

Original Research Article

Chemtrails are not Contrails: Radiometric Evidence

1 ABSTRACT

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Aims: Concerted efforts are made to deceive the public into falsely believing the jet-emplaced tropospheric aerosol trails, called chemtrails by some, are harmless ice-crystal contrails from aircraft engine exhaust-moisture. Our objective is to use radiometric measurements in the range 250-300 nm to show that a typical chemtrail is not a contrail, and to generalize that finding with additional data.

Methods: We utilized International Light Technologies ILT950UV Spectral Radiometer mounted on a Meade LXD55 auto guider telescope tripod and mount assembly.

Results: Radiometric solar irradiance spectra data that included the transit of a typical tropospheric aerosol trail between radiometer-sensor and the solar disc showed significant absorption during the transit period. The during-transit absorption is wholly inconsistent with the almost negligible adsorption by ice, but is wholly consistent with absorption by aerosolized particulates, including coal fly ash. This result is consistent with other aerosol-trail physical phenomena observations.

Conclusions: The public and the scientific community have been systematically deceived into falsely believing that the pervasive, jet-sprayed 'chemtrails' are harmless ice-crystal contrails. We have presented radiometric measurements which unambiguously prove the falsity of that characterization for one specific, but typical instance. We show in a more general framework that the physical manifestations of the aerial trails are inconsistent with ice-crystal contrails, but entirely consistent with aerosol particulate trails. We describe potential reasons for the deception, and cite the extremely adverse consequences of the aerial particulate spraying on human and environmental health. For the sake of life on Earth, the modification of the natural environment by aerial particulate spraying and other methodologies must immediately and permanently end.

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Keywords: Contrail, chemtrail, chemtrail conspiracy theory, disinformation, contrailscience

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1. INTRODUCTION

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For three decades numerous individuals have witnessed jet-laid trails that extend across the sky, gradually spreading out to appear as cirrus-type clouds, before further diffusing to become a white haze [1,2], as shown in Fig. 1. These aerosol trails are sometimes referred to as sky-stripping or particulate trails, but more frequently they are called *chemtrails*. Concerted efforts are made to deceive the public into falsely believing that the jet-laid trails are harmless ice-crystal *contrails*, which form from high-moisture engine exhaust under very humid, very cold conditions, and which typically evaporate into invisible gas in a matter of seconds [3].

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Fig. 1. From [4]. Geoengineering particulate trails with photographers' permission. Clockwise from upper left: Soddy-Daisy, Tennessee, USA (David Tulis); Reiat, Switzerland (Rogerio Camboim SA); Warrington, Cheshire, UK (Catherine Singleton); Alderney, UK looking toward France (Neil Howard); Luxembourg (Paul Berg); New York, New York, USA (Mementosis)

As previously noted [5], the 2005 U. S. Air Force Document AFD-0561013-001 deliberately misrepresented the aerial spraying and set forth the "contrail" basis for public deception. A section of that document entitled *The Chemtrail Hoax* states in part: "*There is no such thing as a 'Chemtrail' Contrails are safe and are a natural phenomenon. They pose no health hazard of any kind*" [6].

The disinformation intent of one website [7] is evident by its "meta description" which states: "*Investigation of the science and history behind 'chemtrails', showing that they are really contrails.*" Moreover, contrail definitions are often forcibly added by Google to YouTube videos discussing chemtrails or the aerial particulate spraying, see for example [8]. Contrail-disinformation even takes place in the scientific literature [9,10].

38 During the course of routine solar ultraviolet measurements, which automatically tracks Sol's
39 motion, a jet laid aerosol trail between the radiometer and the solar disc permitted
40 measurements of the relative absorption of UV-B,C. As discussed below, the results are
41 consistent with the aerosol trail consisting of particulate matter, not ice crystals; a chemtrail,
42 not a contrail. The jet-sprayed particulate trails now routinely observed throughout much of
43 the world are consistent with what is more properly called tropospheric aerosol
44 geoengineering.

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2. METHODOLOGY

47 The experimental method pertains to solar spectrometric irradiance measurements at
48 Earth's surface that employs International Light Technologies ILT950UV Spectral
49 Radiometer with fractional-nanometer resolution in the short-wavelength portion of the
50 ultraviolet (UV) spectrum. The radiometer is mated to a Meade LXD55 auto guider telescope
51 tripod and mount assembly, which permits automatic tracking. The instrumentation
52 specifications and the methodology used have been previously described in detail [11].

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3. RESULTS

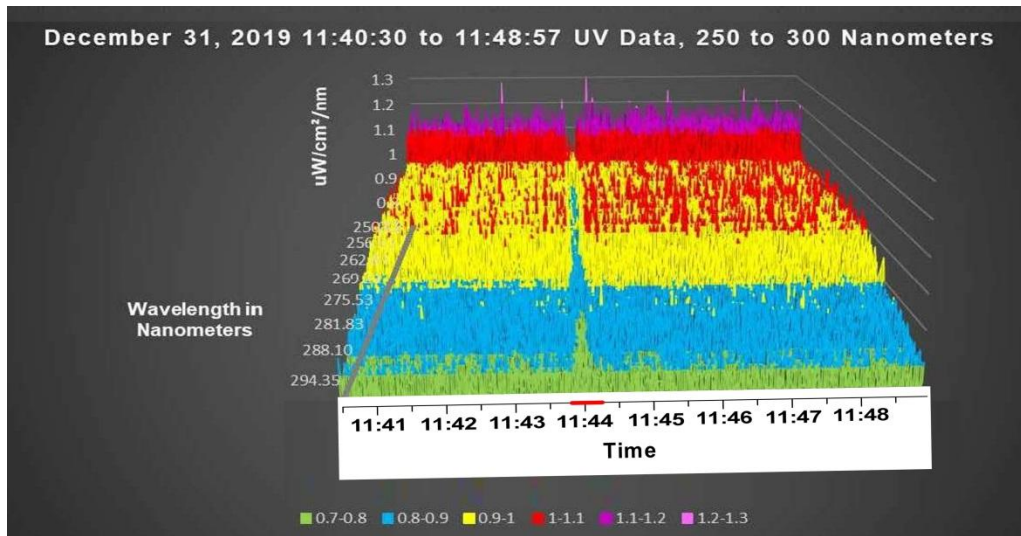
55 **Figure 2** consists of two iPhone photographs taken from behind the auto guider radiometer
56 mount showing the radiometer sensor's entry and exit through the aerosol particulate trail,
57 aka chemtrail. The entry and exit times, accurately determined from the iPhone time-stamps
58 are, 11:43:49 and 11:44:15, respectively, in the morning, local time, on December 31, 2019
59 at Bakersfield, California, USA. The weather conditions at the time **were simultaneously**
60 **measured with instruments on hand**: sky mostly clear, temperature 63° F, 33% Relative
61 Humidity, Barometer 29.63" Hg, no winds.



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Fig. 2. Photographs taken from behind the auto guider radiometer mount showing the radiometer sensor's entry and exit through the aerosol chemtrail. Photographs by author (RDH).

68 Figure 3 shows the UV data, plotted through the range 250 to 300 nm. The only alteration
69 made was to replace the generic graph axis with a time axis corresponding to the time
70 sequence of the data. The red portion of that time axis, taken from the range of time-stamps
71 of the iPhone photographs shown in Fig. 2, shows the time of radiometer-sensor transit
72 through the aerosol chemtrail. Clearly, the UV intensity measured by the radiometer
73 diminishes during the time of radiometer-sensor transit through the aerosol chemtrail.



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Fig. 3. UV data, plotted through the range 250 to 300 nm. The red portion of that time axis, taken from the range of time-stamps of the iPhone photographs shown in Fig. 2, shows the time of radiometer-sensor transit through the aerosol chemtrail. The reduction of UV intensity through this aerosol-transit range is clearly evident. Measurements were terminated at 250 nm to avoid uncertainties that increase as the wavelength decreases below 250 nm.

4. DISCUSSION

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The UV absorption evident in Fig. 3 during the time of radiometer-sensor transit through the aerosol trail is unambiguous radiometric evidence that the chemtrail is not an ice-crystal contrail because UV absorption by ice throughout the wavelength interval measured is negligible.

The absorption coefficient of ice, k_{ice} , at 300 nm is $\leq 0.1\text{m}^{-1}$ [12,13] and 0.665m^{-1} at 250 nm [13]. The nearly 100% reflectivity of snow is further evidence of the extremely low spectral absorbance of ice [14]. As noted by [12]: “Between 300 and 600 nm the absorption by ice is so weak that for some geophysical purposes it may as well be set to zero, for example, when computing absorption of solar radiation by ice clouds, because path lengths of photons through atmospheric ice crystals are very small compared to the absorption length.”

UV absorption by particulate matter, including coal fly ash, however, is wholly consistent with the data shown in Fig. 3 [15-18].

Figure 4 is a photograph of aerial particulate trails (chemtrails) that includes both white trails and black trails. The white trails are white because a high proportion of incident light is scattered, only some is absorbed. The black trails are black because there is very little scattering; most of the incident light is absorbed. The black trails cannot possibly be ice-crystal contrails because, as discussed above, ice has low absorption not only for UV, but for visible light as well [12,13].



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Fig. 4. From [4]. Both white and black particulate trails above Danby, Vermont, an impossible combination for alleged ice-crystal ‘contrails’.

Other physical manifestations of aerosol trails are likewise inconsistent with ice-crystal contrails. These include dispersal rather than evaporation, spontaneous start-stop-start particulate trail production, and trail origination sometimes not being associated with engine exhaust [5].

Why the pervasive disinformation about the aerial particulate trails? Probably because both the covert purpose(s) of the aerial spraying and the adverse human and environmental health consequences would be repugnant to the reasoning public.

Particulate matter in the troposphere becomes heated by solar radiation and radiation from Earth, transfers that heat to the atmosphere by molecular collisions, which reduces atmospheric convection, and concomitantly reduces heat loss from the surface, causing local and/or global warming [19-21] and combined with other techniques melts polar ice [22,23]. Aerial particulate spraying can be used covertly to deliberately cause weather chaos, including floods, droughts, and crop failures [24,25].

Aerial particulate spraying is deliberate air pollution. Aerial pollution particulates, the leading environmental cause of morbidity and mortality worldwide [26,27], have been found in the brains of persons with dementia [28] and in the hearts of persons from highly polluted areas [29]. Air pollution is a major contributor to stroke, heart, and neurodegenerative disease [28-31], lung cancer [32], COPD [33], respiratory infections [34], and asthma [35]. Particulate air pollution is a risk factor for cognitive decline [36-39], and for Alzheimer’s Dementia later in life [36]. Particulate air pollution is a risk factor for children having cognitive defects [38,39] and for Autism Spectrum Disorder in children [40,41].

The pervasive aerial particulate spraying is harming virtually all life on Earth, specifically, disrupting once stable weather patterns and habitats [42], contaminating the environment

139 with mercury [43], decimating insect [44], bat [45], and bird populations [46], killing forests
140 [47], exacerbating wildfires [5], enabling harmful algae in our waters [48], and destroying the
141 ozone layer that shields surface-life from the sun's deadly ultraviolet radiation [11].

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5. CONCLUSIONS

144 The public and the scientific community have been systematically deceived into falsely
145 believing that the pervasive, jet-sprayed 'chemtrails' are harmless ice-crystal contrails. We
146 have presented radiometric measurements which unambiguously prove the falsity of that
147 characterization for one specific, but typical instance. We show in a more general framework
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151 and environmental health. For the sake of life on Earth, the modification of the natural
152 environment by aerial particulate spraying and other methodologies must immediately and
153 permanently end.

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COMPETING INTERESTS DISCLAIMER:

156 Authors have declared that no competing interests exist. The products used for this research
157 are commonly and predominantly use products in our area of research and country. There is
158 absolutely no conflict of interest between the authors and producers of the products because
159 we do not intend to use these products as an avenue for any litigation but for the
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CONSENT

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ETHICAL APPROVAL

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