Mark Z. Jacobson
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B.S. Civil Engineering, B.A. Economics, and M.S. Environmental Engineering (1988) Stanford University.
M.S. (1991) and Ph.D. (1994) Atmospheric Science, University of California at Los Angeles.

The main goal of Jacobson's research is to understand physical, chemical, and dynamical processes in the atmosphere better in order to address atmospheric problems, such as climate change and urban air pollution, with improved scientific insight and more accurate predictive tools. To accomplish this goal, he has developed numerical solvers to simulate gas, aerosol, cloud, radiative, and land/ocean-surface processes. He has also combined solvers into larger models. In 1994, he invented the interactively-coupled air-pollution-weather-prediction model for urban/regional-scales. In 2001, he invented the nested global-through-urban scale coupled air-pollution-weather-climate model. Both technologies are now becoming commonplace.

Some topics he has examined include the relative effects of greenhouse gases versus aerosols on global climate, the effects of aerosols on ultraviolet radiation, the effects of aerosol mixing state on atmospheric heating, the effects of black carbon and biomass burning on climate, the effect of hydrogen fuel cells on air pollution and the ozone layer, the effects of aerosols on winds and precipitation, the effects of ethanol and diesel vehicles on air quality, the effects of agriculture on air pollution, and the effects of carbon dioxide on health. His work also encompasses mapping and analysis of winds for wind energy.

To date, he has published two textbooks and over 70 peer-reviewed journal articles. Several hundred researchers have used computer models that he has developed. He recently received the 2005 American Meteorological Society Henry G. Houghton Award for "significant contributions to modeling aerosol chemistry and to understanding the role of soot and other carbon particles on climate."