

# Fifty Years after “How to Wreck the Environment”: Anthropogenic Extinction of Life on Earth

## ABSTRACT

**Aims:** Fifty years ago geoscientist Gordon J. F. MacDonald penned a book-chapter entitled, “How to Wreck the Environment”, in which he described how a nation might alter the environment so as to covertly inflict harm on an enemy nation. Our objective is to review MacDonald’s suggestions of environmental warfare strategies in light of subsequent technological advances, and in the context of actual deployment of the war methods he described.

**Methods:** We review the interdisciplinary scientific and medical literature.

**Results:** MacDonald discussed overt and covert weather warfare based upon seeding clouds to cause rainfall. Subsequently, a method was developed for inhibiting rainfall by jet-emplacing pollution particulates where clouds form. For at least two decades citizens have observed such particulate trails occurring with increasing frequency. Forensic scientific investigations implicate toxic coal fly ash as their main constituent. Around 2010, the aerial particulate spraying ramped-up to a near-daily, near-global level. Presumably, a secret international agreement mandated the aerial spraying as a ‘sunshade’ for Earth. However, aerial spraying, rather than cooling, heats the atmosphere, retards Earth’s heat loss, and causes global warming. MacDonald also discussed destroying atmospheric ozone and triggering earthquakes and volcanic eruptions, activities now possible with high-frequency ionospheric heaters.

**Conclusions:** The U. S. military’s ongoing decision to weaponize the environment for national security purposes was accurately forecasted by MacDonald. But he failed to realize that national militaries could and would be co-opted by a secret international agreement the consequence of which, however unintentional, was to wage war on planet Earth, on all its biota, and on its natural, biogeochemical processes. Unless and until politicians, news media, scientists, and others in our society face the truth of what is happening before their very eyes and collectively demand a halt to these covert technological activities, we will march onward – to the first anthropogenic-caused mass extinction.

*Keywords: trigger earthquakes, climate modification, ozone depletion, ionospheric heater, Gordon J. F. MacDonald, coal fly ash, geoengineering*

## 1. INTRODUCTION

The politically powerful geoscientist Gordon J. F. MacDonald (1929-2002) wrote an influential essay titled, “How to Wreck the Environment,” that was published in 1968 in a book called *Unless Peace Comes* [1]. At a time when the military’s focus centered on nuclear warfare, MacDonald prophetically suggested: “Among future means of obtaining national objectives by force, one possibility hinges on man’s ability to control and manipulate the environment of his planet.” MacDonald, a top presidential science advisor and participant in national science-policy discussions, was well qualified to address the subject of future environmental warfare possibilities.

Much of what MacDonald predicted or speculated about has come to pass, not with the technology he described, but with potentially far more effective and devastating technology developed during the succeeding fifty years.

As MacDonald noted in 1968: “The key to geophysical warfare is the identification of the environmental instabilities to which the addition of a small amount of energy would release vastly greater amounts of energy.” MacDonald discussed purposefully triggering instabilities in such large-

29 scale natural systems as the weather, the climate, the oceans, and the human brain, including such  
30 phenomena as hurricanes, earthquakes, and tsunamis for use in warfare. He was aware, considering  
31 the limitations of geophysical understanding, that one should also anticipate unforeseen adverse  
32 consequences that could arise from deliberately disturbing complex natural systems that have  
33 unknown 'tipping points'.

34 During the fifty years since MacDonald's landmark publication [1], the technology necessary for the  
35 weaponization of the environment has undergone major advances, well-known to those who have  
36 funded the research. In tandem, the scientific understanding of Earth's behavior has likewise  
37 undergone major advances over the last half-century.

38 However, major new concepts in geophysics – such as those being developed by the military  
39 industrial complex – have been typically ignored in the geoscience community for decades. It is not  
40 surprising, therefore, that deployment of radical environmental warfare technologies that alter  
41 fundamental natural processes of our planet is proceeding, without scientific warning or a full  
42 understanding of the underlying geodynamics and dangers such technologies pose to human and  
43 other life.

44 Here, we review some of the ideas expressed by MacDonald in "How to Wreck the Environment" [1] in  
45 the light of subsequent technological developments. We also review evidence that environmentally  
46 destabilizing military technologies are being deployed on a global scale. Where applicable, we  
47 discuss potential risks to our planet, and its biota, that likely are underappreciated by those  
48 responsible.

## 49 **2. METHOD**

50 We reviewed interdisciplinary scientific and medical literature.

## 51 **3. RESULTS AND DISCUSSION**

52 The long-held dream of military planners to control the weather began to become reality with the  
53 discovery in 1946 that clouds, when seeded with silver iodide or dry ice (solid carbon dioxide), under  
54 appropriate circumstances, could result in rain or snow [2]. MacDonald [1] discussed that form of  
55 cloud seeding and its military potential both for causing rainfall to impede enemy ground operations  
56 and for covertly causing long-term drought, by forcing clouds to release their moisture before they  
57 reached the targeted nation. These have been matters of serious concern to the U. S. military then  
58 and now [3].

59 Weather became a weapon of war during the Vietnam War when cloud seeding operations were  
60 conducted to extend the monsoon season over the Ho Chi Minh Trail to impede movement of  
61 supplies and troops (Operation Popeye) [3]. The U. S. military seeded clouds approaching Cuba in an  
62 attempt to cause drought to spoil the sugarcane harvest [4].

63 Seeding clouds to cause rain, as described by MacDonald [1], was only the first step in weather  
64 manipulation. Subsequent research produced the technology to impede the fall of rain. For clouds to  
65 yield rain, tiny droplets need to nucleate and then coalesce to form drops sufficiently massive to fall to  
66 Earth. The technology for impeding rainfall is known from pollution investigations. A sufficiently large  
67 number of pollution particles, dispersed into the region where clouds form, poses impediments to the  
68 tiny droplets, blocking and keeping them from coalescing to become massive enough to fall as rain.  
69 Eventually, the moisture burden becomes unbearable and clouds release their moisture in deluges.

70 In the late 1990s, alert citizens became concerned about the aerial particulate trails that extended  
71 from horizon to horizon in the skies above them. With the passage of time, these aerial trails became  
72 more frequent, while at the same time, the public was being misled that these were harmless  
73 contrails, ice crystals formed from exhaust vapor [5]. By about 2010 the aerial spraying ramped up to  
74 a near-daily activity over much of the globe [6]. (Figure 1)



75

76 **Figure 1.** Climate manipulation particulate trails. (Photographers with permission) Clockwise from  
 77 upper left: Paris, France (Patrick Roddie); Karnak, Egypt (author JMH); London, England (author IB);  
 78 Northern California, USA (Patrick Roddie); Geneva, Switzerland (Beatrice Wright); Yosemite,  
 79 California USA (Patrick Roddie); Jaipur, India (author JMH).

80

81 Weather modification is a phenomenon limited in duration and geographical extent, whereas climate  
 82 modification is necessarily global. The current, near-daily, near-global aerial spraying seems to  
 83 represent an attempt at climate modification, which MacDonald also discussed [1], and likely involves  
 84 weather modification activity as well. As MacDonald noted: "...climate is primarily determined by the  
 85 balance between the incoming short-wave radiation from the sun (principally light) and the loss of  
 86 outgoing long-wave radiation (principally heat)." He goes on to list the three factors that dominate this  
 87 balance: 1) sun's energy; 2) Earth's atmospheric transparency to different forms of radiated energy,  
 88 and; 3) Earth's surface characteristics. Alteration of any of the three can modify climate.

89 Altering the sun's energy output is not technologically feasible even today, but there are various ways  
90 of effecting radiant energy transport through Earth's atmosphere. Among the possibilities mentioned  
91 by MacDonald [1], albeit without specificity, is the idea of placing material into the upper atmosphere  
92 that would "absorb either incoming light (thereby cooling the surface) or outgoing heat (thereby  
93 warming the surface)." In speculating about such a possibility, MacDonald noted: "At present we know  
94 too little about the paradoxical effects of warming and cooling, however, to tell what the outcomes  
95 might be." That statement is as true today as when published 50 years ago.

96 The **explanation of the behavior** of material placed into the upper atmosphere, as stated by  
97 MacDonald, is simplistic and incorrect. So too, is the oft-repeated proposition by members of the  
98 geoscience community who now discuss the possibility of placing material in the upper atmosphere to  
99 reflect a portion of sunlight back into space, 'sunshades for the Earth'. As we discuss below, particles  
100 placed in the atmosphere exhibit behavior in response to incident radiation that is considerably more  
101 complex than described by MacDonald, as are their physical and chemical reactions in the  
102 atmosphere and at **the** Earth's surface.

103 As noted above, the U. S. military has been engaged for decades in aerial spraying of particulates  
104 into the regions where clouds form to modify weather and for other reasons, such as the  
105 enhancement of communication systems associated with electromagnetic radiation programs.

106 **Aerial spraying appears to have become an international operation sometime around 2010, and is**  
107 **presumably based on a secret international agreement, as observed climate modification activity must**  
108 **involve, *ipso facto*, the collaboration of multiple states. As Figures 1 and 2 illustrate, diverse**  
109 **independent countries are involved. MacDonald advised that *the key lesson* of the Vietnam war's**  
110 **highly secret weather modification program, Project Popeye, was not its failure to alter the war's**  
111 **outcome, but that "one can conduct covert operations using a new technology in a democracy without**  
112 **the knowledge of the people" [1].**

113 **In the case of a possible secret international agreement to modify the climate, the presumption would**  
114 **be it was made to benefit humanity. However, as we show, its implementation is exacerbating the**  
115 **problem of global warming and causing climate chaos, and adversely affecting the health of**  
116 **organisms, including humans. At face value it would seem that the actual geophysical and biological**  
117 **consequences of such covert military operations would be inconsistent with an international program**  
118 **for the benefit of humankind, *unless* that secret international agreement/understanding was based on**  
119 **misrepresentations. If so, a strange dichotomy marks the subject of weather and climate modification,**  
120 **characterized by a blatant contradiction between ends and means, intent and consequences.**

121 Science should be based upon truth, but **improper administration and funding** of science has  
122 corrupted science's integrity [7]. Since 1989, the United Nations' Intergovernmental Panel on Climate  
123 Change (IPCC) has remained silent about the military aerial particulate spraying, and failed to take  
124 into account its geophysical consequences in its climate models [8]. At present, aerial particulate  
125 emplacement can only legally take place under the aegis of military entities, but there is a global effort  
126 to encourage governance that permits non-military entities such as universities and for-profit  
127 companies to also engage in climate intervention [9].

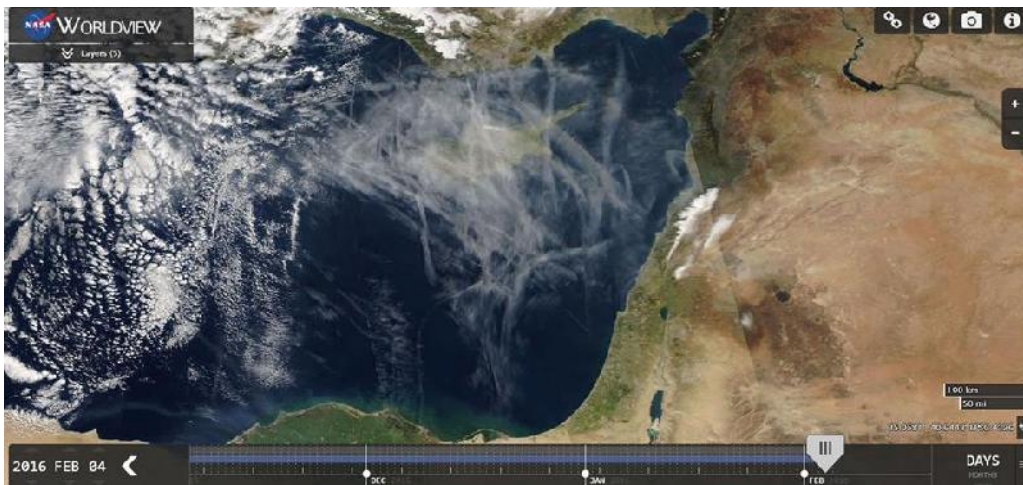
128 **What** reason was given to national governments to get them to agree to become willing parties to  
129 near-daily, near-global, aerial particulate spraying into the atmosphere? Few government leaders,  
130 politicians, and bureaucrats are trained in science. Have they been told that the aerial emplacements  
131 of particulates will act like a sunshade to cool Earth to compensate for alleged anthropogenic  
132 greenhouse-gas global warming?

133 If so, they have been conned into the greatest "science-based" scam ever perpetrated [10]: Cause  
134 global warming and climate chaos by daily aerial spraying and then blame the warming result on  
135 anthropogenic greenhouse gases to **undermine** the authority of nation states, and erect new world  
136 governance structures to regulate anthropogenic, transnational greenhouse gas emissions.

### 137 **3.1 The Real Consequences of Aerial Particulate Spraying**

138 **One of the original military purposes** of aerial particulate dispersal into the regions where clouds form  
139 was to impede precipitation and to cause drought in an unfriendly country. Indeed, **former** Iranian

140 President Mahmoud Ahmadinejad accused Western countries of doing just that [11]. Figure 2 shows  
141 particulate trails blanketing the Republic of Cyprus, whose citizens sought, so far **unsuccessfully**, an  
142 explanation from their government for the deliberate **obscuring** of their skies [12]. There is no  
143 information available to the public about the extent of weather warfare. Interestingly, covert  
144 environmental warfare was predicted by MacDonald [1]: "...removing moisture from the atmosphere  
145 so that a nation dependent on water...could be subjected to years of drought. The operation could be  
146 concealed by the statistical irregularity of the atmosphere. A nation possessing superior technology in  
147 environmental manipulation could damage an adversary without revealing its intent." Not only the  
148 adversary, but the aggressor nation's own citizens would be **unaware**. As noted, MacDonald observed  
149 that, "one can conduct covert operations using a new technology in a democracy without the  
150 knowledge of the people."



151

152

153 Figure 2. NASA Worldview satellite image from February 4, 2016 showing jet-laid **particulate**  
154 trails blanketing the air above the Republic of Cyprus but nearly absent in surrounding regions. The Cyprus  
155 Environment Services Department, part of the Cyprus government, promised to investigate the aerial  
156 spraying following the February 2016 presentations made to the Parliamentary Environmental  
157 Committee, but **to date there is no sign of an investigation.**

158

159 Presumably the use of readily available, inexpensive particulate matter was considered a practical  
160 necessity **and was implemented** without regard for its possible adverse health effects. We know this  
161 was done in Vietnam [3]. The undisclosed international agreement for near-daily, near-global aerial  
162 spraying and its concomitant funding has allowed military entities to indiscriminately expose millions of  
163 uninformed citizens to the dispersed particulate matter day after day, year after year, *inside their own*  
164 *sovereign countries*. Moreover, the aerial spraying has been accompanied by a concerted  
165 disinformation campaign to **mislead** the public, as well as the scientific community, about its adverse  
166 health consequences [5,13-15]. In the following subsections, we review various consequences of  
167 aerial spraying.

### 168 **3.1.1 Aerosolized Particulate Composition**

169 The composition(s) of the military aerial particulate sprayed into the atmosphere has long been a  
170 closely held secret. At the beginning of the 21st century, concerned citizens took samples of post-  
171 spraying rainwater and had them analyzed at commercial laboratories. Usually only aluminum  
172 analysis was requested; occasionally both aluminum and barium; rarely aluminum, barium, and  
173 strontium. The presence of those elements in rainwater indicated to one of us (JMH) that the  
174 particulate matter sprayed into the atmosphere was capable of being rapidly leached by atmospheric  
175 water, **elements partially extracted from the particulates into the water (like tea is made from tea**

176 leaves), just as the toxic waste product of industrial coal-burning, coal fly ash (CFA) is readily leached  
177 by water.

178 By comparing laboratory CFA leachate [16,17] with samples of post-spraying rainwater [6,18,19], we  
179 demonstrated that the aerosolized particulates are consistent with coal fly ash. We further showed  
180 that element-ratios measured in post-spraying air-suspended dust collected outdoors and in matter  
181 brought down by snow are consistent with similar ratios measured in CFA [16,17].

182 Coal fly ash forms in the hot gases above the coal-combustor. Typically CFA forms as spheres, 0.01 –  
183 50 µm in diameter [20]. Readily available throughout the world at low cost, the fine grain-size of this  
184 major industrial waste product means that little further processing is necessary before it is deployed in  
185 aerosolized form in the atmosphere.

186 A large proportion the toxic heavy metal and radioactive elements originally present in coal end up  
187 concentrated in CFA [21]. Because of its toxicity, regulations in Western nations require CFA to be  
188 collected, usually trapped by electrostatic precipitators, rather than allowed to exit smokestacks. The  
189 circumstances of CFA formation are unlike circumstances found in the natural environment (except  
190 when coal deposits catch fire), condensing and accumulating in the hot gases above the combustor,  
191 where burning takes place. Because the chemical reactions during formation of CFA are different from  
192 reactions usually found in nature, many of the elements present in CFA are capable of being partially  
193 extracted by exposure to moisture [16].

194 For the military this is advantageous, since CFA aerial spray makes atmospheric water more  
195 electrically conductive, because of the many dissolved elements, and thus more responsive to  
196 electromagnetic radiation. But for the humans, plants, and animals exposed to these toxins, the  
197 consequences are, in the long run, devastating.

### 198 **3.1.2 Public and Environmental Health Concerns**

199 Epidemiological investigations of particulate aerosol pollution in the same particle size range as CFA  
200 provide some guidance as to the adverse health effects of the particulate matter sprayed into the  
201 troposphere and lower stratosphere. Pollution particles in the size range (PM<sub>2.5</sub>) [22] are associated  
202 with morbidity and premature mortality [23-25], Alzheimer's disease [26,27], risk for cardiovascular  
203 disease [28], risk for stroke [29], lung cancer [30], lung inflammation and diabetes [31], decreased  
204 male fertility [32], reduced renal function in older males [33], onset of asthma [34], increased hospital  
205 admissions [35], and low birth weight [36].

206 The adverse health consequences of aerosolized CFA are even more dire. Ambient air pollution  
207 contributes to the growing global burden of respiratory disease and lung cancer [37,38]. Inhaled,  
208 aerosolized CFA, with its complement of carcinogens, such as arsenic, chromium VI, and  
209 radionuclides, settles deep in terminal airways and alveoli where it remains and can pose risks for  
210 lung cancer [39].

211 Spherical exogenous magnetite (Fe<sub>3</sub>O<sub>4</sub>) nanoparticles, recently discovered in brain tissue of persons  
212 with dementia [40], suggests an origin in the kind of air pollution produced by CFA, which is  
213 characterized by spherical particles. Iron oxides and aluminosilicates, primary components of CFA,  
214 are all found in the abnormal proteins that characterize Alzheimer's dementia, which leads to oxidative  
215 stress and chronic inflammation of brain tissue [41].

216 Coal fly ash, when exposed to moisture or body fluids, releases numerous toxins, including aluminum  
217 in a chemically mobile form, which is an environmentally and biologically unnatural state [16].  
218 Chemically mobile aluminum is deadly to plants and trees as well as to amphibians [42]. Aluminum is  
219 associated with neurological disorders [6], and has been found in high levels in bees [43].

### 220 **3.1.3 Thermal Consequences of Aerial Particulate Spraying**

221 In addition to inhibiting rainfall by interfering with moisture droplet coalescence, particles sprayed into  
222 the troposphere and lower stratosphere reflect a portion of sunlight back into space. But a portion of  
223 the incident sunlight is absorbed by the particles as heat. That heat can be transferred to the  
224 atmosphere by molecular collisions or can be re-radiated in any direction, and not returned to space.

225 **The** aerosolized particulates also act to restrain infrared radiation loss from Earth's surface and thus  
226 *become a source of atmospheric heating – global warming* [44].

227 Iron oxides, a significant component of CFA, absorb strongly in the ultraviolet range but reflect in the  
228 infrared range [45]. Most of the airborne iron oxide particles observed in the continental outflows of  
229 anthropogenic origin **in China** consist of magnetite nanoparticles or iron-bearing particles in CFA [46].  
230 Strongly light-absorbing aerosols, such as CFA, *directly heat the atmosphere* and indirectly reduce  
231 snow albedo by their warming effect [47]. As the aerosolized particulates fall to Earth, especially in far  
232 northern and far southern regions, they change the albedo of the ice/snow, which allows more solar  
233 energy to be absorbed by Earth [48]. This behavior, especially when considered in the context of  
234 near-daily, near-global aerosol spraying clearly **may contribute to** global warming. Consequently, the  
235 thermal state of Earth is biased toward warming, *the exact opposite* of official claims **for**  
236 geoengineering.

237 There are other consequences of **atmospheric** CFA particulate matter in the troposphere and lower  
238 stratosphere that further lead toward warming. For example, CFA particles can cause super-cooled  
239 droplets of moisture high in the atmosphere to form ice crystals, which form cirrus clouds whose effect  
240 is to retard Earth's infrared heat loss [49,50]. Current levels of CFA emissions are estimated to  
241 contribute 0.1-06W/m<sup>2</sup> of extra warming through their role in cirrus cloud formation [51]. This estimate,  
242 however, does not take into account the massive quantities of CFA used in aerial particulate spraying.

243 With all of the concern expressed in the press and elsewhere about global warming, it seems  
244 inconceivable **to us** that political leaders would knowingly sign a secret international agreement that  
245 promotes global warming. The **presumptive** alternative is that political leaders were deceived into  
246 believing that they were agreeing to an activity that would cool the Earth, when in fact the net effect of  
247 the activities warm the Earth and will destroy life if permitted to persist.

#### 248 **3.1.4 Ozone Destruction**

249 In 1968 MacDonald [1] warned: "More sudden, perhaps much briefer but nevertheless disastrous,  
250 effects are predictable if chemical and physical means were developed for attacking one of the natural  
251 constituents of the atmosphere – ozone." In the intervening years, such means have been developed  
252 and deployed. The chemical means are principally manifest in the form of aerosolized CFA; the  
253 physical means, by radiofrequency ionospheric heaters.

254 Many assume that the protective ozone layer in the stratosphere is slowly recovering primarily due to  
255 the international ban on chlorofluorocarbons (CFC's) by the Montreal Protocol [52], and that the  
256 Antarctic ozone hole is slowly healing [53]. However, it is coming to light that these assumptions may  
257 be wrong. There is new evidence for the continuous loss of ozone in the lower stratosphere [54]. It is  
258 thought that a reduction in ozone in the tropical stratosphere, where most of the ozone is formed,  
259 leads to transport of this ozone-rich air to the mid-latitudes via the Brewer-Dobson circulation [54].

260 Ozone column losses at high latitude are in the range of 6% [55]. Previously, depletion of lower  
261 stratospheric ozone has been attributed to rapidly increasing anthropogenic (and some natural) short-  
262 lived substances that contain chlorine or bromine [54]. However, the aerosolized CFA used for climate  
263 modification, now conducted on a near-daily, near-global basis, places *massive quantities* of chlorine,  
264 bromine, fluorine, and iodine into the atmosphere (Table 1), including *highly reactive nano-*  
265 *particulates*. These are **potential** destroyers of ozone [56].

266 **Table 1.** Range of halogen element compositions of CFA [57].

Chlorine (µg/g)	Bromine (µg/g)	Fluorine (µg/g)	Iodine (µg/g)
13 – 25,000	0.3 – 670	0.4 – 624	0.1 – 200

267

268 There is a disquieting parallel for this ecosystem degradation: Despite strengthened mercury emission  
269 regulations, mercury measured in rainwater is increasing [58]. As the upper troposphere has now  
270 been found to contain oxidized, particle-bound mercury [59], it is not unlikely that covert aerosolized

271 CFA, which contains up to 2 µg/g mercury, is a major source of mercury pollution when sprayed into  
272 the atmosphere [19].

273 In addition to the chemical destruction of stratospheric ozone, there are indications that high-  
274 frequency ionospheric heaters, now dispersed globally [60,61], may adversely affect stratospheric  
275 ozone. Russian scientists have discovered a new physical phenomenon of the decrease of the  
276 intensity of microwave emission from the mesosphere in the ozone line upon the modification of the  
277 ionosphere with high-power high-frequency (HF) radio waves [62,63]. The Sura facility for generation  
278 of high power radio waves is located near the village of Vasil'sursk in Russia. It has 190MW effective  
279 radiated power transmitter and operated in the 30 min on/30 min off mode. Thermal radiation of the  
280 atmosphere in the ozone spectral line, at a frequency of 110836.04 MHz, decreased in intensity  
281 during the heating-on portion of the cycle by an average of 10±2% over all sessions of measurements  
282 in March, 2009, as shown in Table 2.

283 **Table 2.** Comparison of O3 number density x10<sup>9</sup> reduction during the thirty minute heating facility  
284 emitted high-power X-polarization radio waves at 4.3 MHz. Data from [62].

DATE>>>	3/ 14/ 2009	3/ 15/ 2009	3/ 16/ 2009	3/ 17/ 2009
Night		12.1±0.7	13.6±0.7	13.6±0.5
Day	9.37±0.48	9.60±0.50	9.55±0.40	9.82±0.35
<b>HF Pumping</b>	<b>8.03±0.38</b>	<b>8.31±0.29</b>	<b>7.32±0.47</b>	<b>8.97±0.49</b>
Day	9.09±0.42	9.23±0.21	9.01±0.24	9.67±0.30
Night	12.8±0.6	14.4±0.7	11.9±0.6	12.2±0.5

285

### 286 **3.1.5 Turning the Environment against Humanity**

287 The Russian discovery may be a bellwether of severe problems to come. For 60 years the U. S. and  
288 other major powers' militaries have conducted ionospheric modification 'experiments' without regard  
289 for the integrity of the ozone layer or life in general, exploiting the ionosphere to serve multiple military  
290 ends, including communications with submarines, resource mapping and exploitation, and  
291 weaponization of weather and climate [3,64]. In 1968, MacDonald [1] foresaw the possibility that in  
292 the future the military might develop the means to trigger on-demand covert environmental  
293 modifications to cause storms, floods, droughts, earthquakes, and tidal waves. Although one would  
294 not expect an admission from the steeped-in-secrecy military, an email to then Secretary of State  
295 Hillary Clinton [65], sent February 21, 2011 at 7:35 PM states "6.3 magnitude earthquake in  
296 Christchurch, New Zealand **And on cue...**"[emphasis added]. The phrase, "And on cue", seems to  
297 indicate that the time of a 6.3 magnitude earthquake in New Zealand was known in advance,  
298 presumably an indication that the earthquake was deliberately triggered.

299

300 In 1997 Secretary of Defense William Cohen directly stated [66]: "Others are engaging...in an eco-  
301 type terrorism whereby they can alter the climate, set off earthquakes, [and] volcanoes remotely  
302 through the use of electromagnetic waves....It's real, and that's the reason why we have to intensify  
303 our efforts."

304

305 Fifty years ago MacDonald [1] noted: "The enhanced low-frequency electrical oscillations in the earth-  
306 ionosphere cavity relate to possible weapons systems through the little-understood aspect of brain-  
307 physiology....No matter how deeply disturbing the thought of using the environment to manipulate  
308 behavior for national advantage is to some, the technology permitting such use will very probably  
309 develop within the next few decades." With ionospheric heater transmitters scattered throughout the  
310 world, that time might be close at hand – half a century after MacDonald's forecast.

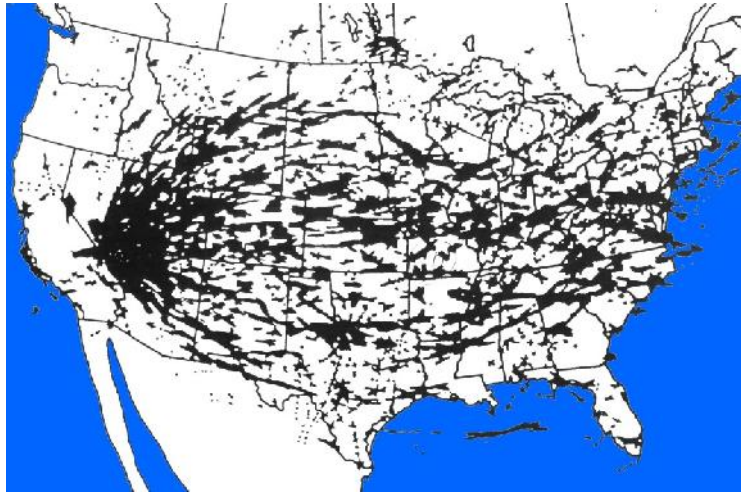
311

### 312 **3.1.6 Extinction of Life on Earth**

313 Historically, the militaries of the world's major powers have exhibited little or no concern for the health  
314 of their own citizens when what they perceive as 'national security' goals are at stake [67]. During the



315 1950s and 1960s, more than one hundred nuclear devices were detonated above ground in Nevada  
316 (USA) [69]. Without being told of the potential health risks, thousands of military personnel were  
317 deliberately exposed to nuclear blasts, including "war game" maneuvers that took place directly  
318 beneath the atomic clouds [69,70]. Nor were local residents clearly informed of the risks or provided  
319 with ways to minimize those risks [69]. Radioactive fallout occurred not only in the area near the  
320 nuclear blasts, but as winds propelled the radioactive cloud across the United States, fallout occurred  
321 along the paths, shown in Figure 3, that depended on local weather conditions.



322

323 **Figure 3.** U. S. Department of Energy image showing areas of the continental United States crossed  
324 by more than one nuclear cloud from aboveground detonations as indicated in black during the  
325 1950s-1960s (courtesy of U. S. Department of Energy).

326

327 Atmospheric nuclear aboveground testing came to an end only as the result of public outcry over  
328 news reports that bomb-produced radioactive strontium-90, found in cows' milk, posed dangers of  
329 being incorporated into the teeth and bones of infants and children especially [71]. Now, more than a  
330 half-century later, the scientific community is mute about vast military experiments on such Earth  
331 systems as the climate, and the world's media are similarly mute. Yet the dangers of aerial particulate  
332 spraying and ionospheric heating activities, taken as a whole, may pose dangers as serious as those  
333 once posed by atmospheric nuclear testing [39,41,72]. Continued without abatement, these military  
334 experiments in our atmosphere pose a risk of extinction of life on Earth.

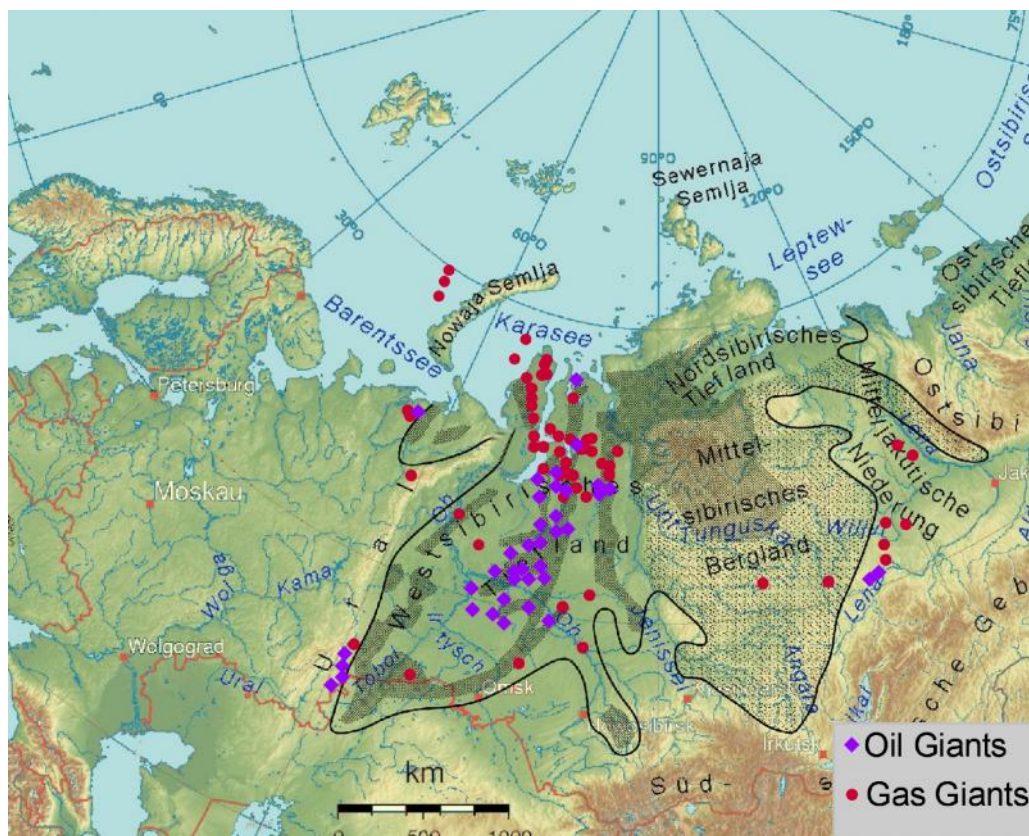
335 Mass extinction as defined when the Earth loses more than three-quarters of its species in a  
336 geologically short period of time has happened only five times in the last 540 million years [73].  
337 Common features of the "Big Five" suggest that key synergies may involve unusual climate dynamics,  
338 atmospheric composition, and global ecological stressors that affect multiple lineages [74]. Drizo et al.  
339 [75] have asserted that in just the past 500 years, humans have triggered a wave of extinction, threat,  
340 and population declines already comparable in rate and magnitude with previous extinctions. Earth is  
341 now experiencing a huge wave of population declines and extirpations with cascading consequences  
342 on both ecosystem functioning and resources vital to modern civilization. A recent study, for example,  
343 documents an alarming decline, a 75% reduction, in insect populations (biomass) over the past three  
344 decades in protected areas of Germany [76]. The term "biological annihilation" has been used to  
345 highlight the current state of Earth's ongoing Sixth Great Extinction [77].

### 346 **3.1.7 Geophysical Ignorance, Arrogance, and Secrecy**

347 Earth's great extinctions correlate with epic volcanic phenomena called Large Igneous Province (LIP)  
348 [78]. Earth's most extreme mass extinction, at the end of the Permian (or "Great Dying"), 250 million  
349 years ago, coincided with the Siberian Traps LIP, a massive outpouring of lava and intrusion of  
350 underground magma. The underground magma mixed with thick coal seams and this hot coal-basalt  
351 mixture extruded at numerous surface locations, producing plumes of pyroclastic fly ash, soot, sulfate,

352 and basaltic dust which ascended to the upper atmosphere [79]. This material was dispersed globally,  
353 and the resulting char deposits in Permian-aged rock have been found to be remarkably similar to  
354 modern coal fly ash [80]. The Permian was characterized by high levels of carbon dioxide, methane  
355 gas and rapid global warming to levels lethal to most living organisms [81]. A period of deadly  
356 ultraviolet radiation stress during the Permian period may have resulted from depletion of  
357 stratospheric ozone by massive output of hydrothermal organo-halogens from the vast Siberian Traps  
358 volcanism [82].

359 The rifting that occurred east of the Urals 250 million years ago resulted in one of the world's largest  
360 petroleum and gas deposits, as shown in Figure 4 [83]. There is considerable frozen methane trapped  
361 in the permafrost in that extensive northern area [84]. Anthropogenic global warming, caused by the  
362 near-daily, near-global aerial particulate spraying, poses a serious risk of massively thawing and  
363 releasing that entrapped methane to the atmosphere. The potential for another mass-extinction event,  
364 should this happen, cannot be dismissed.



365  
366 **Figure 4.** The relationship between major petroleum and natural gas production wells and the  
367 boundary of the Siberian Traps, indicated by the black line. Methane hydrate deposits currently locked  
368 in the permafrost within this extensive area upon melting pose a major catastrophe. From [83].

369  
370 Military activities aimed at manipulating Earth's environment by polluting the atmosphere with CFA  
371 and utilizing ionospheric heaters to cause earthquakes, volcanic eruptions, and other undisclosed  
372 purposes are, we submit, causing great harm to life on Earth. The military, like the Sorcerer's  
373 Apprentice, is toying with forces of great potential destruction about which it has neither  
374 understanding nor concern for the harm inflicted [3,64,85].

#### 375 4.0 CONCLUSIONS

376 The **decision** to alter the natural workings of our planet, to pollute the air we breathe, to disrupt natural  
377 climate, to weaponize natural geophysical processes, to disrupt the ionosphere that protects us from  
378 the sun's deadly electromagnetic radiation, and to **mislead** the public about the health risks involved  
379 was accurately forecasted in 1968 by Gordon J. F. MacDonald in his essay aptly entitled "How to  
380 Wreck the Environment." But MacDonald's vision was not 20-20. He imagined that a nation would  
381 develop the technology for the benefit of its natural national interests. MacDonald failed to realize that  
382 the world's militaries could be co-opted by a secret international agreement, the perhaps unintentional  
383 consequence of which is to wage a first-ever war on planet Earth, on all its biota and on its  
384 fundamental biogeochemical processes.

385 Unless and until politicians, news media, scientists, and others in our society face the truth of what is  
386 happening before their very eyes and collectively demand a halt to these covert technological  
387 activities, we will march onward – to the first anthropogenic-caused mass extinction of life on Earth.

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