

UAE2 expanded notes

Connections between Aerosols, WxMod & Directed Energy Weapons: What Are They Really Researching?

1999-2001: SAFARI 2000 was an international study on human emissions (aerosols), how they effect the atmosphere, climate and other physical/chemical earth systems. **Bruintjes'** study focused on biomass smoke and the effects it had on clouds/weather. He pointed out that both human-created aerosols/pollutants modify the weather in various ways, similar to the way intentional weather modification works.

2000-2003: The UAE Rain Enhancement Study was a basic cloud seeding study for UAE, lead by **Bruintjes**. This study and SAFARI 2000, which was around the same time, possibly created the impetus for later national and global aerosol & wxmod studies. I believe this study, and others in this time period, confirmed the importance of researching the specific effects that "natural" aerosols have on clouds and weather conditions. Perhaps if they can figure out which aerosols create which specific effects, they could use that knowledge to create whatever weather patterns they choose.

There are a wide range of man-made aerosols that affect the clouds. Detecting aerosol types, determining what effect each type of aerosol has, and also the effect of aerosol combinations, requires a system that can process complex data. **AERONET (AErosol RObotic NETwork)** is one of these systems. Research for AERONET was started in 1992, but wasn't fully implemented until sometime before 2006(?). AERONET is run by NOAA and Raytheon. AERONET "measures atmospheric aerosol properties. It provides continuous cloud-screened observations of spectral aerosol optical depth (AOD), precipitable water, and inversion aerosol products in diverse aerosol regime."^[1]

"Atmospheric aerosols are suspensions of solid and/or liquid particles in air."^[2] The shape, size and composition of aerosols determine how they will affect clouds. AERONET can determine the size of the particles by measuring the "spectral aerosol optical depth". "Precipitable water" is the "depth of water in a column of the atmosphere if all the water in that column were precipitated as rain."^[3] This is very important for rain enhancement. In basic terms, in order to seed a cloud to enhance rain, the cloud already has to have the potential for rain. So it would be much easier to induce rain in an area that has a high volume of "precipitable water".

NASA, NOAA, DHS and the Navy have also been working on satellite programs that can integrate with the aerosol detection systems. Ideally an aerosol satellite-detection system would allow them to observe and calculate exactly when and where it is best to utilize weather modification, whether it be rain, drought, hail, hurricane, tornado etc. This system would make all types of weather modification much more effective. This is also what **DHS' HAMP program (2008-2010)** is interested in, with the specific focus on Hurricane Modification. **Bruintjes** was a part of the initial HAMP workshop; more research needed on his involvement with the later HAMP project.^[4]

2008-2010 DHS, working with TSA, Naval Research Laboratory and the U.S. Army, conducted Project Jack Rabbit.^[5] This was an experiment releasing tons of ammonia and chlorine, and measuring the aerosol dispersal effects. Interestingly, **Roelof Bruintjes** was one of the researchers at a conference on modeling dispersal effects of aerosols, in assistance to the DHS. Bruintjes paper was about measuring aerosols in Istanbul, Turkey Feb-Jun 2008. There was a large May Day protest during that time period, not sure if police fired tear-gas into crowds just as they did in the 2013 Gezi Park protests. More research needs to be done on whether Bruintjes aerosol research that year is somehow connected to the protests or other similar events. Another report from that conference is titled "Development as an Operational System of a 3D Modeling Suite from the Global Scale to the Urban Scale Application to a Toxic Release in New York City (NY) USA".^[6] Coincidentally, 3 years later in **July of 2013 DHS and NYPD released a "non-toxic" gas into the NY subway system** to "help the NYPD get ready for a terrorist attack".^[7] Brookhaven National Laboratory led the NY subway tests. Brookhaven is owned by the Department of Energy (formerly the Department of Atomic Energy). According to Wikipedia, "co-located with the laboratory is the Upton, New York forecast office of the National Weather Service." Also according to Wikipedia^[8]:

"Although originally conceived as a nuclear research facility, its mission has greatly expanded. Its foci are now:

- Nuclear and high-energy physics
- Physics and chemistry of materials
- Environmental and energy research
- Nonproliferation
- Neurosciences and medical imaging
- Structural biology"

That's..... interesting..... but again, more research needs to done on these projects.

In 2011 The Naval Research Laboratory was working on "**Unified Aerosol Microphysics for NWP (Numerical Weather Prediction)**". "The long-term goal of this

research is to develop a practical predictive capability for visibility and weather effects of aerosol particles over any region of the world for timely use in planning and executing DOD operations and activities. Specifically, the goal is to develop a COAMPS that is capable of simulating the full range of interactions between aerosol particles, clouds, and radiative transfer while remaining flexible, extensible and operationally practical."

"The primary objective for this project is to design and implement a flexible and extensible mechanism into COAMPS that allows new scalar variables to be added and accessed with less effort, thus enabling new development of more complex cloud-aerosol interactions."

"Another objective is the development of an aerosol microphysics library and emission inventories for use by COAMPS and other models. The final objective is a version of COAMPS configured to forecast the major aerosol species, yet suitable for operational use. The proposed capabilities will provide numerous opportunities to study and solve problems of interest to the Navy and DOD, as well as the climate community."^[9]

COAMPS = Coupled Ocean/Atmosphere Mesoscale Prediction System [The Navy's short-term Numerical Weather Prediction system for various regions of the world]. ^[10]

Is it just a coincidence that the UAE2 Experiment from 2000-2003 was called the Unified Aerosol Experiment? Sounds pretty similar to the Navy Research Laboratory's Unified Aerosol Microphysics for NWP. Although the reports say UAE2 was just a research project to assess the nature of aerosols in that region of the world, how they affect the earth's atmosphere and "provide the first ground truth of a variety of environmental satellite and model products." ^[11] Hmmm, what kind of satellite and model products? One of the main departments that funded this experiment was the Naval Research Laboratory, Code 35. NAVSEA PMS 405, The Naval Directed Energy and Electric Weapon Systems Program Office. That seems like a rather specific department, so what were they testing out there in the Arabian Gulf region?

Aerosols are also important in climate research. The USAF in their "Air Force 2025" report from 1996 stated that they are working towards modifying weather on a larger scale.^[12] The feasibility of climate modification is currently being studied by a vast number of groups around the world.^[13]

Aerosols & Energy Weapons

The U.S. Army has known since the 60's that aerosols affect high-energy lasers.^[14] More recent studies have also been conducted by the U.S. Army.^[15]

Depending on the type of aerosols in the atmosphere, lasers can heat the aerosol particles, scatter the beam or deflect the laser beam. Being able to include the type and quantity of aerosols in the atmosphere would make calculations for directed-energy weapons more accurate and effective.

On the subject of satellites, since at least 1998, there have been patents for artificial satellites that modify the weather. The most recent is a concept and model from 2013 "for utilizing high-frequency or radar or microwave producing or emitting devices to produce, effect, create or induce lightning or lightspeed or visible to naked eye electromagnetic pulses, acoustic or ultrasonic shockwaves or booms in the air, space, enclosed or upon any object or mass, to be used solely as part of a system, platform or device including weaponry and weather modification."^[16]

By the sound of it, this could be used not only as a directed-energy weapon, but also used to induce earthquakes, tsunamis and various other lethal "natural" disasters.

So it seems the research projects on aerosols benefit many agencies and organizations. The main core working on directed-energy weapons and/or possibly satellite weather weapons are: Naval Research Laboratory, NCAR & UCAR, DHS, Jet Propulsion Laboratory, NASA, Penn State University, Hebrew University, Raytheon, Colorado State University, University of Colorado, and specifically Roelof Bruinijes, Daniel Rosenfeld and Quentin Saulter. More will be added to this list after more research is done.

References:

[1] AERONET: <https://en.wikipedia.org/wiki/AERONET>

[2] Atmospheric Aerosol Properties and Climate Impacts (U.S. Climate Change Science Program)2009

[3] Precipitable Water: https://en.wikipedia.org/wiki/Precipitable_water_column

[4] Hurricane Aerosol & Microphysics Program - Final Report 2010

[5] Project Jack Rabbit: Spring 2010 Ammonia & Chlorines Releases

[6] Atmospheric Transport and Dispersion Modeling Conference - 2010

[7] Test Gas Attack Coming to NY Subway: <http://is.gd/TW8ITb>

[8] Brookhaven National Laboratory: https://en.wikipedia.org/wiki/Brookhaven_National_Laboratory

[9] Unified Aerosol Microphysics for NWP - 2011 Naval Research Laboratory

[10] COAMPS: <http://www.nrlmry.navy.mil/coamps-web/web/home>

[11] UAE2 First Year Report for the Naval Research Laboratory - 2005

[12] Weather as a Force Multiplier: Owning the Weather in 2025 - USAF 1996

[13] List of Geoengineering projects

[14] A Study of Methods to Measure the Effects of a Contaminated Atmosphere onThe Transmission of a High Energy Laser Beam - 1967 U.S. Army

[15] The Impact of Aerosols and Battlefield Obscurants on Ultrashort Laser Pulse Propagation - 2011 U.S. Army

[16] Lightning inducing Satellite Patent - 2013