

The RAL Seminar Series



NCAR

Rainmakers, scientists and statisticians: The challenges in designing a weather modification experiment

by

Matthew Pocerlich

National Center for Atmospheric Research
RAL

*Wednesday, April 9, 2008
Foothills Lab Building 2, Room 1001
3:00 p.m.*

Modern efforts at modifying the weather began in 1946 with the discovery that pellets of dry ice and silver iodide could cause ice crystals in clouds to nucleate. Possibly the next day, controversies surrounding cloud seeding began. For the next several decades, significant resources were committed to determining if and when weather modification could be effective. In the mid-seventies, a veritable who's who in statistics weighed in on the topic. Their conclusion? (paraphrased) "We are not sure - more studies are needed." Move forward 25 years. Research funding dwindled. In 2003 a review was conducted by the National Research Council. Their conclusion - "no convincing scientific proof of the efficacy of intentional weather modification efforts." In spite of this, with water resources becoming increasingly limited, the weather modification business is growing. What is up with this?

The history of weather modification alone is fascinating. To keep things more focused, this talk will address the following topics: 1. A brief history of statistical efforts to support weather modification experiments; 2. Why is weather modification so important now; 3. Challenges in designing a statistical experiment in weather modification. These include the issues of experiment type, the use of control gages, issues of significance and power and estimating needed sample sizes; 4. An illustration of these concepts using data compile for the Wyoming Weather Modification Pilot Project. While the issues of the design of experiment are illustrated in a weather modification context - the statistical issues relate to many types of experimental design.