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*Computer Modeling VI: A Study Into Cloud Formation and the Effects on Particulate Scavenging*

Computer modeling is essential for the prediction and examination of complex systems such as environmental and atmospheric conditions. Over the past six years, I have developed a predictive atmospheric computer model to track particle dispersion.

The goal of this year's project was to create a program capable of modeling cloud formation, and showing the effects of water vapor on particulate dispersion in the atmosphere.

Each year in this project, I have focused on removing fixed values and adding atmospheric conditions in order to create a fully functioning, predictive model. This year I added the formation of clouds, water vapor, groundwater sources, and new temperature equations in order to finish the basic elements of a complete predictive model. I also added the effects that each of these elements, especially water vapor, has on the dispersion of pollution.

To visualize my numerical data, I produced both two and three dimensional graphs using MATLAB to generate graphs to model the various calculations and then the model as a whole when all parts had been added. These graphs were used to examine results for errors and inconsistencies and provided a more reasonable and accurate method for visualizing and isolating errors.

This year I created a teaching application with the IOS software which allows individuals to explore various atmospheric conditions and how they affect particulates. Finally, I simulated the depth, location and movement of clouds, the advection of water vapor, and the simulation of particulate dispersion with all aspects of the model working together.