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## Abstract View

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## A Simulation Model for Studying Possible Modification of Surface Temperature

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### ABSTRACT

A simulation model is presented which hopefully is consistent with known physical and statistical properties of atmospheric events, and consistent with criteria that might be applied in the management of actual experiments in the atmosphere. The process being simulated is the possible modification of daytime surface temperatures during the summer in central Missouri through the generation of contrail cirrus clouds. Monte Carlo techniques are used in the model to allow for the likelihood of failure of the experiment on any particular day, and to allow for variations in the degree of success on days when the experiment is considered to not be a failure.

The model is applied to an observed time series (1946-1965) of surface and upper air observations from Columbia, Mo. Estimates of the results are based on analysis of the relationship between temperatures on the cirrus and cirrus-free days. If it can be assumed that it is possible to create enough contrail cirrus to reduce the per cent of possible sunshine from 15-35%, it appears that it might be possible to reduce daily maximum temperatures by from 3-5F on about half of the days when soil moisture values are below "desirable" levels of when temperatures are expected to be above some "critical" level

This is a relatively inexpensive way to estimate the order of magnitude of the effect of weather modification, compared to the cost of conducting an actual experiment over a long period of time.

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