

# ATMOSPHERIC CONDUCTIVITY

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Research is indicating that the conductivity of the atmosphere has been increased. This finding is in conjunction with the extensive aerosol operations that have been documented in detail for the last 2 1/2 years, and with the most recent findings that support the claims for the existence of saturated levels of metallic particulates within the atmosphere.

A Van de Graaf generator has been used to create a spark in the open atmosphere at repeated intervals. The length of the spark that the generator can produce is generally predictable, and it is highly dependent upon the size of the sphere of the generator as well as the dielectric strength of the medium (e.g., air) that the spark traverses.

In the cases that are under examination, the generator being used is rated at 200,000 volts. This agrees reasonably well with the theoretical value of the potential for the generator, which has an oblate spheroid of 18 cm. diameter.

The dielectric strength is a measure of the insulating capability of a medium, and is represented by a constant known as the dielectric strength of the material. The dielectric strength of air is stated from numerous sources to be approximately 3 million volts per meter.

This leads to an expected spark length from the generator being used of:

$$200,000 \text{ V} / (3\text{E}6 \text{ volts} / \text{meter}) = .067 \text{ meters} = 2.6 \text{ inches.}$$

Outdoor measurements with a clean sphere are producing spark lengths much greater than that which is expected, on the order of 10 -12 inches (.254meters).

This indicates that the breakdown voltage of the atmosphere (dielectric strength) of the atmosphere under testing has been reduced to approximately:

$$200,000 \text{ V} / .254 \text{ meters} = 787,400 \text{ volts} / \text{meter.}$$

This indicates a reduction in the dielectric strength of the atmosphere under testing by a factor of 3.8. If the manufacturer claims of maximum spark lengths of 5" is used, there remains a reduction factor of 2 in the dielectric strength of the atmosphere that is to be accounted for. This finding leads to the conclusion that the atmosphere is not acting as efficiently as an insulator, or conversely, the atmosphere is more electrically conductive than is expected.

One observable and expected consequence of a reduction in the dielectric strength of the atmosphere would be an increase in lightning frequency and intensity.

These findings are preliminary. Any corrections to this presentation are appreciated, and any revisions will be made as is appropriate.

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Note : July 16 2001

These tests were repeated on the night of Jul 16 2001 with the same results. Maximum spark length reached during this test ranged between 10 and 12 inches. Theoretical considerations continue to support and confirm an expected maximum spark length of approximately 3 inches. The results of this test continue to indicate that conductivity characteristics of the atmosphere have been altered.