Georgia Tech

Research News

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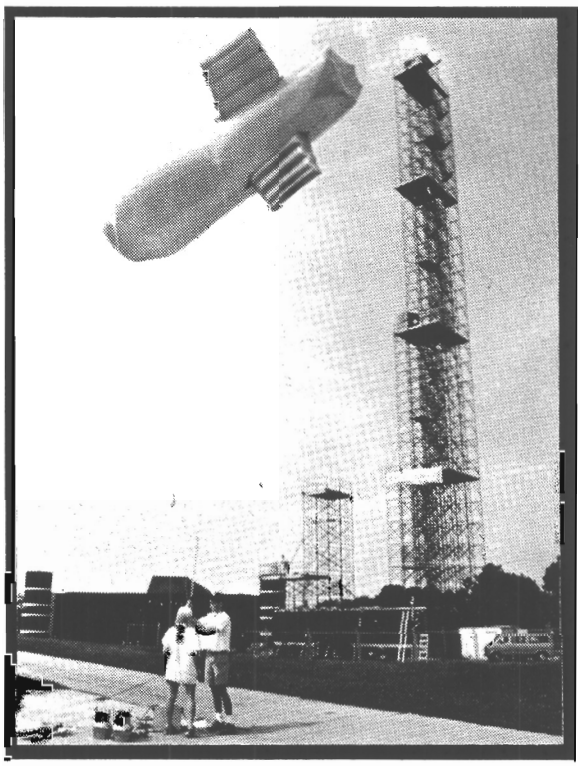
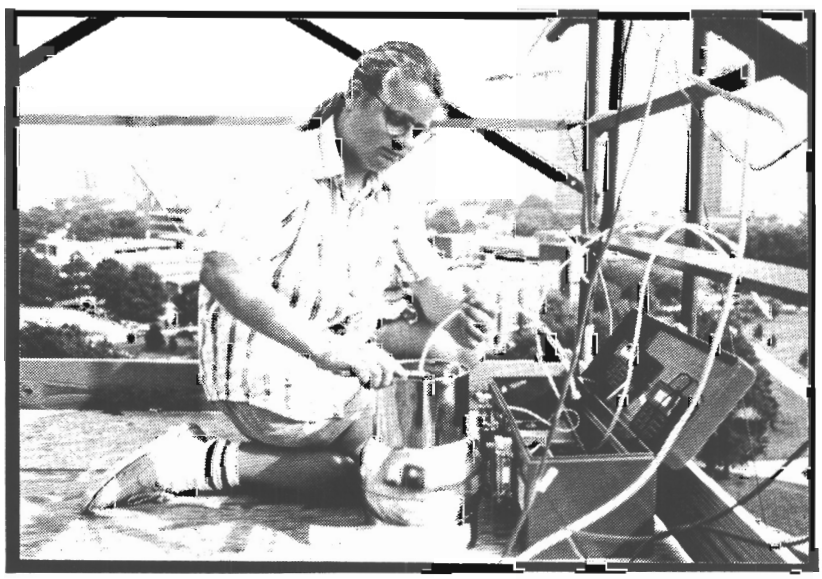
Dear Writers/Editors:



Despite an unusually cool and rainy August, atmospheric scientists working in Atlanta this summer obtained a "tremendous" set of data which they expect will provide a better understanding of the complex processes which lead to the formation and accumulation of ozone pollution in major cities.

Researchers from the University of Michigan, North Carolina State University, the University of Miami, the National Oceanic and Atmospheric Administration, the Tennessee Valley Authority, the Georgia Institute of Technology, the U.S. Environmental Protection Agency and several other organizations participated in the Atlanta study, which is part of the regional Southern Oxidants Study.



The accompanying photographs, available in color slides or black-and-white prints, show (1) the launch of a tethered balloon used to gather air samples above the ground, and (2) air samples being taken from the 200-foot tower built on the Georgia Tech campus. A news release describing the study is enclosed. If you need more information, or if you would like copies of these photos, please call John Toon or Lea McLees at (404) 894-3444.

SOUTHERN OXIDANTS STUDY

NEWS RELEASE

September 30, 1992

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COOL SUMMER: GOOD FOR ATLANTA RESIDENTS, BUT PRESENTS A CHALLENGE FOR SOUTHERN OXIDANTS STUDY SCIENTISTS

ATLANTA, GA -- Atlanta's cool and rainy August weather may have been good news for the metropolitan area's residents, but it was a challenge for the more than 200 scientists and technicians who had gathered to study urban ozone in the area.

Ground-level ozone pollution in Atlanta often reaches a peak during the hot and sunny days of August, thanks to the photochemical processes which form the pollutant and the stagnant air which often slows its dispersal. But August of 1992 was the coolest in more than a decade, which kept ozone levels lower than normal.

"By and large, the weather was not favorable for us, but we were able to directly observe the accumulation of high ozone concentrations during several episodes in Atlanta," said Dr. Michael Rodgers, a Mission Scientist for the Southern Oxidants Study, a multi-year regional research effort which conducted a large-scale analysis of ground-level ozone in Atlanta this summer.

More than 200 scientists and technicians participated in the intensive Atlanta study, taking measurements from 22 ground-based sites scattered over a 100-mile radius around the metropolitan area -- including a 200-foot tower built on the campus of the Georgia Institute of Technology and a 130-foot tower in the Fernbank Science Center's urban forest.

Scientists also used a helicopter provided by the Tennessee Valley Authority, ground-based sampling equipment, tethered balloons, free-release balloons, weather radar and two laser radar (LIDAR) systems to gather data about the atmosphere, generating a detailed view of conditions over the Atlanta metropolitan area.

"We have a tremendous database on how winds move over an urban area and how that may play a role in the formation of ozone," said Dr. Perry Samson, a University of Michigan scientist who headed the meteorological portion of the study. "We have the potential to understand a lot more about the interaction of winds and mixing in ozone production."

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He said the Fernbank Science Center offers a unique opportunity to study the exchange of heat and momentum from a forest area surrounded by Atlanta's urban development. Samson and his University of Michigan colleagues worked with scientists from Fernbank, the National Oceanic and Atmospheric Administration (NOAA) and North Carolina State University to obtain the meteorology data.

Under the supervision of University of Miami scientist Dr. Rod Zika, more than 4,000 hydrocarbon air samples were taken during the seven-week Atlanta Intensive Study. Those samples, along with other sampling and continuous monitoring efforts, made the Atlanta Intensive one of the largest ozone research projects ever done in the Southeast.

Dr. William Chameides, Director of Georgia Tech's School of Earth and Atmospheric Sciences and a Program Scientist for the Atlanta study, said a full analysis of the data gathered during the Atlanta study will bring atmospheric scientists closer to understanding the complex processes of ozone formation and accumulation.

"This understanding should provide information which will be used by regulators as they develop ozone control strategies in our nation's cities," Chameides added.

Information from the Atlanta analysis will be used in the development of future large-scale ozone studies planned for other Southeast locations, said Dr. C. S. Kiang, director of the Southern Oxidants Study and an Institute Professor at Georgia Tech. Those projects will more closely examine the relationship between atmospheric chemistry in rural and metropolitan areas.

Kiang also noted that based on a previous day's meteorological and ozone data, Southern Oxidants Study scientists were able to forecast several days of high levels of ozone formation and accumulation. He suggested that these efforts could provide some of the basic foundation for future atmospheric chemical forecasting.

He said the intensive study conducted in Atlanta this summer showed that large-scale cooperative efforts between university, private sector and public organizations could produce good results. "This study was too large for any of the participants to take on individually," Kiang explained. "But through a lot of cooperative linkages, the study was done effectively."

With the data collection phase of the work completed, participating scientists must now analyze their data and develop a final report.

Ozone forms in the atmosphere when nitrogen oxides and hydrocarbons react in the presence of sunlight. Ground-level ozone should not be confused with high-altitude stratospheric ozone, which protects life from the harmful effects of the sun's ultraviolet rays.

The Southern Oxidants Study, a strategic alliance composed of university, federal, state and industry representatives, has a mission to study the formation of ozone in the South and to evaluate alternative strategies for its reduction. Funding for the Study, which began in 1990, includes contributions from federal and state agencies, the electric utility and automotive industries, and universities.

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