Change Research Initiative (ACCRI)

"Less Warming and More Cooling Contrails: Predictable for Operational Planning" - Dr. Ulrich Schumann, German Aerospace Center, Recent research results on the climate impact of contrail cirrus and mitigation options, ICAO Colloquium on Aviation and Climate Change 2010

CLIMATEVIEWER.COM/CIRRUSCLOUDSMATTER/
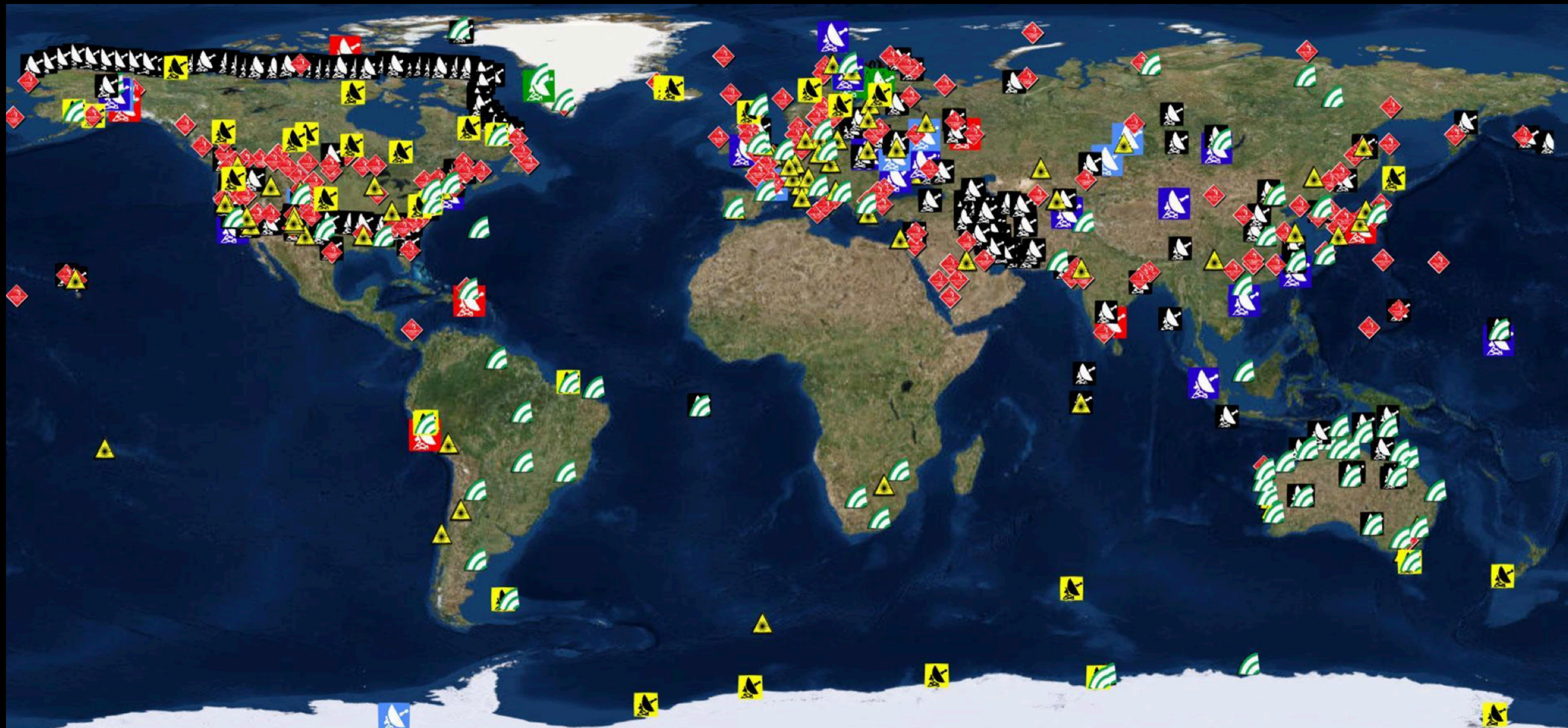
CLIMATEVIEWER 3D

MAP AVAILABLE AT **CLIMATEVIEWER.ORG**

Ionospheric Heater

EISCAT Incoherent Scatter Radars

Missile Defense Radars

Ionosondes

SuperDARN

Other Incoherent Scatter Radars

CV3D

Historic Ionospheric Heaters

Lasers & Directed Energy

ELF & VLF Transmitters

ACT>>> GLOBAL

Message

Contrail cirrus contributes a large fraction to the aviation induced climate impact (comparable to 50 years of aviation CO_2)

Satellite data analyses suggest observable impact of aviation on cirrus cover and radiation fluxes

The climate impact of aviation induced contrail cirrus depends on aircraft properties (e.g. soot emissions) and routing (avoid cirrus forming regions)

Both aspects offer the potential for aviation to reduce the climate impact of aviation (less soot emissions, less warming and more cooling contrails; predictable for operational planning)

U.S. Patent Application 20130340834

ice-supersaturated air

Altitude

Horizontal position

FUEL DELIVERY SYSTEM
two jet fuels + one fuel tank = contrail control

CONTROLLING THE SUPPLY OF A VEHICLE WITH MULTIPLE FUELS

Deutsches Zentrum für Luft- und Raumfahrt e.V.
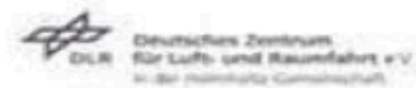
US Patent 9,518,965 B2
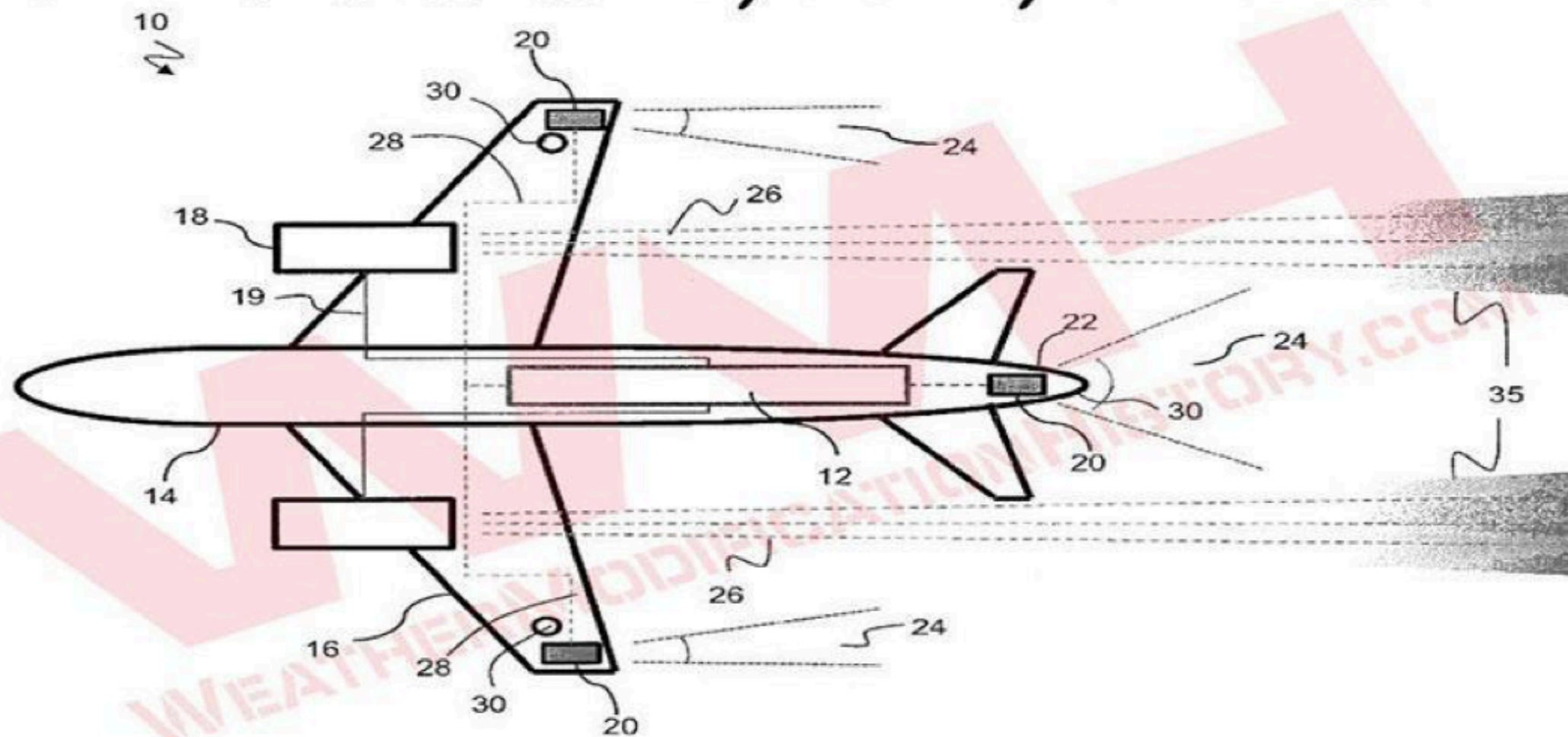
Fuel System for Vapor Trail Control

Figure 1

Jet Fuel Electronic Control Unit (ECU)
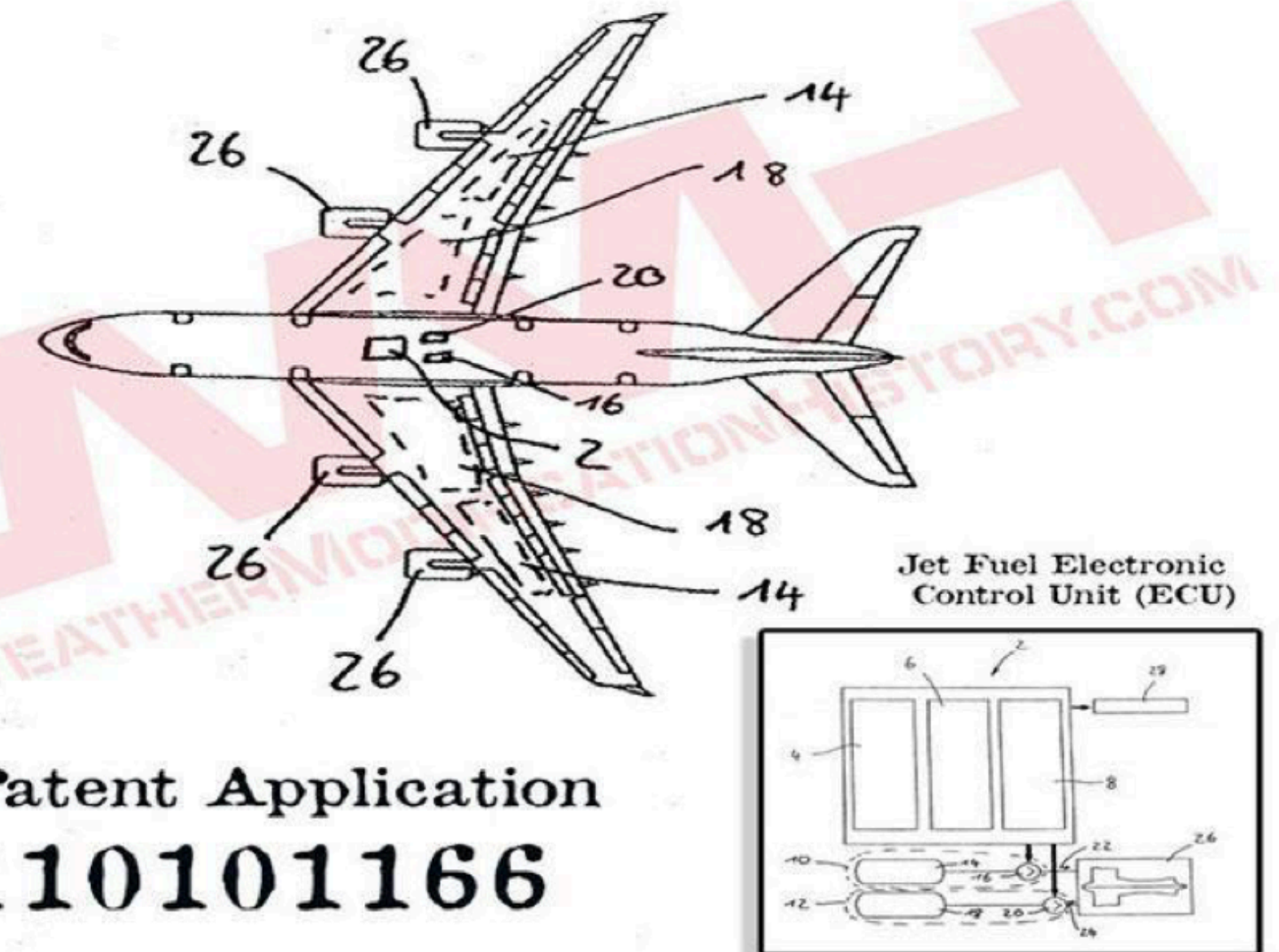
U.S. Patent Application 20110101166

CARBON BLACK DUST vs. SOOT

Military Application vs. Commercial Pollution

CARBON BLACK

› **Military Use - Weather Warfare:**
- Increase Cirrus Cloud Cover
- Increase/decrease precipitation
- Dissipate Fog

› **Scientific – Weather Modification:**
- Hurricane Modification
- Increase/decrease precipitation
- Increase Cirrus Cloud Cover
- Dissipate Fog

SOOT

› **Commercial Aviation – Weather Modification & Geoengineering**
- Increase Cirrus Cloud Cover
- Alter Rainfall Patterns
- Affects Solar Radiation: cools by day, traps heat by night
- Contains metals, coated in sulfur dioxide and sulfuric acid

CARBON BLACK DUST vs. SOOT

01

Carbon black and soot often have been used interchangeably; however, carbon black is physically and chemically distinct from soot. **[1]**

02

Carbon black is composed of turbostratic colloidal aggregates which we call **aciniform carbon (AC, grape-like clusters)**. Chimney soots from domestic wood or coal fires contain very little AC, while in **diesel soots the solid particulates are essentially all AC**. **[2]**

04
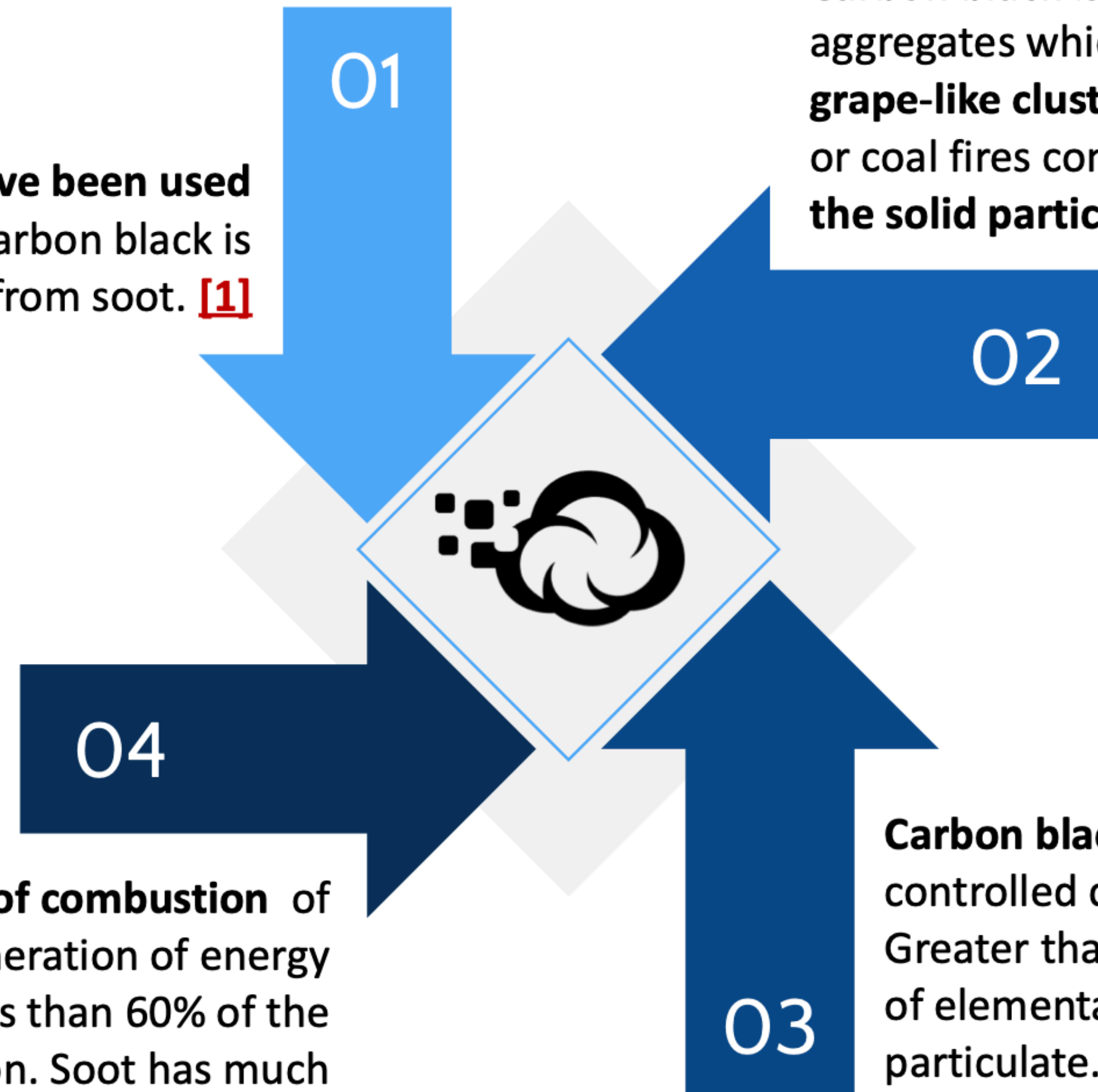
Soot is the unwanted by-product of combustion of carbon-based materials for the generation of energy or heat, or for waste disposal. Less than 60% of the total soot particulate mass is carbon. Soot has much greater percentages of ash and solvent extractable organic compounds. **[3]**

03

Carbon black is manufactured under controlled conditions for commercial use. Greater than 97% of carbon black consists of elemental carbon arranged as acinoform particulate. **[3]**

3

CARBON BLACK DUST & SOOT

CRUCIAL FOR ARTIFICIAL CIRRUS CLOUD CREATION

WEATHER WARFARE: U.S. Air Force and Navy FOIA documents and Presentations

GEOENGINEERING: CBD & Soot is a carrier for metals and sulfur into the stratosphere

OZONE: CBD & Soot levitates into stratosphere, METALS AND SULFUR DESTROY OZONE

Is released in exhaust of jet aircraft by burning fuels (soot) or dumped/pumped from military aircraft (carbon black).

OZONE DESTRUCTION

SOOT LEVITATS INTO THE STRATOSPHERE, CARRIES SULFUR & METALS

Though airborne, Black Carbon is known to dissipate and settle down in a few months under the influence of rain and wind and is unlikely to travel upward of 4 km. However, a group of scientists — including from the Indian Institute of Science and ISRO's Vikram Sarabhai Space Centre — say they now have evidence of **such particles existing up to 18 km into the stratosphere** and there are about 10,000 of them in every cubic centimeter.

Given the shape and location of these particles, they argue, it could only derive from **emissions from aviation fuel** and they pose a problem because these black carbon particles can linger long enough to provide a fertile ground for other chemical reactions that can **deplete the ozone layer**.

Govardhan, Gaurav, et al. **"Possible climatic implications of high-altitude black carbon emissions."** *Atmospheric Chemistry and Physics* 17.15 (2017): 9623-9644.

PHOTOPHORETIC LEVITATION

"engineered nanoparticles could exploit photophoretic forces, enabling more control over particle distribution and lifetime than is possible with sulfates, perhaps allowing climate engineering to be accomplished with fewer side effects."

Keith, David W. **"Photophoretic levitation of engineered aerosols for geoengineering."** *Proceedings of the National Academy of Sciences* 107.38 (2010): 16428-16431.

Stratosphere

OZONE

Troposphere

Black Carbon from Aircraft Exhaust is Destroying Ozone, Melting Poles
https://climateviewer.com/2017/10/25/black-carbon-from-aircraft-exhaust-destroying-ozone-melting-poles/
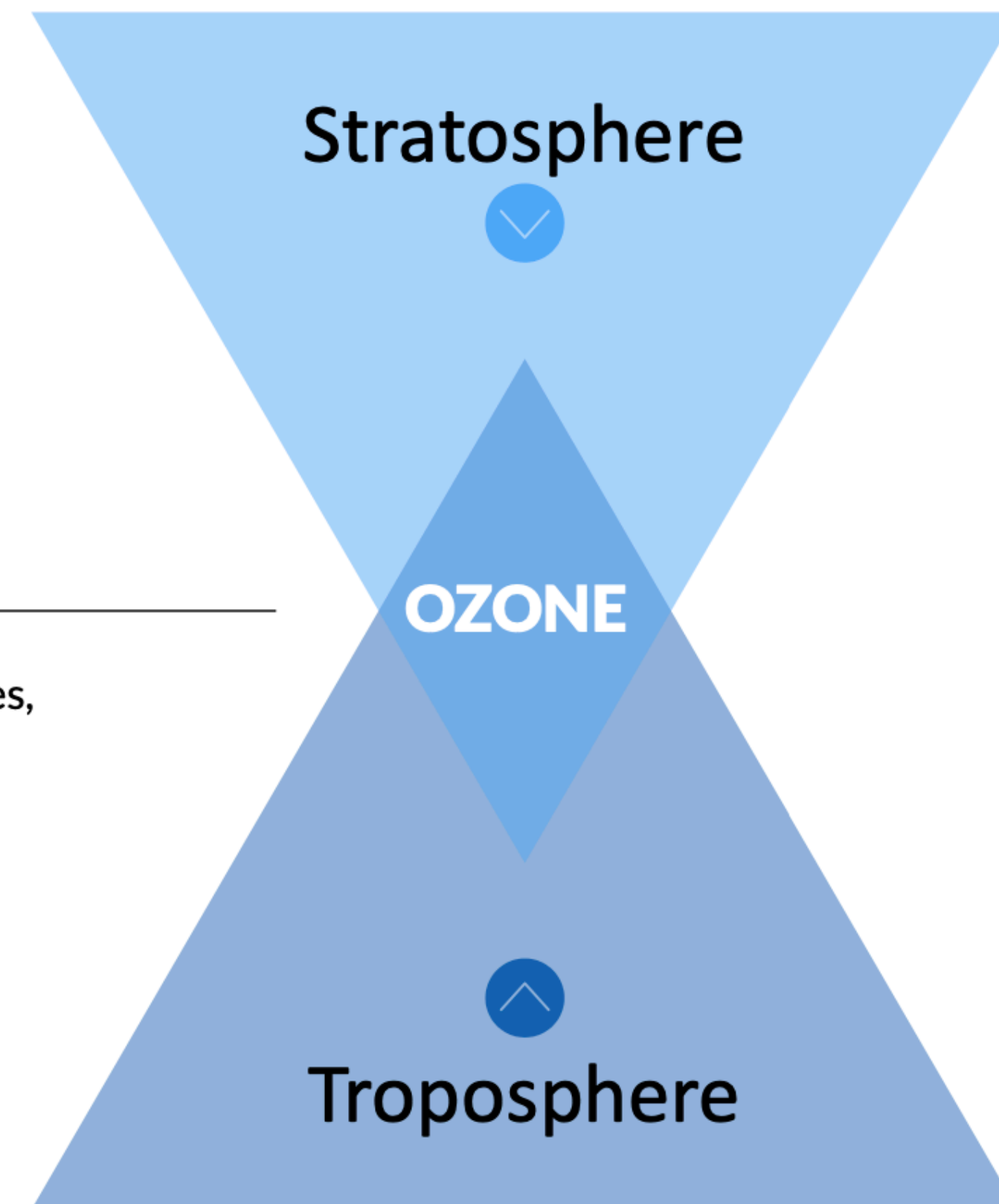
OZONE DESTRUCTION

What happens if we lose our Ozone Layer?

https://www.epa.gov/ozone-layer-protection/health-and-environmental-effects-ozone-layer-depletion

Harmful Ultra-Violet Radiation would kill all plant life on the planet. UVB radiation affects the physiological and developmental processes of plants. Despite mechanisms to reduce or repair these effects and an ability to adapt to increased levels of UVB, plant growth can be directly affected by UVB radiation.

Laboratory and epidemiological studies demonstrate that **UVB causes non-melanoma skin cancer** and plays a major role in **malignant melanoma development**. In addition, UVB has been linked to the **development of cataracts**.

Exposure to solar UVB radiation will kill marine life. Damage to Phytoplankton, early developmental stages of fish, shrimp, crab, amphibians, and other marine animals with implications for the whole marine food chain.
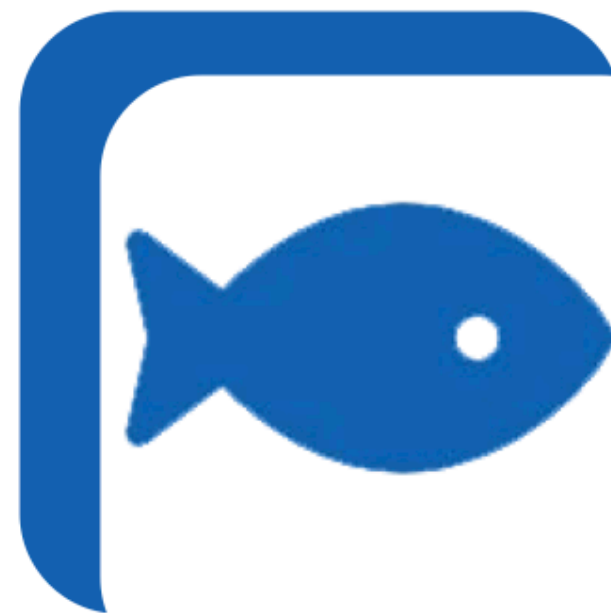
UVB radiation could affect terrestrial and aquatic biogeochemical cycles, thus altering both sources and sinks of greenhouse and chemically important trace gases (e.g., carbon dioxide, carbon monoxide, carbonyl sulfide, ozone, and possibly other gases).

OZONE DESTRUCTION
HARRY WEXLER AND ROCKET EXHAUST - 1961

"Wexler was concerned that inadvertent damage to the ozone layer might occur if increased rocket exhaust polluted the stratosphere."

Inadvertent
1. Increased pollution from rocket exhaust.
2. Near-space experiments could go awry, e.g. unknown risks of Operation Argus (1958), Project West Ford (1961), and Project Highwater (1962).

Purposeful
1. In 1934 S. Chapman proposed making a temporary "hole in the ozone layer" for the benefit of astronomers.
2. Possible military interest in waging geophysical warfare by attacking the ozone layer over a rival nation

"[Climate control] can best be classified as 'interesting hypothetical exercises' until the consequences of tampering with large scale atmospheric events can be assessed in advance. Most such schemes that have been advanced would require colossal engineering feats and contain the inherent risk of irremediable harm to our planet or side effects counterbalancing the possible short-term benefits."

"On the Possibilities of Climate Control" in 1962: Harry Wexler on Geoengineering and Ozone Destruction – PowerPoint Presentation

9

POLLUTION OF THE UPPER ATMOSPHERE BY ROCKETS

W. W. KELLOGG
The RAND Corporation, Santa Monica, California*

(Received June 11, 1964)

Abstract. This report estimates the amounts of various constituents that would have to be continually injected by rockets into the upper atmosphere in order to double the worldwide natural concentrations there. Involved in the calculations are: (a) the natural atmospheric abundances of constituents such as H_2O, CO_2, NO, Na, K, Li, H, etc.; (b) the residence times in various regions of the atmosphere, since these determine how rapidly a constituent will be removed; and (c) the chemical or photo-chemical stability of a substance exposed to the upper atmosphere environment. It is concluded that a doubling of the CO_2, H_2O, or NO content would require per year on the order of 10^3 to 10^5 Saturn-type rockets, each injecting 100 tons of exhaust above 100 km. On the other hand, a few hundred small rockets per year, each containing 10 kg of the chemical, would probably double the Na content; similarly, less than two such rockets per year would be expected to double the Li content. These last conclusions have implications for future tracer experiments using these substances.
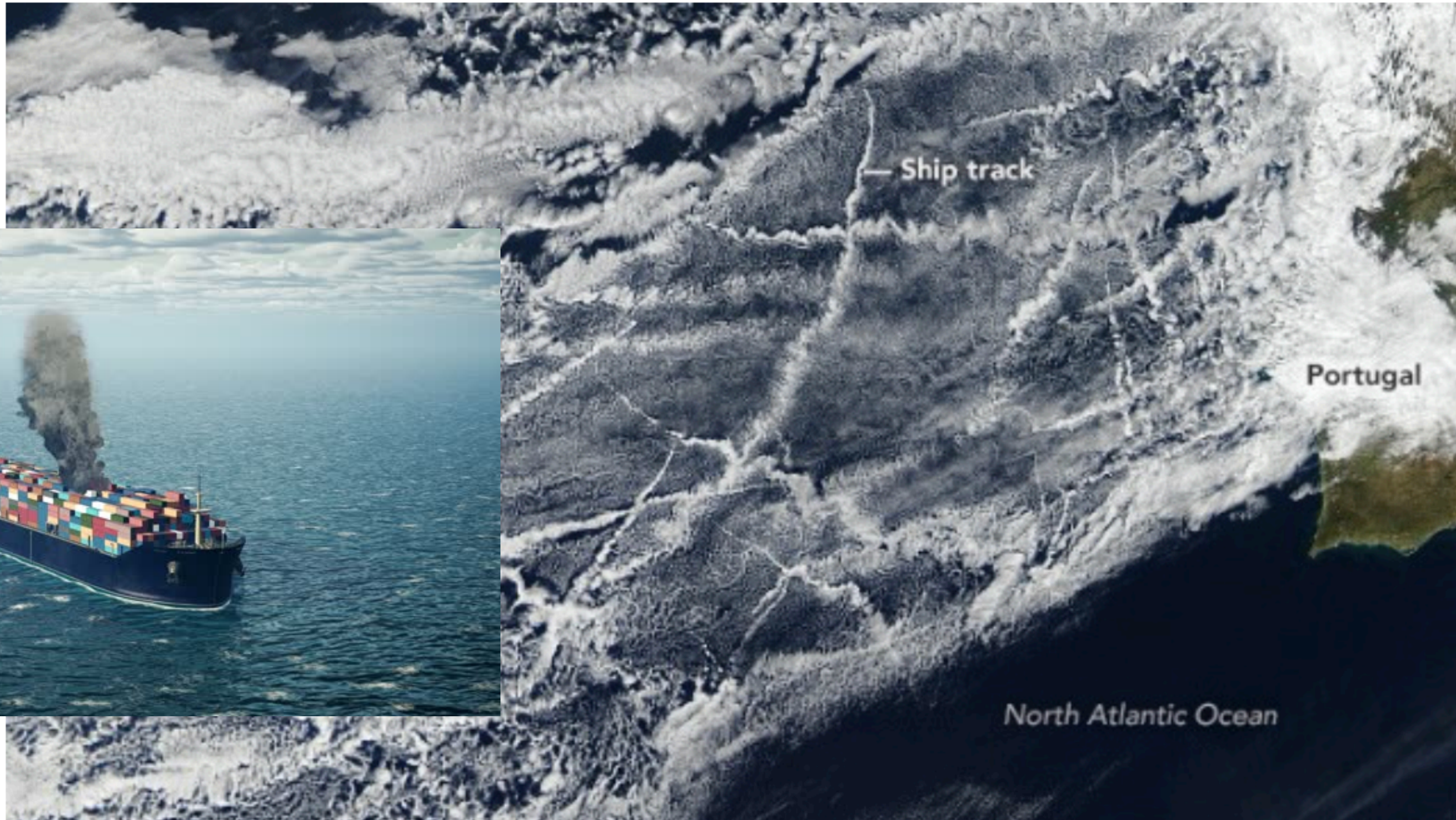
1. Introduction

There have been so many deplorable examples of man's pollution of his environment that a conscious effort is being made in many quarters to forestall further cases. At its meeting in Prague in October, 1962, the Executive Council of the International Council of Scientific Unions (ICSU) adopted a resolution (EB-XIV-27) that noted that the large rockets used in connection with satellites and space vehicles could introduce into space and the upper atmosphere matter that could possibly have an adverse effect on future scientific observations and that could possibly change the natural state of the atmosphere. (See Appendix A for text of ICSU Resolution. Appendix B is a second statement from ICSU, dated April 25, 1963.) In March, 1963, ICSU urged that the International Committee on Space Research (COSPAR) request its Consultative Group on Potentially Harmful Effects of Space Experiments to consider this matter.

The COSPAR Consultative Group agreed to study the matter of pollution of the upper atmosphere at its meeting in Warsaw in June, 1963, and decided to go about it by preparing a technical note on the subject that could be distributed to certain qualified scientists for comments, along with any other pertinent material.
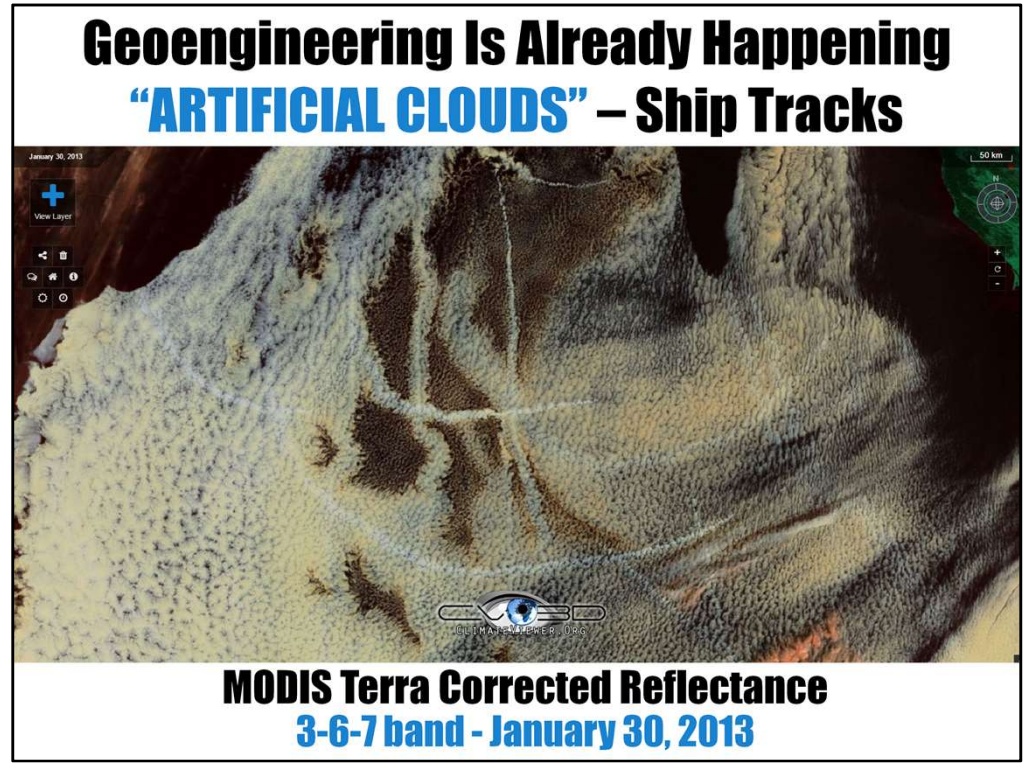
This report first appeared in draft form in December, 1963, and was sent to about twenty-five knowledgeable scientists in many parts of the world. Not all of those who responded with comments agreed with everything we said, and a few had reservations

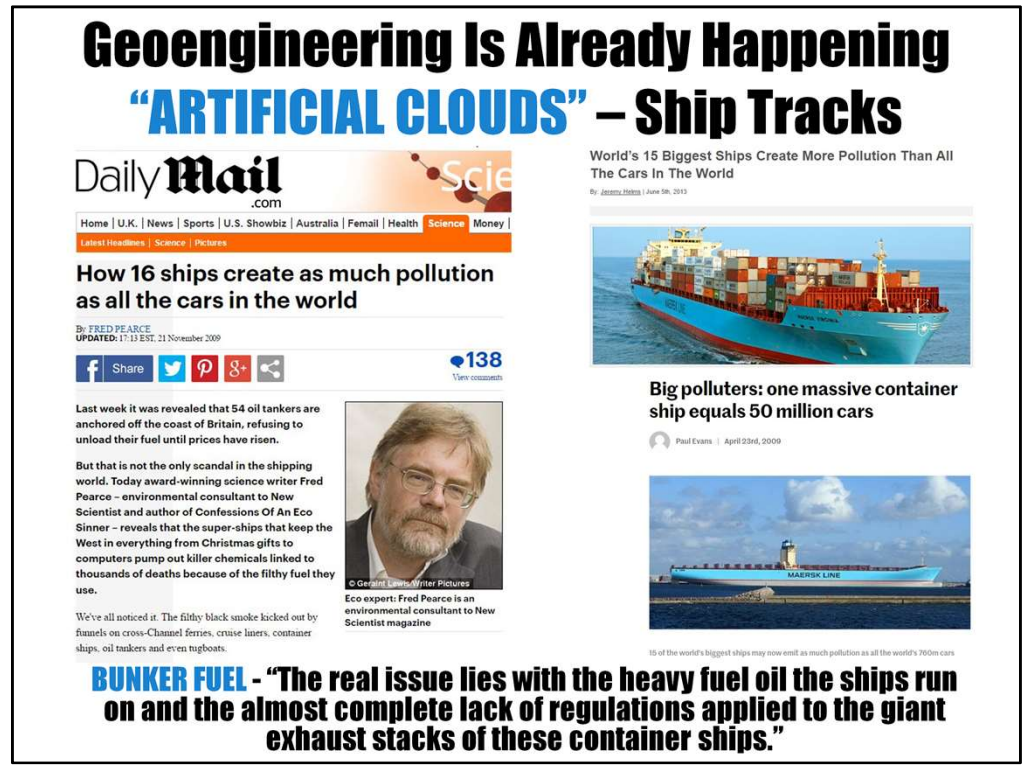# Ship Tracks & Weaponization
In All Its Different Forms

Ship Emissions Leave Tracks in the Clouds

Ship Tracks credit NASA

Geoengineering Is Already Happening
"ARTIFICIAL CLOUDS" – Ship Tracks

MODIS Terra Corrected Reflectance
3-6-7 band - January 30, 2013

http://climateviewer.org/3D/index.html?layersOn=MODIS_Terra_CorrectedReflecta nce_Bands367&baseLayer=Dark%20Matter&lat=- 130.45279&lon=37.51724&zoom=1099418.71&date=2013-01-30

Geoengineering Is Already Happening
"ARTIFICIAL CLOUDS" – Ship Tracks

How 16 ships create as much pollution as all the cars in the world

World's 15 Biggest Ships Create More Pollution Than All The Cars In The World

Big polluters: one massive container ship equals 50 million cars

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."

http://www.dailymail.co.uk/sciencetech/article-1229857/How-16-ships-create- pollution-cars-world.html
http://newatlas.com/shipping-pollution/11526/
http://www.industrytap.com/worlds-15-biggest-ships-create-more-pollution-than-all-the- cars-in-the-world

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.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

http://geoengineeringclimateissues.blogspot.com/2013/11/h2so4-sulfuric-acid-from- aviation-may.html
https://climateviewer.com/2014/01/31/sulfuric-acid-aviation-ship-tracks-may-higher- today-geoengineering-srm-require-2020/

— Ship track

North Atlantic Ocean

Lightening Following Ship Tracks,
Cloud Ionizers, Lightening Propagation

#Map shows that #lightning follows shipping lanes: As it turns out particles in ship exhaust increase the likelihood and intensity of thunderstorms. Really cool fact that I had never considered! Source: buff.ly/2B0tcOV

PM₂.₅ Emissions (km⁻²/year)

Annual Mean Lightning (strokes km⁻²/year)

- Lightning Initiation, Propagation, Attachment, and Ionospheric Effect, 2010-2014, DARPA.
- Lightning: Electromagnetic Environment and Source Parameters, 2009-2014, NSF.
- Lightning and Propagation, 2009-2010, US Dept. Defense/DARPA.
- Lightning Research and Testing at Camp Blanding, 2009-2010, NASA.
- A Characterization of the Close Electric and Magnetic Fields and Thunder of Lightning from the UF Multiple Station Experiment, 1999-2010, Department of Transportation, Federal Aviation Administration.
- Update Direct-Strike Lightning Environment for Stockpile-to-Target Sequence Supplement LLNL - Contract #B568621, 2007-2010, Lawrence Livermore Laboratory.

MORE INFO ON CLOUD IONIZERS

Forest Fire as a Military Weapon

A June 1970 Report of study commissioned by the Department of Defense.

In 1965 the Joint Chiefs of Staff requested that the Secretary of Defense **initiate research to determine the feasibility of measuring the flammability characteristics of forests and jungle growth, modifying flammability so that vegetation would readily support combustion and developing measures to destroy large areas of forest or jungle growth by fire.** This research has been conducted by the Forest Service of the Department of Agriculture, under sponsorship of the Advanced Research Projects Agency through ARPA Order 818. The primary research attention was givenForest

CLIMATE MI–NHLB
MILD WINTER; NON–HUMID, LONG BURN SEASON

Mainly subtropical climates—nearly frostfree to occasional winter frosts—having low or moderate (+) values and high (−) values for the year; or with at least 5 "B" months. Examples are:

Location	Precipitation Pattern	No. of Months "H"	"D"	"B"	Yearly Humidity Values (+)	(−)
Cloncurry, Aust.	Desert	0	12	10	+7	−88
Brownsville, Texas	Semi-arid	1	3	7	+34	−38
San Diego, Calif.	Medit.	0	8	8	+13	−57
Cape Agulhas, S. Afr.	Medit.	7	1	5	+54	−18
Los Angeles, Calif.	Medit.	3	7	8	+25	−50
Candia, Greece	Medit.	4	4	7	+96	−53

Temperature: Limiting in winter, but many woody species and grasses grow throughout the winter.

Precipitation: Restrictive much of the year; extremely so during the hot, dry summer.

Major vegetation types: Semi–dense thorny woodland or thick–leaved shrub types. Open desert shrub type under driest climate.

Ground-story vegetation: Usually shrubs; also grass and semi-shrubs in open types.

   Amount: Moderate dry weight in semi–dense woodland or shrub types; low in open desert shrub type.

   Moisture content: Drops during long dry season. Shrub stems retain about 70–80 percent of dry weight; grasses 5–10 percent.

Litter layer: Scant, because of low current production and weathering during mild winter. However, shrubs have many dead stems caused by frequent drought years.

Total available fuel weight on a good burning day: 0.23 pounds per square foot.

Burn days: Long dependable burning season.

Dessiccation needs: Grass and dead woody material burn readily during the dry season. But removal of all woody vegetation under normal burning weather requires desiccation with a foliar spray or an application of pellets to the soil. Under extreme weather, intense fires may burn out of control and present a major hazard.

   Foliar spray: Spray during the Spring. Apply per acre:

      3 lbs., a.e., of a 1:1 mix of 2,4–D and 2,4,5–T in diesel oil to make a total mixture of 5 gallons.

   Soil application: Apply 7.5 lbs., a.e., of picloram pellets per acre.

Dates for example location (Los Angeles, Calif., Fig. B10):

1. Spray in March or early April.

2. Burn in October or in September.

Soil application: Apply 15 pounds, a.e., of picloram pellets per acre.

Dates for example location (Tampa, Fla., Fig. B7):

1. Spray in late June and repeat spray in August if needed.

   Or

1. Apply pellets in April or May.

2. Burn during dry weather, November or December, if the vegetation is dead; otherwise, wait and burn in March or April.

NOTE: Under mediterranean climate, which has a definite dry summer burn period, timing of spraying and burning is similar to CL–HUSB. Hong Kong is similar to Hanoi, FF–HUSB.

CLIMATE CL-NHSB
COOL WINTER, NON-HUMID, SHORT BURN SEASON

Warm marine, warm temperate, and semi-warm continental climates- occasional to common winter frosts having low to moderate (+) values and low (–) values for the year; 1–4 "B" months. Examples are:

Location	Precipitation Pattern	No. of Months "H"	"D"	"B"	Yearly Humidity Values (+)	(–)
Nice, France	Medit.	6	2	4	+48	–25
Canberra, Aust.	Medit.	4	3	1	+67	– 1
Edirne, Turkey	Medit.	5	3	3	+61	–18

Temperature: Slightly limiting during a short winter period, but many woody plants and grasses grow throughout the winter.

Precipitation: Restrictive during dry, hot summer.

Major vegetation types: Savana-like with open stand of thick-leaved shrubs and trees. Some dense shrubby vegetation.

Ground-story vegetation: Grasses and shrubs; or mainly shrubs where woody canopy is dense.

  Amount: Light in savana types; moderate dry weight in dense shrubby types.

  Moisture content: Drops during dry season, woody stems retain about 30 percent of dry weight.

Litter layer: Limited yearly leaf production; little accumulation of old material.

Total available fuel weight on a good burning day: 0.19 pounds per square foot.

Burn days: Predictable burning season each year.

Desiccation needs: Dry grass and dead woody material will burn readily during the dry summer. Desiccation is needed for effective removal of live woody material. Use either a foliar spray or an application of picloram pellets to the soil.

  Foliar spray: Apply per acre:

    4 lbs., a.e., of a 1:1 mix of 2,4-D and 2,4,5-T in diesel oil to make a total mixture of 5 gallons.

  Soil application: Apply 7.5 lbs., a.e., of picloram pellets per acre.

Dates for example location (Nice, France, Fig. B15):

1. Spray in early April.

  Or

1. Apply pellets in December.

2. Burn in August.

CLIMATE SC-HUYL
SHORT COLD WINTER: HUMID YEARLONG

Cool to cold marine, cool temperate and warm to semi-warm continental climates -- with frosts, freezes, and snow being common – having no "D" months and no "B" months. Examples are:

Location	Precipitation Pattern	No. of Months "H"	"D"	"B"	Yearly Humidity Values (+) Months ≥40°	(–) Months ≤40°	Total
Nashville, Tenn.	Humid	6	0	0	+227	+ 37	0
Liverpool, England	Humid	12	0	0	+290	0	0
Inverness, Scot.	Humid	12	0	0	+234	+ 83	0
Washington, D.C.	Humid	9	0	0	+170	+ 63	0
Springfield, Mo.	Humid	8	0	0	+177	+ 39	0
Staranger, Norway	Humid	12	0	0	+235	+131	0
Bern, Switzerland	Humid	12	0	0	+233	+ 67	0
Vienna, Austria	Humid	8	0	0	+114	+ 30	0
Prague, Czech.	Steppe	5	0	0	+123	+ 47	0

Temperature: All plant growth restricted by cold weather for one or more months; herbaceous plants mature and dry each year. Deciduous trees are favored.

Precipitation: Not limiting under typical humid precipitation pattern. Steppe pattern, favors grassland.

Major vegetation types: Typically deciduous forest, but replaced in many areas by conifers. Conifer and heath under cold marine climates. Prairie and woodland grow under steppe pattern.

Ground-story vegetation: Under forest canopy the woody plants are tree seedlings and scattered shrubs and vines; plus some grass rough. Grass is mixed with woodland under steppe climate.

  Amount: Moderate to low in dry weight.

  Moisture content: High during Spring and Summer, but drops during frosty fall weather. Grasses mature and dry in early Fall.

Litter layer: Mainly current leaf fall and grass rough. Some accumulation of old leaf litter.

Total available fuel weight on a good burning day: 0.19 pounds per square foot in hardwoods; 0.28 pounds per square foot in conifers.

Burn days: No burn season. Best odds are during driest Fall months.

Desiccation needs: Must remove forest canopy and kill understory woody plants for successful burning. Use either a foliar spray or an application of pellets to the soil.

SECRET

DISCUSSION

The deliberate initiation of forest fires can result in significant damage to enemy troops and facilities provided that incendiary operations are carefully planned with due consideration given to three essential ingredients: fuel, weather, and ignition pattern.

Forest fires must get their start in a surface layer of fallen leaves, twigs, or dry grass, and spread from there into the aerial parts of shrubs and trees. This surface litter is generally lacking in arid or arctic areas where vegetation is sparse. Litter if often scanty in the humid tropics where termites and decay consume dead vegetation nearly as fast as it falls. In situations where natural surface fuel is insufficient to carry fire, measures must be taken to increase the amount of flammable material on the ground. Chemical defoliation of overstory trees and shrubs is the only logistically feasible method of augmenting the surface fuel supply. Defoliation missions should be flown at least 4 months in advance of the incendiary missions. This means that the opportunities for planned forest fire raids in humid areas of the tropics are restricted to situations where the military environment is essentially static, and targets can be selected months in advance. In temperate climates where the surface fuel supply is adequate, defoliation is unnecessary and forest fire operations can be conducted on short notice whenever conditions are optimum.

Weather is crucial for success in forest burning. Incendiary operations must be preceded by at least a week of dry weather, and cloud cover should be 3/8 or less with relative humidity below 50 percent in the target area at the time of ignition. Under most circumstances, these requirements mean that forest incendiary operations must be conducted in the early afternoon. No external environmental modification technique can overcome the effects of adverse weather conditions. Consequently, a good meteorologist is an absolute necessity as a member of any team planning fire raids against forests.

If fuels and weather are within acceptable limits for fire initiation, the intensity of forest fires resulting from properly spaced ignition devices can be increased by as much as a factor of 5 over that of naturally occurring fires. Maximum fire intensity is achieved by spacing ignitions so that adjacent fires begin to interact with each other at the exact time that each fire has reached its maximum normal intensity. Proper use of this area ignition technique can greatly increase the effectiveness of forest fire as a military weapon. But area ignition will not compensate for wet weather or insufficient ground fuel: five times zero still equals zero.
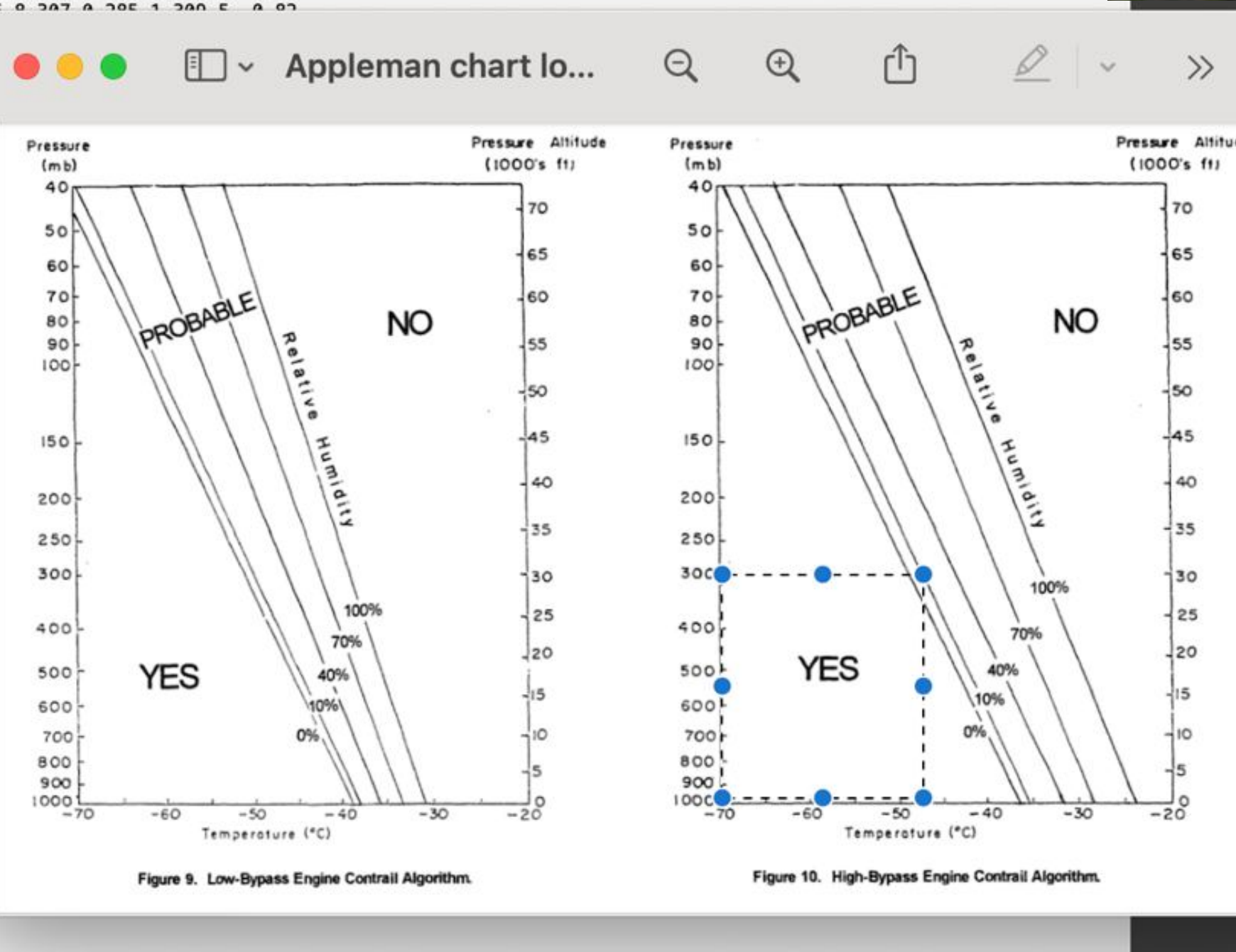
Big Basin Redwoods State Park, 08/2018

TERRAIN FIRE AREA

8/18 FIRE

FIRE PATTERN
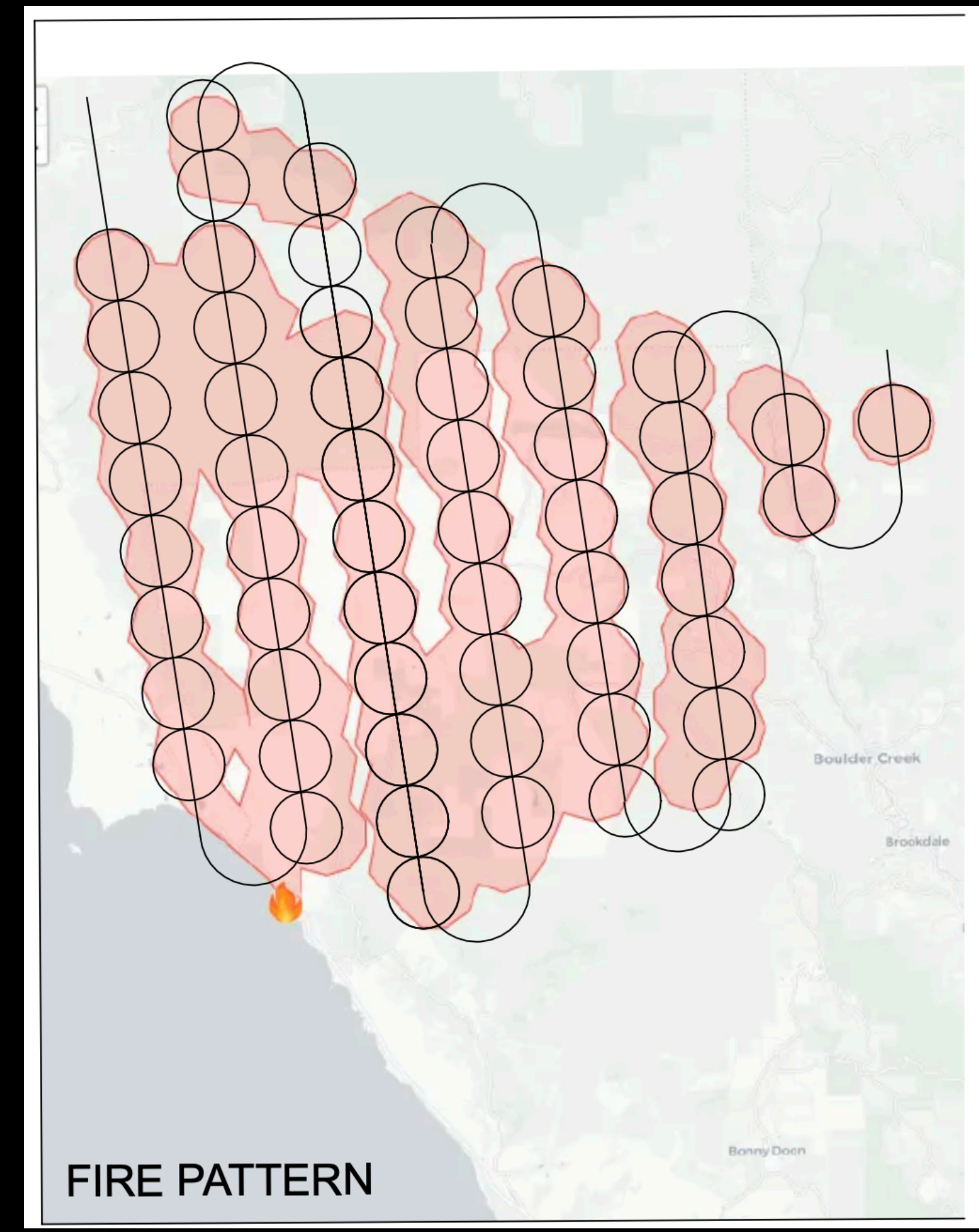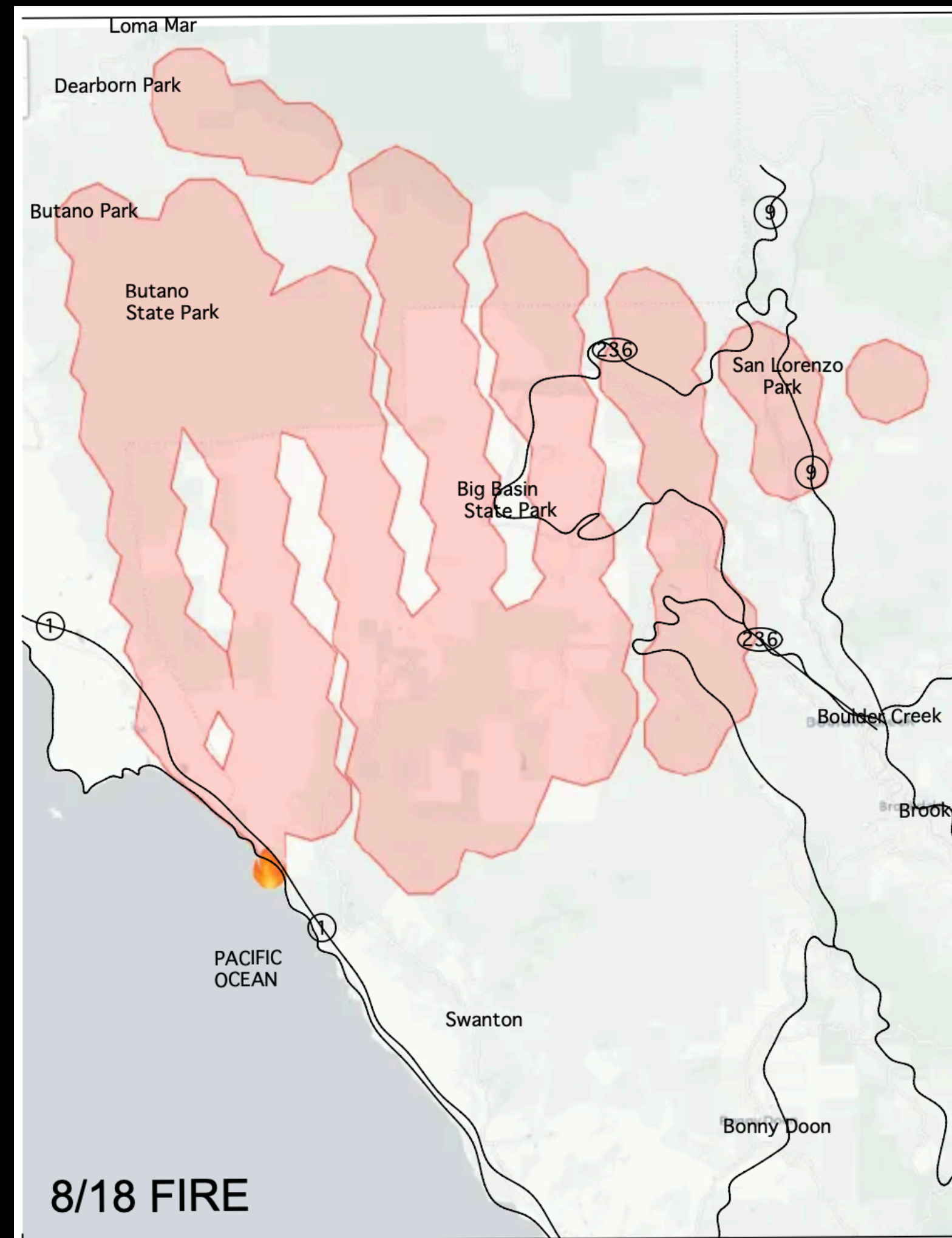
How to Read the Weather

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LEV PRES  HGHT TEMP  DEWP  RH  DD   WETB DIR SPD THETA THE-V THE-W THE-E   W
    mb    m    C     C     %   C    C   deg knt   K     K     K     K     g/kg

SFC 1008    3  14.4  12.4  88  2.0  13.2 280   7 286.9 288.5 286.0 312.0  9.00
  1 1000   69  13.4  11.7  89  1.7  12.4 255   5 286.5 288.1 285.5 310.7  8.66
  2  971  316  11.0  11.0 100  0.0  11.0 271  11 286.6 288.0 285.4 310.2  8.51
  3  925  721   9.0   8.9  99  0.1   8.9 295  10 288.5 289.9 285.4 310.3  7.75
  4  866 1265   6.0   6.0 100  0.0   6.0 308  12 290.9 292.1 285.4 310.2  6.78
  5  850 1418   5.6   4.6  93  1.0   5.1 320  14 292.0 293.1 285.3 310.0  6.26
  6  832 1593   4.8   3.5  91  1.3   4.1 320  12 293.0 294.0 285.4 310.1  5.92
  7  795 1962   2.4   0.7  89  1.7   1.6 318  10 294.2 295.1 284.9 309.0  5.06
  8  774 2178   0.6   0.5  99  0.1   0.5 315  11 294.6 295.5 285.1 309.6  5.13
  9  752 2409  -0.7  -1.0  98  0.3  -0.9 315  14 295.6 296.4 285.1 309.5  4.73
 10  729 2657  -2.1  -3.1  93  1.0  -2.6 315  15 296.7 297.4 284.9 309.1  4.17
 11  726 2690  -2.1  -4.4  84  2.3  -3.1 315  15 297.0 297.7 284.7 308.4  3.80
 12  720 2756  -2.5  -4.5  86  2.0  -3.4 314  15 297.3 298.0 284.8 308.7  3.80
 13  716 2800  -2.7  -6.4  76  3.7  -4.2 312  15 297.6 298.2 284.4 307.5  3.31
 14  701 2968  -4.1  -5.6  89  1.5  -4.7 301  15 297.8 298.5 284.8 308.6  3.59
 15  700 2979  -4.3  -5.8  89  1.5  -4.9 300  15 297.7 298.4 284.7 308.4  3.54
 16  686 3138  -5.1  -7.6  83  2.5  -6.1 301  15 298.6 299.1 284.6 308.1  3.14
 17  676 3254  -6.3  -7.4  92  1.1  -6.7 308  16 298.7 299.1 284.7 308.3  3.24
 18  669 3335  -6.7  -8.5  87  1.8  -7.4 313  17 298.9 299.5 284.6 308.1  3.01
 19  665 3382  -6.7 -11.5  69  4.8  -8.4 315  17 299.4 299.9 284.1 306.8  2.38
 20  659 3453  -7.3 -11.0  75  3.7  -8.6 315  17 299.5 300.0 284.2 307.2  2.50
 21  656 3488  -7.5 -12.5  67  5.0  -9.2 315  17 299.7 300.1 284.0 306.6  2.23
 22  641 3668  -8.9 -11.7  80  2.8  -9.9 315  16 300.1 300.5 284.4 307.6  2.43
 23  632 3778  -9.3 -13.2  73  3.9 -10.6 313  16 300.9 301.3 284.4 307.6  2.19
 24  623 3889 -10.1 -13.9  74  3.8 -11.3 312  16 301.2 301.6 284.4 307.7  2.09
 25  617 3963 -10.7 -13.0  83  2.3 -11.5 310  16 301.3 301.7 284.7 308.4  2.28
 26  612 4026 -10.9 -15.7  68  4.8 -12.3 309  17 301.8 302.1 284.4 307.6  1.84
 27  593 4268 -12.7 -16.1  76  3.4 -13.7 305  17 302.4 302.8 284.7 308.2  1.83
 28  579 4450 -13.7 -18.7  66  5.0 -15.0 300  19 303.3 303.6 284.6 308.2  1.51
 29  574 4516 -14.1 -18.2  71  4.1 -15.2 298  19 303.6 303.8 284.8 308.7  1.59
 30  555 4771 -15.9 -19.8  72  3.9 -16.9 298  21 304.4 304.7 284.9 309.0  1.43
 31  541 4964 -17.5 -19.9  82  2.4 -18.1 301  21 304.8 305.0 285.1 309.4  1.46
 32  521 5245 -19.3 -23.7  68  4.4 -20.3 303  19 305.9 306.1 285.1 309.4  1.08
 33  515 5331 -20.1 -24.0  71  3.9 -21.0 303  19 305.9 306.1 285.1 309.4  1.07
 34  511 5389 -20.5 -26.5  59  6.0 -21.7 304  19 306.1 306.3 284.9 309.0  0.86
 35  507 5447 -21.1 -25.6  67  4.5 -22.0 304  18 306.1 306.3 285.0 309.2  0.94
 36  500 5550 -21.9 -28.9  53  7.0 -23.1 305  18 306.3 306.5 284.8 308.7  0.70
 37  499 5565 -21.9 -28.9  53  7.0 -23.1 304  18 306.5 306.6 284.9 308.9  0.70
 38  485 5772 -23.7 -27.6  70  3.9 -24.4 287  20 306.8 307.0 285.1 309.5  0.82
 39  482 5817 -23.9 -28.9  63  5.0 -24.8 286  20
 40  479 5862 -24.3 -27.8  73  3.5 -24.9 288  20
 41  476 5908 -24.7 -27.9  75  3.2 -25.2 290  20
 42  459 6170 -26.9 -30.5  71  3.6 -27.5 296  20
 43  445 6391 -28.9 -31.0  82  2.1 -29.2 281  20
 44  444 6407 -29.1 -31.5  80  2.4 -29.5 280  20
 45  440 6472 -29.5 -36.5  51  7.0 -30.3 281  21
 46  434 6569 -30.3 -38.3  46  8.0 -31.2 283  23
 47  413 6917 -33.5 -39.5  55  6.0 -34.1 275  25
 48  410 6968 -33.9 -41.9  44  8.0 -34.6 273  24
 49  405 7054 -34.7 -39.7  60  5.0 -35.1 269  24
 50  400 7140 -35.3 -40.2  61  4.9 -35.7 265  23
 51  384 7423 -37.9 -42.0  65  4.1 -38.2 256  19
 52  383 7441 -37.9 -42.9  59  5.0 -38.2 256  19
 53  379 7513 -38.5 -42.9  63  4.4 -38.8 254  18
 54  377 7549 -38.7 -43.7  59  5.0 -39.1 252  17
 55  300 9090 -46.7 -70.7   5 24.0 -47.1 310  37
 56  250 10290 -50.7 -73.7   5 23.0 -51.1 305  56
 57  209 11447 -54.1 -78.1   4 24.0 -54.4 305  63
 58  200 11730 -53.7 -79.7   3 26.0 -54.0 300  63
 59  169 12813 -53.7 -81.5   2 27.8 -54.1 300  83
 60  150 13580 -53.7 -82.7   2 29.0 -54.1 295  75
 61  100 16180 -57.1 -85.1   2 28.0 -57.5 295  37
TRP  209 11447 -54.1 -78.1   4 24.0 -54.4 305  63
WND  169 12813 -53.7 -81.5   2 27.8 -54.1 300  83

Sounding variables and indices
1000-500 mb thick:      5481.00 m
Freezing level:           763.85 mb =   2284.92 m =
Wetbulb zero:             765.44 mb =   2267.38 m =
Precipitable water:         0.96 inches
Sfc-500 mean rel hum:      84.79 %
Est. max temperature:      18.96 C =    66.12 F
Sfc-Lift cond lev (LCL):  978.32 mb =    253.21 m =
700-500 lapse rate:         6.85 C/km
ThetaE index:               1.72 C Layer 1000.0- 92
Conv cond level (CCL):    952.31 mb =    478.36 m =
  Mean mixing ratio:        8.22 g/kg
  Conv temperature:        14.84 C =    58.71 F
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Appleman chart lo...

Figure 9. Low-Bypass Engine Contrail Algorithm.

Figure 10. High-Bypass Engine Contrail Algorithm.

Radiosondes are release daily, and atmospheric conditions are recorded to determine when we will see persistent contrails.

Date:1200Z 16 NOV 23
Station: KILN
WMO ident: 72426
Latitude: 39.42
Longitude: -83.82
Elevation: 317.00

LEV	PRES mb	HGHT m	TEMP C	DEWP C	RH %	DD C	WETB C	DIR deg	SPD knt	THETA K	THE-V K	THE-W K	THE-E K	W g/kg
0	1000	210												
SFC	986	317	2.4	0.1	85	2.3	1.4	155	6	276.7	277.3	275.3	287.4	3.90
2	953	605	14.2	2.2	44	12.0	8.1	274	9	291.3	292.2	283.4	304.9	4.70
3	925	861	12.4	2.4	50	10.0	7.3	290	12	292.0	292.9	283.9	306.2	4.92
4	922	888	12.2	2.2	50	10.0	7.1	287	13	292.1	292.9	283.8	306.2	4.86
5	850	1563	8.2	-7.8	31	16.0	1.6	240	13	294.7	295.2	282.3	302.3	2.50
6	822	1838	6.0	-10.0	31	16.0	-0.2	245	13	295.2	295.6	282.1	301.9	2.17
7	794	2121	5.0	-13.0	26	18.0	-1.5	250	14	297.1	297.4	282.4	302.6	1.77
8	780	2266	3.8	-6.2	48	10.0	-0.4	242	15	297.3	297.9	284.0	306.6	3.08
9	766	2413	3.4	-12.6	30	16.0	-2.4	232	17	298.5	298.8	283.1	304.3	1.89
10	734	2757	0.2	-4.2	72	4.4	-1.7	245	20	298.6	299.3	285.4	310.1	3.81
11	700	3136	-1.3	-18.3	26	17.0	-6.6	265	15	301.0	301.3	283.5	305.2	1.29
12	670	3484	-2.1	-24.1	17	22.0	-8.1	269	12	303.9	304.1	284.0	306.6	0.81
13	664	3555	-2.1	-25.1	15	23.0	-8.2	271	13	304.7	304.9	284.2	307.2	0.75
14	652	3699	-3.3	-22.3	21	19.0	-8.7	277	14	305.0	305.1	284.7	308.2	0.98
15	631	3957	-4.7	-30.7	11	26.0	-10.6	292	16	306.2	306.3	284.5	307.8	0.47
16	620	4095	-3.7	-51.7	1	48.0	-10.8	299	17	308.9	308.9	285.0	309.1	0.05
17	616	4147	-3.5	-51.5	1	48.0	-10.7	302	17	309.7	309.7	285.3	309.9	0.05
18	590	4486	-5.3	-53.3	1	48.0	-12.1	308	20	311.5	311.5	285.9	311.7	0.05
19	583	4579	-5.7	-53.7	1	48.0	-12.3	308	21	312.1	312.1	286.1	312.2	0.04
20	544	5116	-10.1	-34.1	12	24.0	-14.9	302	23	313.1	313.2	286.9	314.5	0.39
21	500	5760	-14.5	-42.5	7	28.0	-18.7	295	19	315.4	315.4	287.4	316.0	0.18
22	497	5806	-14.7	-42.7	7	28.0	-18.8	294	18	315.7	315.7	287.5	316.3	0.18
23	483	6023	-15.1	-57.1	1	42.0	-19.5	280	26	317.8	317.8	288.1	317.9	0.04
24	400	7420	-26.7	-51.7	8	25.0	-28.8	275	29	320.3	320.3	288.9	320.6	0.08
25	345	8470	-35.1	-54.1	13	19.0	-36.2	277	34	322.7	322.8	289.7	323.0	0.07
26	330	8779	-37.5	-60.5	7	23.0	-38.5	281	36	323.6	323.6	289.9	323.7	0.03
27	300	9430	-42.3	-51.3	37	9.0	-42.8	285	41	325.7	325.8	290.6	326.2	0.11
28	288	9703	-44.3	-49.3	57	5.0	-44.6	284	41	326.7	326.7	290.9	327.3	0.15
29	276	9985	-46.5	-53.5	45	7.0	-46.8	283	41	327.5	327.6	291.1	327.9	0.10
30	260	10376	-49.9	-54.9	56	5.0	-50.1	281	42	328.2	328.2	291.3	328.5	0.09
31	251	10604	-51.7	-56.7	55	5.0	-51.8	280	42	328.8	328.8	291.5	329.1	0.07
32	250	10630	-52.1	-57.1	55	5.0	-52.2	280	42	328.6	328.6	291.4	328.9	0.07
33	223	11361	-57.7	-61.9	59	4.2	-57.8	279	46	330.9	330.9	292.0	331.1	0.04
34	200	12040	-62.7	-67.1	55	4.4	-62.7	270	51	333.5	333.5	292.7	333.6	0.02
35	196	12164	-63.3	-68.0	53	4.7	-63.3	271	51	334.4	334.4	292.9	334.5	0.02
36	183	12584	-65.7	-70.7	50	5.0	-65.7	274	49	337.2	337.2	293.6	337.2	0.02
37	181	12651	-65.7	-70.7	50	5.0	-65.7	274	49	338.2	338.2	293.9	338.3	0.02
38	174	12892	-64.5	-70.5	43	6.0	-64.6	272	47	344.0	344.1	295.3	344.1	0.02
39	167	13142	-65.1	-72.1	37	7.0	-65.1	270	46	347.1	347.1	296.0	347.2	0.01
40	158	13482	-63.5	-71.5	33	8.0	-63.6	267	43	355.4	355.4	297.8	355.4	0.02
41	150	13800	-64.7	-72.7	32	8.0	-64.8	280	41	358.6	358.6	298.4	358.7	0.01
42	146	13964	-65.1	-74.1	28	9.0	-65.2	281	42	360.7	360.7	298.5	360.8	0.01
43	136	14396	-64.7	-74.7	24	10.0	-64.8	282	43	368.8	368.8	300.4	368.9	0.01
44	130	14671	-65.3	-76.3	20	11.0	-65.4	283	44	372.5	372.5	301.0	372.6	0.01
45	122	15057	-64.7	-77.7	15	13.0	-64.8	284	45	380.5	380.5	302.3	380.5	0.01
46	114	15469	-65.9	-80.9	11	15.0	-66.0	284	49	385.7	385.7	302.3	385.7	0.01
47	104	16023	-67.5	-84.5	7	17.0	-67.6	281	56	392.9	392.9	304.2	392.9	0.00
48	100	16260	-65.7	-84.7	5	19.0	-65.8	280	59	400.8	400.8	305.3	400.8	0.00
49	99	16321	-65.6	-84.7	5	19.2	-65.7	280	59	402.2	402.2	305.5	402.2	0.00
50	75	18032	-61.5	-85.5	3	24.0	-61.8	271	37	444.0	444.0	310.3	444.0	0.01
51	70	18460	-62.7	-87.7	2	25.0	-63.0	285	47	450.2	450.2	310.9	450.3	0.00
52	67	18730	-63.1	-88.1	2	25.0	-63.4	280	48	455.1	455.1	311.3	455.1	0.00
53	56	19838	-60.9	-87.9	2	27.0	-61.4	283	40	484.0	484.0	313.8	484.0	0.00
54	50	20540	-62.1	-88.1	2	26.0	-62.6	265	26	497.1	497.1	314.8	497.2	0.00
55	47	20922	-61.1	-88.1	2	27.0	-61.6	267	31	508.4	508.4	315.5	508.4	0.00
56	43	21474	-60.1	-86.1	2	26.0	-60.7	258	47	524.0	524.0	316.5	524.0	0.01
57	38	22242	-61.3	-86.3	2	25.0	-61.9	281	49	539.8	539.8	317.5	539.8	0.01

Sounding Analysis Page

NWS / Storm Prediction Center
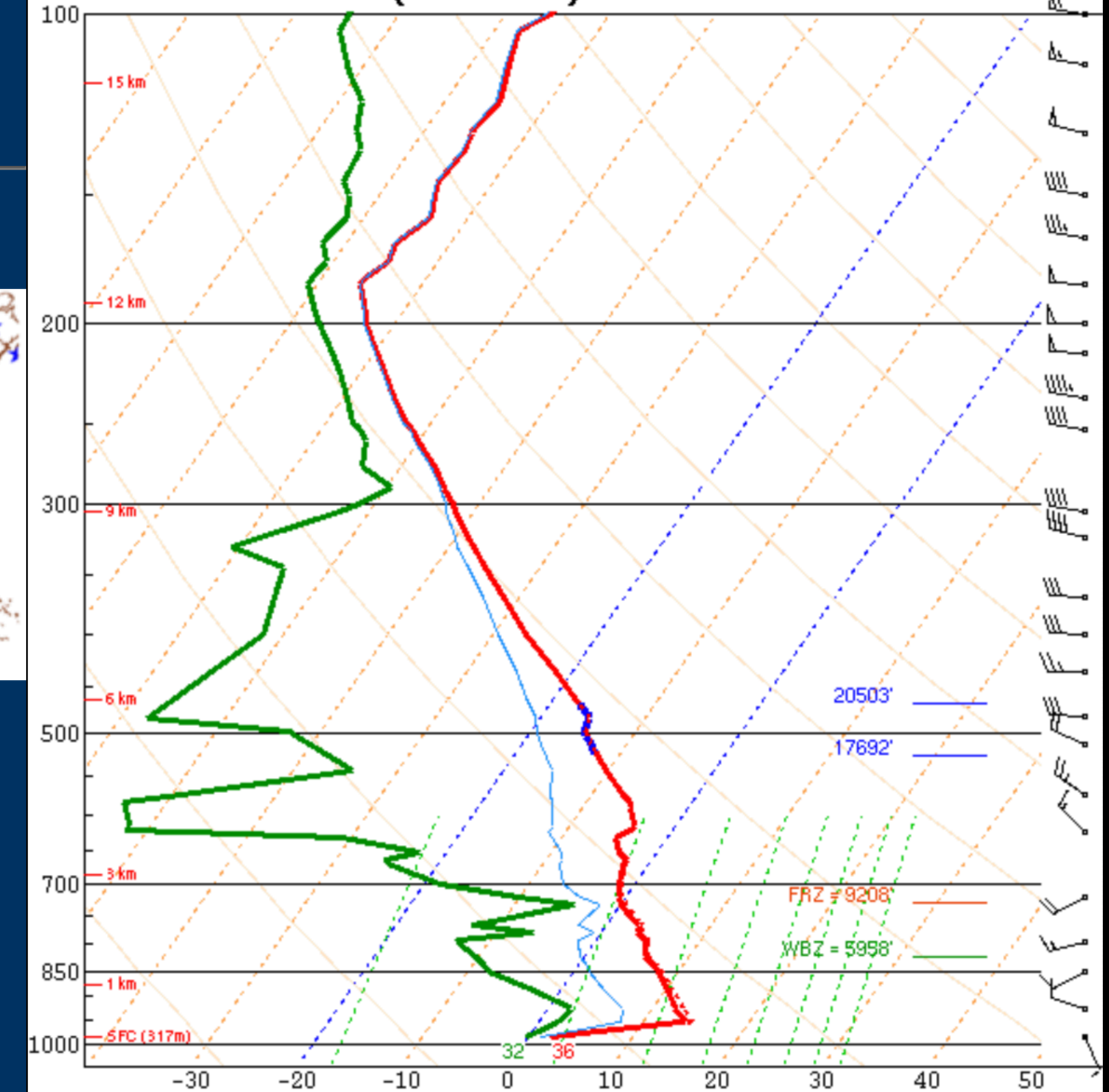Norman, Oklahoma

Observed Radiosonde Data
11/16/2023 12 UTC

Sounding Stations 11/16/2023 12 UTC

Click on any blue star to display that sounding

Choose another date/time period

ILN 231116/1200 (Observed)

PARCEL	CAPE	CINH	LCL	LI	LFC	EL
SURFACE	0	0	302m	24	M	991'
MIXED LAYER	0	0	1742m	12	M	5714'
FCST SURFACE	0	0	2375m	8	M	7789'
MU (583 mb)	0	0	9990m	7	M	32764'

PW = 0.41 in   3CAPE = 0 J/kg   WBZ = 4918'   WNDG = 0.0
K = -2   DCAPE = 329 J/kg   FZL = 8168'   ESP = 0.0
MidRH = 29%   DownT = 48 F   ConvT = M   MMP = 0.09
LowRH = 44%   MeanW = 4.4 g/kg   MaxT = 70F   NCAPE = 0.00
SigSevere = 0 m3/s3

Sfc-3km Agl Lapse Rate = 1.4 C/km
3-6km Agl Lapse Rate = 5.3 C/km
850-500mb Lapse Rate = 5.4 C/km
700-500mb Lapse Rate = 5.0 C/km

Supercell = 0.0
Left Supercell = 0.0
STP (eff layer) = 0.0
STP (fix layer) = 0.0
Sig Hail = 0.0

	SRH(m2/s2)	Shear(kt)	
SFC - 1 km	43	16	
SFC - 3 km	69	18	
SFC - 6 km		27	
SFC - 8 km		38	

BRN Shear = 8 m²/s²
4-6km SR Wind = 243/11 kt

.....Storm Motion Vectors.....
Bunkers Right = 327/18 kt
Bunkers Left = 235/22 kt

Corfidi Downshear = 283/33 kt
Corfidi Upshear = 293/12 kt

Click here for a description of this page

Whether inadvertent or intentional geoengineering- aircraft contrail induced cirrus clouds, including ship tracks, are destroying all living things in our biosphere.

npj | climate and atmospheric science

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Emissions of ultrafine particles from civil aircraft: dependence upon aircraft type and passenger load

Brian Stacey, Roy M. Harrison ✉ & Francis D. Pope

Heavy Metals Detected in Jet Fuel

METALS DETECTED IN JET EXHAUST

CLIMATEVIEWER.COM/CIRRUSCLOUDSMATTER/

CALIFORNIA

California Plagued With 36 Million Dead Trees, New Report Reveals

By Olivia Wynkoop | Bay City News • Published February 9, 2023 • Updated on February 9, 2023 at 11:04 am

David McNew/Getty Images

Dead trees are seen near drought-shrunken Horseshoe Lake dioxide, on July 28, 2022 near Mammoth Lakes, California.

69% average decline in wildlife populations since 1970, says new WWF report

Wildlife populations in Latin America and the Caribbean plummeting at a staggering rate of 94%
Freshwater species populations have suffered an 83% fall
The report's Living Planet Index shows that there is no time to lose in securing a nature-positive society

More Than Half of U.S. Birds Are in Decline, Warns New Report
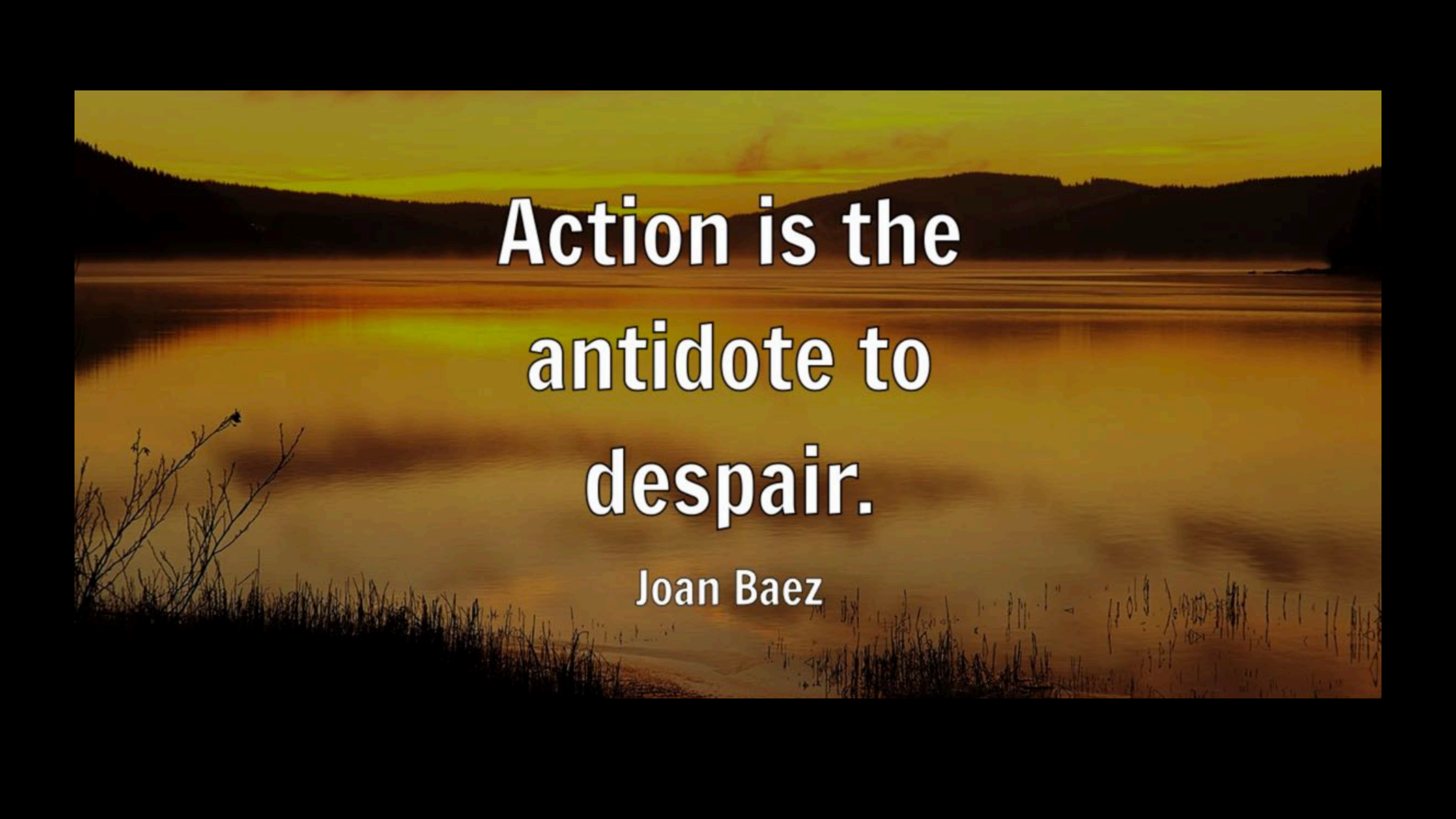
The 2022 U.S. State of the Birds report shows plummeting bird populations across almost all habitats while highlighting the need for further conservation efforts.

Lesser and Greater Yellowlegs. Photo: Shari McCollough/Audubon Photography Awards

Pollinators are declining globally, could possibly affect our food chain

UNCAPPED BROOD (LARVAE)

POLLEN CELLS

BROOD CELLS

DRONE CELL

Action is the antidote to despair.

Joan Baez

This Is Where You Come In

SOS

Social Media Ambassador

We are undertaking a massive public outreach/education campaign to educate Americans (and beyond) about the science, data, patents, weather modification history, and more regarding geoengineering. Information is power, and our job is to inform the masses.

Would you be willing to share our S.O.S. posts regularly on social media? Share as an influencer or on influencers' pages? We will provide social media templates and posts. All you need to do is push them out on your page and share them in comments where possible.

Ground Crews

Are you up for attending farmers' markets and local events, passing out fliers, holding banners at intersections, and dropping from overpasses to build public awareness around the aerosol spraying?

We will provide the flier and banner templates. All you need to do is print and find some of the most trafficked areas in your community to hit the ground running.

NOL Crews, Open Letters, & Small Claims Court

We are utilizing different legal avenues; small claims court, Notice of Liabilities, and Open Letters to put our elected/appointed officials on notice. We will show you how to put your leaders on notice and then how to write a proper NOL. open letter, or file a small claims case regarding geoengineering.

We can provide you with the science, data, documentation, etc., or a template to get you started with the NOLs or Open Letters.

Legal Research

As you can imagine, stopping geoengineering is a beast of an undertaking. Whether it's case law, source documents, or a collection of legal research, you may be the perfect keyboard warrior to take this on.

We need legal researchers to help us do the deep dive. Do you have experience in this area? We prefer law students, paralegals, and attorneys. However, if you are more of a general researcher, let us know. We will need some of this as well.

![SOS - Save Our Skies logo]

BECOME A SKYWATCHER

If you like, play with FlightRadar24.com and become familiar with aircraft that fly over you regularly. You'll become familiar with which ones are commercial, and which ones are private/government. Look for PATTERNS. Document with date & screenshots. Your phone will be a TIMESTAMP. Best to use your browser rather than a phone.

Every aircraft has a unique registration number or "N" number. You can find it here on flight radar (after tapping on the aircraft). Note: This one is "N522JP."

After locating the "N" number, go to the FAA website to search for "N" registration #'s: https://registry.faa.gov/aircraftinquiry/Search/NNumberInquiry
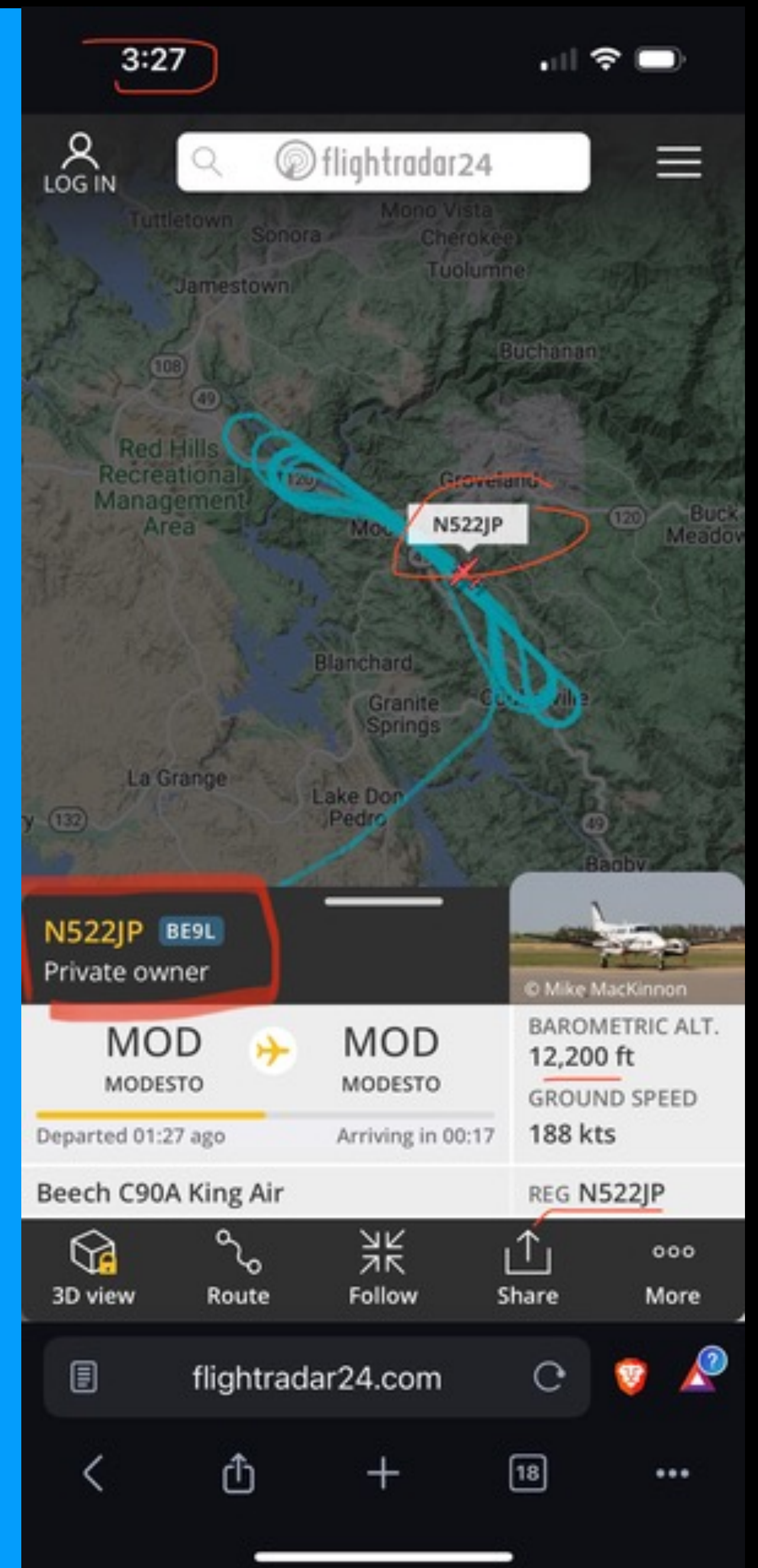
What it looks like on FAA website when you search:

This way, you can find out WHO the aircraft is registered TO. N522JP is registered like this:

REGISTERED OWNER

Name	AEROLEASE LLC		
Street	3802 20TH ST N		
City	FARGO	State	NORTH DAKOTA
County	CASS	Zip Code	58102-0908
Country	UNITED STATES		

AIRWORTHINESS

Here is a document per a PUBLIC RECORDS REQUEST that shows this aircraft IS part of the weather modification program overhead:

GATION DISTRICT BILLING SUMMARY

(SNOW #4) N6111V & N522JP - Cessna C90A

Modesto, CALIFORNIA

Date	Receipt #	Fuel (g)	Cost
11/1/22	17663363	67.0	$428.63

HOW TO COLLECT A RAIN SAMPLE

Collect in clean plastic containers. More containers= more surface space. The metals fall the fastest (at least, the aluminum does). Catch the first rainfall! I use MULTIPLE tubs and then consolidate into one container for shipping.

Collect at least 50ML (roughly 1/4 cup) of your rain (or melted hail) to a certified lab and test for these metals (and/or MORE if you like):

- Aluminum
- Barium
- Chromium
- Copper
- Lead
- Magnesium
- Nickel
- Strontium
- Titanium
- Vanadium
- Zinc

Put the date and time on the sample. Take a picture while you're collecting a sample as more documentation.

Fill out a (COC) chain of custody form and include the COC with your sample in the mail. The COC form will be emailed to you by somebody from the lab that you contact. The lab can explain how you fill it out!!

SAVE OUR SKIES

## HOW TO TEST YOUR RAIN SAMPLE

1. Contact McCampbell Analytical Inc. (or a different lab). Ask for the sales dept.
2. Tell sales what you wish to test for (i.e., my list of heavy metals or more if you want to). They will set up an account with you for billing.
3. They will send you a COC (Chain of custody form with your information filled out). You can then:
     a. Name your sample.
     b. Fill out your information in the boxes I showed you. Include the date/time of the sample (location can be general as long as you keep track).
4. PRINT the COC form .
5. LABEL the SAMPLE CONTAINER with the NAME of your sample. Put it in a box with the printed Chain of Custody (COC) form!!!
6. Take it to UPS and ship it GROUND (cheap) to McCampbell Analytical. Make sure you put "Attn: Sample Receiving." See photo.
7. Wait for their email to confirm they've received it.
8. You will be asked again to authorize payment, and they will process the results.
9. You can request the lab to retain your results.

Santa Barbara County and Twitchell Reservoir Cloud Seeding Program
CEQA Final Mitigated Negative Declaration

13NGD-00000-00011
October 15, 2013

Picture Below: Twitchell Reservoir July 2011
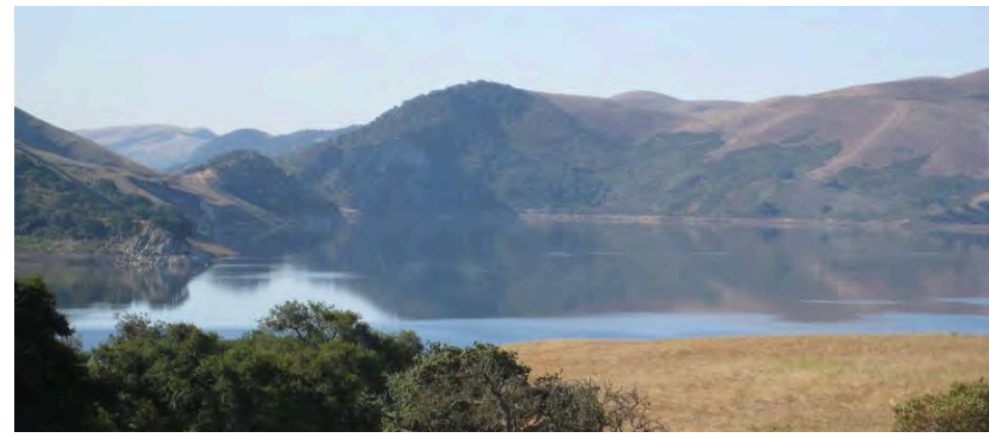
Owner/Applicant	Agent	Engineer
Santa Barbara County Water Agency	Dennis Gibbs, P.H. Senior Hydrologist	Thomas Fayram, P.E. Public Works Deputy Director

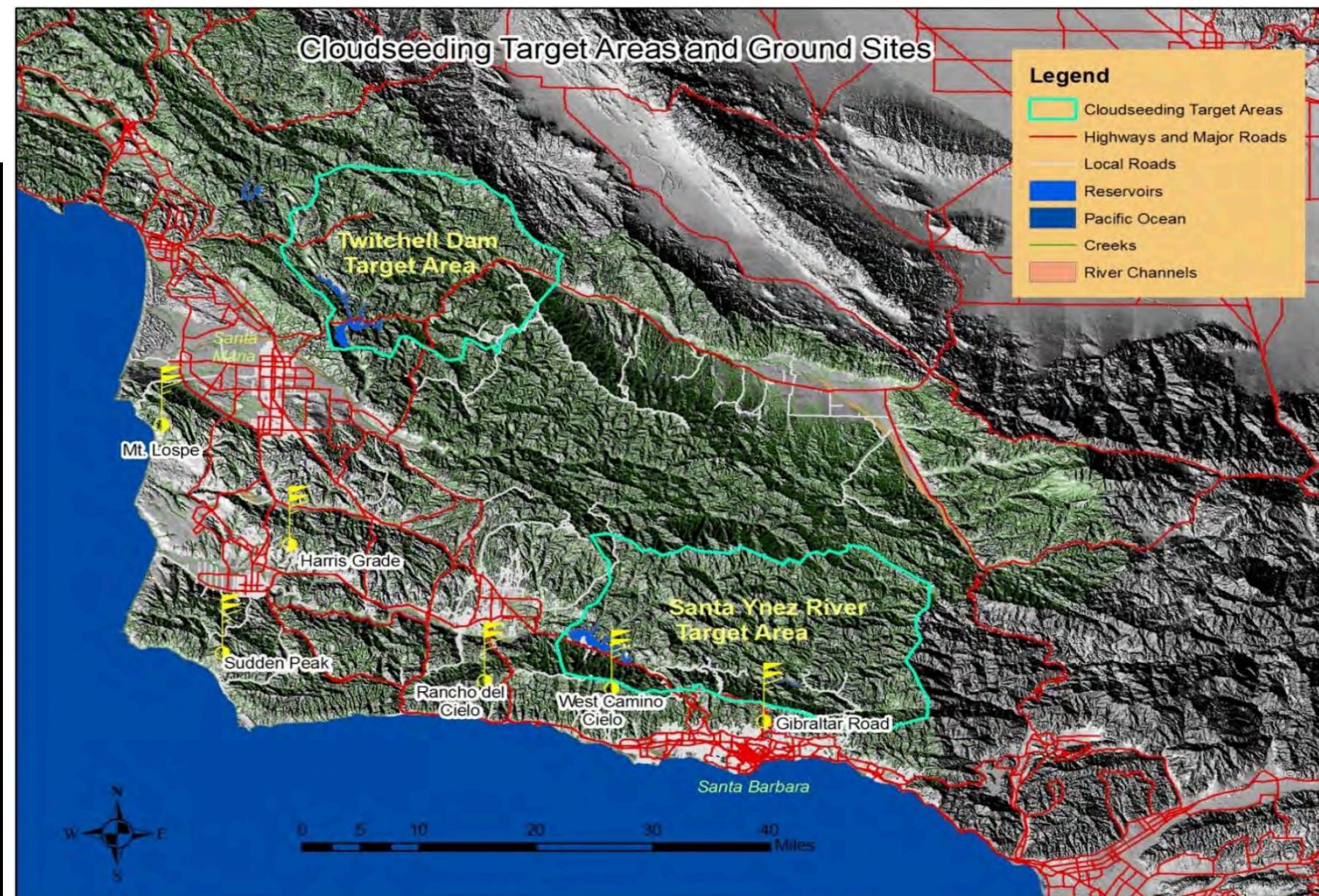particles. The seeding flare MSDS sheet is attached as **Appendix E.**

Three ingredients are listed on the HSIS (Hazardous Substances Information System): Ammonium Perchlorate, Zinc Powder and Aluminum Powder. None of these chemicals have any listed health effects. All three have physiochemical effects only.

The Ammonium Perchlorate is used as an oxidizer in the flares as well as solid rocket boosters in the military industry. This allows the Aluminum and Zinc, which are reactive metals, to burn within the solid propellant without any additional oxygen needed for combustion from the atmosphere. The Ammonium Perchlorate does not survive the combustion process. The Zinc and Aluminum Powders are used as propellants.

The three other chemicals: Silver Iodide, Copper Iodide and Ammonium Iodide are not listed on the HSIS. These three chemicals have listed irritant health effects according to their manufacturers MSDS but are used in the flare below the listed levels for irritant hazard category. Upon combustion, a Silver Iodide complex is produced which serves as the seeding agent.

The resulting products of combustion, in addition to the Silver Iodide Complexes include: Aluminum Oxide, Aluminum Chloride, Zinc Oxide, Zinc Chloride, Nitrogen, and water. All chemicals produced from the combustion process are "inert", that is they do not readily react with plants or animals.

Chaff. Strips of frequency-cut metal foil, wire, or metalized glass fiber used to reflect echoes for confusion purposes. It is usually dropped from aircraft or expelled from shells or rockets as a radar countermeasure.

Cloudseeding Target Areas and Ground Sites

Legend
- Cloudseeding Target Areas
- Highways and Major Roads
- Local Roads
- Reservoirs
- Pacific Ocean
- Creeks
- River Channels

Twitchell Dam Target Area

Santa Maria

Mt. Lospe

Harris Grade

Sudden Peak

Rancho del Cielo

West Camino Cielo

Gibraltar Road

Santa Ynez River Target Area

Santa Barbara

0 5 10 20 30 40 Miles

Figure 1: Cloud Seeding Target Area and Ground Seeding Site Locations

A particularly promising remote-sensing tracer method uses radar to track microwave chaff, which consists of very thin aluminum-coated glass fibers cut to half the wavelength of the observing radar. Chaff fibers released with or without seeding material show by direct measurement the actual transport and dispersion occurring within clouds. The fibers can be detected by radar in extremely small concentrations. The depolarization of the radar signal (the depolarization ratio) caused by the chaff allows it to be isolated from the signal of cloud intensity (reflectivity) and to be effectively tracked (Martner et al., 1992; Reinking and Martner, 1996). The volume treated and the location of treatment effects thus can be identified and assessed in relation to the total cloud volume. The concentration of chaff fibers can be computed from the radar measurements to yield information about diffusion rates. Although the chaff fibers fall faster than silver iodide aerosols (i.e., the seeding material), they provide a good approximation of the aerosol movement for several minutes after a release. This allows a polarization-diversity radar to observe and provide three-dimensional depictions of seeding aerosol movement to a treated cloud, as shown in Figure 4.3. Chaff tagging offers additional opportunities to remotely sense microphysical changes between tags. For instance, using such tagging, ice particle production and enlargement by seeding has been followed from the source to snow on the ground (Klimowski et al., 1998; Reinking et al., 1999, 2000).

SOS
SAVE OUR SKIES

<u>BEGIN WRITTEN CORRESPONDENCE:</u>

- Contact local Air Pollution Control district

- Contact California Air Resources Board (CARB)

- Contact the California State Water Resources Control Board

Share your results and ask reps what each result means (toxicity-wise). Ask if they have previous examples and known exposure limits. If they DON'T KNOW, press them to find answers and get back to you. Don't let them blow you off.

Include your local reps (BOS) on the written correspondence. If you have samples, evidence of weather modification agreements, share them with your BOS along with the water/air agencies you're communicating with.

OTHER TIPS

Go to NOAA website to see if weather mod is happening near you:
https://libguides.library.noaa.gov/weather-climate/weather-modification-project-reports

If you find a cloud seeding or other weather modification contract on NOAA's website, you can contact the representatives listed in the agreement. **Document** each call with notes/date/time/person you're speaking with.

SOS
SAVE OUR SKIES

HOW TO DO A PUBLIC RECORDS REQUEST

1. Contact CARB (California Air & Resources Board), DWR (Department of Water Resources), WCRB (Water Resources Control Board), or the irrigation district that has a cloud seeding or "precipitation enhancement program."

Links:

Go to DWR: http://tinyurl.com/CALIFORNIADWR

or

Water Resources Control Board: waterboards.ca/gov/resources/public_records/

Initial questions to ask (you can ask anything you like; make it as clear and direct as possible). Names removed for privacy:

I am writing to request the following documents or records pertaining to the (fill in the title of the project) Weather Modification Project: Dates of first actual weather modification activity undertaken through the actual termination date of weather modification activities (estimated from 11/1/22-4/30/23).

HOW TO DO A PUBLIC RECORDS REQUEST

1. All exact dates/times/logs of every flight conducted by the weather modification company and operator.

2. All documentation/information pertaining to the seeding agents (chemicals, additives, stabilizers) used in this project (i.e., silver iodide, titanium dioxide, etc.).

3. All correspondence between (irrigation district name) and any/all agencies regarding the (Name of the project), including the "weather modification company."

4. All costs/funds used/loans/expenditures associated with the (name of project).

5. Environmental impact statement from "weather modification company."

6. All documents pertaining to the Safety & Environment (section 8 in NOAA form 17-4, including all Information pertaining to the description of the specific procedures and guidelines of the operational plans of this project.

7. Methods (if any) to notify the public about this project.

8. The contact information for the project meteorologist is furnished by the "weather modification company."

Please let me know you have received this FOIA and when I can expect a response with documents requested.

Solar Geoengineering Non-Use Agreement

About   Non-Use Agreement   Resources   Media   **TAKE ACTION**

OPEN LETTER

We Call for an International Non-Use Agreement on Solar Geoengineering

We call for immediate political action from governments, the United Nations, and other actors to prevent the normalization of solar geoengineering as a climate policy option. Governments and the United Nations must assert effective political control and restrict the development of solar geoengineering technologies at planetary scale. Specifically, we call for an International Non-Use Agreement on Solar Geoengineering.

Download in Other Languages   **View Signatories**

An Act

To End Atmospheric Experimentation Without Notification

Desiring to effectively prohibit military or any other hostile use of environmental modification techniques in order to eliminate the dangers to mankind from such use, and recognizing the Environmental Modification Convention of 1976, it shall be law that any individual or organization shall give prior notice of intent to modify weather or climate in order to determine if such actions are hostile or result in monetary, environmental, or physical losses.

Further, this Act shall require the creation of a weather modification detection system consisting of sensors capable of determining the difference between inadvertent and intentional weather modification.

1. Create an **International Registry of Atmospheric Experimentation (IREA)** events:
   a. Registry must be publicly available on a website as well has available in hard-copy.
   b. Registry should include: Intention (snowpack augmentation, rainfall enhancement, hail mitigation, etc), funding source(s), operator, area of effect, hours of operation, and duration of event.
2. Require nations/states/persons to notify the **IREA** (at least) 48 hours prior to initiation of Atmospheric Experimentation to ensure public notice, and liability should said experimentation/modification cause monetary, environmental, or physical losses.
3. Verify the composition of our atmosphere (chemical, aerosol, gases, and electromagnetic activity) by creating both citizen-powered and government-sponsored sensor networks with data publicly available and **displayed in real-time** ⬈
   a. Create an atmospheric sensor network for verification of the **IREA** by unifying worldwide weather data for easy transmission, dissemination, and processing.
   b. Provide support for the creation of a citizen-powered sensor network to augment and/or validate the sensor network mandated by this Act.

Geoengineering/ENMOD Solution

Verification

and

Transparency

The Clarity Clause

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

http://climateviewer.org/
http://climateviewer.org/about/
https://www.gofundme.com/climateviewer

FUNDING FOR R&D

Need to purchase mass spectrometer guns, design waterproof container, circuit board. Add "plug-in" options such as RF monitoring, chemiion particles, and more

Clarity: A Sustained Observing System

Citizen-Powered Sensor Network

http://climateviewer.org/
http://climateviewer.org/about/
https://www.gofundme.com/climateviewer

CARBON BLACK DUST & SOOT

HOW TO DEAL WITH THE PROBLEM OF SECRET WEATHER MODIFICATION

https://climateviewer.com/enmod/

COMMERCIAL

DON'T FLY

- Tell the airline industry **"You're #GROUNDED!"**
- Demand the ICAO, FAA, NASA, and the DLR pursue options to stop creating cirrus clouds.

SCIENTIFIC

Support The Environmental Modification Accountability Act.

- Demand Transparency: a worldwide requirement to give prior notification before experimenting in the sky.
- Build a sensor network to detect illegal weather modification & geoengineering activity.

MILITARY

Support The Environmental Modification Accountability Act.

- Give the Weather Warfare ban of 1978 teeth.
- Build a sensor network to detect illegal weather warfare activity.
- Pursue a complete ban on Space Weather Modification (Ionospheric Heaters, Rockets)

A Big Thank You to Jim, Kat, & Jeff
for Providing Material for the Above Slides

Spread the word and THANK YOU!

SAVE OUR SKIES

Clean skies means clean water, clean soil, and a clean future.

DONATE NOW

SaveOurSkies.Org

THANK YOU!