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Dear redacted redacted

Chem-trails and global warming

Thank you for your letter of 11 March about chem-trails and global warming. I have been asked to reply.

The HAARP facility in Alaska was established to conduct scientific research into the Earth's ionosphere though there have been 'conspiracy theory' like rumours that it was set up to control global weather for military purposes. The fact is the HAARP facility cannot affect the weather. Transmitted energy in the frequency ranges that is used by HAARP is not absorbed in either the troposphere or the stratosphere - the two levels of the atmosphere that produce the earth's weather. Electromagnetic interactions only occur in the near-vacuum of the rarefied region above about 70 km which is the ionosphere. Also, because of the ionosphere's near-vacuum state, aircraft are unable to fly in this part of the atmosphere unless they are somehow rocket powered.

The ionosphere is created and continuously replenished as the sun's radiation interacts with the highest levels of the Earth's atmosphere. The downward coupling from the ionosphere to the stratosphere/troposphere is extremely weak, and no association between natural ionospheric variability and

surface weather and climate has ever been found, even at the extraordinarily high levels of ionospheric turbulence that the sun can produce during a geomagnetic storm. If the ionospheric storms caused by the sun itself do not affect the surface weather, there is no chance that HAARP, with its relatively miniscule influence on the ionosphere compared to the sun's influence, can do so either. Moreover, if HAARP does create holes in the ionosphere (which it doesn't) it would be insignificant in comparison to the fact that the effects of solar turbulence can strip away several ionospheric layers over a hemispheric area for several hours at a time.

Regarding your point on contrails, the climatic effect of these has been estimated by the Intergovernmental Panel on Climate Change as about 1-3% of the warming effect of greenhouse gases. Furthermore, the current phase of the modern warming trend began in the 1970s long before HAARP started operation in 1993, and since 1999 the rate of global warming has slowed considerably. Contrails can therefore be eliminated as the main cause of global warming.

I hope that this letter addresses your concerns.

Yours sincerely,

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Defra - Customer Contact Unit