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Obituary  
Glen R. Cass 1947–2001



Glen Cass and co-workers, 2001.

On July 30, 2001, Glen R. Cass passed away after a short, fierce, battle with cancer. At 54, Glen had recently assumed the role of chairman of the Department of Earth and Atmospheric Sciences at the Georgia Institute of Technology, having previously served 22 years as a professor of environmental engineering and mechanical engineering at the California Institute of Technology. At the time of his death, Glen's group was divided between both institutes, with research activities taking place in China and India as well.

Glen began his research career by taking on the challenge of both working to understand how to clean up the air in Los Angeles, and in assisting the responsible regulatory agencies to that end. Over time, his interests broadened, to traverse the entire field of atmospheric aerosol science, ranging from studies of mutagenic and asthma-inducing effects of aerosol, to aerosol instrument design and development, and to the impact of air pollution on Buddhist cave temples and other cultural artifacts. In parallel with these other efforts, his group conducted an exhaustive evaluation of

the physics and chemistry of pollution aerosol in the urban atmosphere. Glen and his research group also carried out a disproportionate number of the theoretical, laboratory and field studies that underlie our present knowledge of the chemical composition of primary and ambient pollutant aerosol.

Under Glen's highly engaged supervision, his group advanced the technique of organic aerosol source apportionment to a degree that permits quantification of the contributions to ambient pollution by specific sources. This method is presently being used to support the development of air quality management plans for some of the world's most polluted cities, including Beijing and New Delhi.

The atmospheric sciences community will remember Glen for his impressive intellectual contributions to the field. His students, staff and collaborators will also remember him for his vision, his bold and creative approach to his science, for the joy he took in imagining new ways of thinking about problems, and for his whole-hearted commitment to the

intellectual and personal well-being of those with whom he worked.

Since Glen's passing, much has been written about his specific scientific contributions. Therefore, the balance of this article will focus on Glen as he was as a colleague, teacher and mentor. What follows is a selection from the observations that were provided to the author by several of Glen's students, staff and other associates.

### **Glen's approach to research**

Cliff Davidson, Caltech classmate,

I have always been amazed at how quickly the hours went by when Glen and I started talking. His knowledge was so extensive, and his speech so clear, that I would be captivated by his thoughts. Many times I wished I had a tape recorder as the information was coming too fast for me to absorb. Furthermore, he would never stop the conversation even if he was tired and the hours were getting late—he truly enjoyed sharing his wisdom with others.

Ted Russell, early student,

One of Glen's most important lessons for his students was that they should understand air quality management problems as a whole and pursue research that would 'make a difference'.

William Nazaroff, early student,

[You taught us to] think big and bold in research. I'm still amazed at the intellectual courage and breadth that you have exhibited in the projects you pursue: visibility modeling, organic aerosol source characterization, modeling and control of a vast array of urban air pollution problems. Any one of these could have been enough to occupy a good career. It seems that you have had no sense of the possibility or consequences of failure. I'm mindful of this in my own research.

Philip Fine, current student,

What is often lost in discussions about [Glen's] dedication and drive is that he possessed a great long-term vision for his work. His lines of research would branch out and/or coalesce in imaginative ways. He was also very adept at anticipating changes in the field and positioning himself appropriately. He would often present me with an idea that at first I thought was far-fetched, only to have it turn out to be a successful innovation and very well received in the scientific community.

Darrell Winner, early student,

On the last evening before my thesis had to be submitted to meet the spring graduation deadline, we'd worked from after dinner, into the wee hours of the morning, on analyzing the results from my last chapter. Knowing how Glen loved to imagine and consider every possible plot of results, I'd come to the meeting armed with hundreds of graphs. Yet, at 4 AM, as I started my car in preparation to drive away, Glen chased me down, pen and paper in hand, and tapped on the car window. I rolled it down, to hear him say, 'I thought of another way we could look at the data...'

### **Glen, as a research leader, advisor and mentor**

Ted Russell,

What is most striking to me was his ability to continue to mentor, even elevate those around him, while still calling it how he saw it.

Phil Fine,

He treated me, and my ideas, with utmost respect. He inspired a high level of work by setting an example of dedication that I could only hope to approach. He never issued orders, deadlines or ultimatums and let me have as much freedom as I could handle. He was a great people manager who could shift his management style to fit his students and achieve the best results for everyone.

Kenneth McCue, staff member,

When I think of Glen Cass I think of the integrity and compassion with which he dealt with those with whom he had responsibilities. He had a genuine concern regarding how any project might be approached so that it would be in the best interests of the student or staff member. He was careful to give full credit to all collaborators and bent over backwards to make certain that students in particular received proper credit. He prided himself on the fact that his students did not have to make appointments to see him. He was simply always available, if not in person, then by phone or e-mail. Furthermore, once he took a student, that student was his. He never discarded a student no matter how poorly he or she was doing or how long it took him or her to finish. Most of his students, of course, did well and he was very successful at placing them in academic jobs. He made his students better.

Brooke Hemming, former Caltech post-doctoral scholar,

His enthusiasm for our common research interests was such a pleasure to experience, that I would concoct excuses just to talk with him. Although I was under the supervision of another member of the faculty, Glen was happy to take the time to hear my ideas, and never failed to encourage me to be creative in my thinking.

Mei Zheng, post-doctoral fellow,

The most touching moment for me was my last visit with Glen on July 22, in Durham, North Carolina, just about one week before he passed away. He was very sick and physically weak, yet mentally sharp. He had asked me to bring our project report for review, which I did. Upon seeing it, he said, 'I will read the pages that I have not yet reviewed, if we have time before you leave.' At Glen's insistence and although he needed an oxygen supply, two of his graduate students and I discussed our work with him for over 6 hours. At several points during the discussion, he was forced to stop and rest. By 4:30 PM, he was very tired. Although we were about to leave, I did not want raise the subject of the report. However, he looked at me and said 'Mei, could you give me your report?' We were surprised and deeply moved. He,

right then, read it very carefully and gave his final comments.

In summary, the scientific and technical advances accomplished by Glen Cass and his research group have made a significant impact upon the field of atmospheric and aerosol sciences. More importantly, Glen made contributions to those fields by transmitting his enthusiasm for atmospheric and aerosol science to his students, collaborators and other colleagues. Thus, his greatest contribution may well be found in the generation of researchers he trained or otherwise influenced. May Glen's joy in the practice of science, his high research standards, his sense of responsibility to his students, his creative approach to problems, and his long-term vision as part of the conduct of scientific work be propagated forward.

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