



## ANNOUNCEMENTS

**Regional Surface-Level Ozone Assessment Completed:** A synthesis report assessing the state of understanding regarding regional ozone pollution was completed in fall 2000. The report, *An Assessment of Tropospheric Ozone Pollution: A North American Perspective*, is the first comprehensive report to address the status of ozone reduction efforts since a 1991 report of the National Research Council. Scientists from Canada, Mexico, and the United States (including Dan Albritton) authored the assessment under the auspices of NARSTO, which is a tri-national partnership of government, utilities, industry, and academia that coordinates and enhances policy-relevant scientific research and assessment of tropospheric pollution behavior in North America. A small number of copies are available through the AL Director's Office, and the report is also available on the web ([www.cgenv.com/Narsto/assess.doc.html](http://www.cgenv.com/Narsto/assess.doc.html)) or at 800-313-3774.



**AL Website News:** This fall, the Aeronomy Lab website added several new data and information

resources. An archive of the data from the Trans-Pacific Profiler Network (TPPN) is now available, adding to the "real-time" data access that has been provided since April of 1997. A full list of the Aeronomy Lab's publications since 1993 is now accessible. A new page describes the Intercontinental Transport and Chemical Transformation (ITCT) research activity (see next page of this newsletter) and links to the Office of Global Program's Atmospheric Chemistry Project grants site. Lastly, comprehensive information regarding the Texas Air Quality Study-2000 is posted. All are accessible from the main page, [www.al.noaa.gov](http://www.al.noaa.gov).



**New Seminar Coordinator:** Greg Frost is the new seminar coordinator for the Aeronomy Laboratory, commencing with the fall 2000 lineup. He takes over for Wayne Angevine, who has served in this post over the last two years. Debe Fisher recently took over from Babs Herrli in assisting with the seminar notices, and she will continue in that role. A big "THANK YOU" to Wayne and Babs, and thanks—in advance—to Greg and Debe for their help with this important job during the next two years.



**A.R. Ravishankara (Ravi)** has been elected to the rank of Fellow of the American Association for the Advancement of Science. He received the honor "for fundamental studies of the gas-phase and surface chemistry that control ozone and its depletion and for quantification of reaction rates of gases relevant to climate." Ravi will receive a certificate and rosette at the AAAS Annual Meeting in San Francisco this February. He was the only NOAA scientist to be elected as a AAAS Fellow this year.

**Ken Gage, Warner Ecklund, and Tony Riddle** (retired from AL) were coauthors of a paper that has received the fifteenth "Professor Dr. Vilho Vaisala Award" (2000). The award honors outstanding papers in the field of instruments and methods of observation in support of the World Meteorological Organization's programs. The winning paper, which included coauthors from NOAA's Environmental Technology Laboratory and Air Resources Laboratory, was entitled "Ground-based Remote Sensor Observations during PROBE in the



Tropical Western Pacific," E.R. Westwater, Y. Han, J.B. Snider, J.H. Churnside, J.A. Shaw, M.J. Falls, C.N. Long, T.P. Ackerman, K.S. Gage, W. Ecklund, and A. Riddle, *Bulletin of the American Meteorological Society*, volume 80, February 1999.

**Susan Solomon** presented the 3<sup>rd</sup> Walter Orr Roberts Distinguished Lecture on December 4. An audience of about 500 members of the Boulder community heard Susan speak on "Adventures in Cold Places: From Ozone Depletion to Robert Falcon Scott"... Susan has been selected as 2000-2001 Honoree of the Year for the Denver Chapter of Achievement Rewards for College Scientists Foundation, Inc. (ARCS). The ARCS Foundation provides scholarships to academically outstanding U.S. students who are in need of financial assistance to complete their higher education. Past honorees have included Denver-area scientists from academia and industry... Susan has received an honorary doctoral degree from the Illinois Institute of Technology, her undergraduate alma mater.



## ITCT Research: On the Trail of a New Breed of "Chemical Globetrotters"

Longer-lived gases, such as carbon dioxide and chlorofluorocarbons, have long been recognized to have a global influence on the atmosphere and climate. An emerging realization is that pollutants that have shorter lifetimes can, too, have intercontinental and global consequences. Research of the Intercontinental Transport and Chemical Transformation (ITCT) is focusing on this aspect of the "global" nature of Earth's atmosphere. ITCT is a newly initiated activity of the International Global Atmospheric Chemistry (IGAC) project of the International Geosphere-Biosphere Programme (IGBP).

Initial investigations of ITCT will focus on the Northern Hemisphere, which contains most of the world's population and where most anthropogenic pollution originates. The emphasis will be on ozone, fine particles, and other chemically active "greenhouse" compounds that can have intercontinental influences on atmospheric chemistry and climate.

The inaugural fieldwork of ITCT gets underway in January and February of 2001, when AL and NOAA/OAR's Environmental Technology Laboratory (ETL) team up to study ozone and carbon monoxide in the mid-to-eastern Pacific region off the coast of the western U.S. Researchers will deliver a "one-two punch" by using the NOAA Gulfstream IV SP aircraft (flying from Hawaii in the Winter Storm Reconnaissance mission), as well as the NOAA WP-3D Orion (flying from California in the Pacific Landfalling Jets Experiment, PACJET). AL scientists are testing inlet designs and instrument modifications that would enable the Tropospheric Chemistry group's chemical instrumentation to fly on the G-IV.

ITCT research will involve a full complement of intensive field missions, monitoring, modeling, and assessment over the coming years. More details can be found on the web ([www.al.noaa.gov/WWHWD/pubdocs/ITCT/](http://www.al.noaa.gov/WWHWD/pubdocs/ITCT/) and [www.etl.noaa.gov/programs/pacjet/](http://www.etl.noaa.gov/programs/pacjet/)).



### WHAT'S UP WITH PEOPLE

Three people have recently joined the Chemistry and Climate Processes group. **Bernie Sierk**, from Eidgenössische Technische Hochschule Zurich, has taken a joint CIRES position with AL and the Environmental Technology Laboratory; he will be looking at various methods of measuring water vapor in the atmosphere. **Megan Melamed** has returned to the group as a CU graduate student. She has previously worked with the group as a summer undergraduate, and now is analyzing NO<sub>2</sub> observations taken in Houston last summer. **Barb Keppler** is the new secretary for the Chemistry and Climate Processes group as well as the Theoretical Aeronomy group. She was formerly the secretary for the Forecast Research Division of the NOAA Forecast Systems Laboratory... **Tomasz Gierczak**, of the University of Warsaw in Poland, visited the Atmospheric Chemical Kinetics group for three months this summer to carry out joint research projects. **Sandra Laursen** and **Gary Knight** have recently left the group. Sandra is teaching environmental science at CU-Boulder and is also pursuing interests in science writing. Gary is doing computing work in the private sector in England... **Dan Hereid** has left the Tropospheric Chemistry group to take a position in the private sector in Boulder. **Tom Jobson** will be leaving the group in January to work at the Pacific Northwest National Laboratory in Richland, WA, where he will continue his research in tropospheric chemistry... In September, **Hans Schipper** began working with the Theoretical Aeronomy group for six months as his "practical period" in completion of his degree from Wageningen University in The Netherlands. He is analyzing data from the 1999 Nashville and 2000 Texas air quality studies... **Eric Ray** joined the

Meteorological Chemistry group in September to work on analysis of data from the group's field missions. He was formerly with the Climate Monitoring and Diagnostics Laboratory... We wish everyone the best in their new endeavors, whether here or elsewhere!

### COMMUNICATING OUR SCIENCE



**To Decisionmakers:** Dan Albritton attended the first meeting of the core writing team for the Synthesis Report of the Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report, held in Amsterdam November 12-17. The Synthesis Report will synthesize and integrate material from all three Working Group Reports (science, impacts, and mitigation) into one common story... On November 9, Jim Meagher discussed the scientific findings from the 1994, 1995, and 1999 Southern Oxidants Study Nashville air quality field campaigns at a meeting with air quality managers, scientists, environmentalists, and other stakeholders in Tennessee... Dan Albritton attended a drafting meeting for the Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report, held in October in New York, NY. He is a lead author of the Summary for Policymakers and the Technical Summary of the report... Dan Albritton, Chris Ennis, Jim Burkholder, John Daniel, and Ravi reviewed input materials and assisted with the preparation of a draft report for the Parties of the Montreal Protocol regarding the possible ozone-layer effects of hexachlorobutadiene, a fully chlorinated compound that is used as a solvent and in other applications.

**To the Scientific Community:** Venues included:

- *Scientific Conferences and Symposia:* Several AL scientists presented talks and posters at the Fall Meeting of the American Geophysical Union, held December 15-19 in San Francisco. Jim Meagher and

Seven Aeronomy Laboratory staff members were among the 23 individuals honored at the David Skaggs Research Center for service with NOAA throughout all of NOAA's 30-year history. They are: **Dan Albritton; Wally Clark; Fred Fehsenfeld; Paul Goldan; Walt Harrop; Tom Thompson; and Dick Winkler.** All seven have spent the entirety of their 30 NOAA years with the Aeronomy Lab.

Fred Fehsenfeld were co-conveners of one of three special sessions on the 1999 Nashville/Atlanta air quality studies... Ann Middlebrook presented a paper at the 7<sup>th</sup> International Conference on Carbonaceous Particles in the Atmosphere, which was held November 26-29 in San Juan, Puerto Rico... Jerry Weinstock presented a poster on turbulence theory at the American Physical Society meeting in Washington, DC, in November... In November, Christopher Williams presented a paper on the development of an underwater rain gauge at the 10<sup>th</sup> International Symposium on Acoustic Remote Sensing & Associated Techniques of the Atmosphere and Oceans (ISARS 2000) in Auckland, NZ... Ken Gage, Paul Johnston, Christopher Williams, and Wayne Angevine presented papers on wind profiler techniques and observations at the Fifth International Symposium on Tropospheric Profiling: Needs and Technologies, which was held December 4-8 in Adelaide, Australia... Several AL scientists gave presentations at the annual meeting of the American Association for Aerosol Research, held November 6-10 in St. Louis... Ravi, George Reid, and Karen Rosenlof gave presentations at the Stratospheric Processes and their Role in Climate (SPARC) Second General Assembly (SPARC 2000), which took place November 6-16 in Mar del Plata and Buenos Aires, Argentina... Fred Fehsenfeld gave the plenary lecture, "Results from Aircraft Studies of Regional Pollution," at the 7th International Conference on Atmospheric Sciences and Applications to Air Quality and also attended the Workshop on Air Quality Modeling Challenges, held October 31-November 3 in Taipei, Taiwan. Fred also served on the international program committee of the Conference... Jim Meagher served on the Scientific Steering Committee and attended the NARSTO 2000 technical symposium on aerosol science, "Tropospheric Aerosols: Science and Decisions in an International Community," held October 23-26 in Querétaro, Mexico. Ann Middlebrook presented a paper at the meeting... Harald Stark presented a poster at the International Discussion Meeting "Competitive Processes in Vibrationally Highly Excited Molecules" held in Göttingen, Germany, in October... George Reid attended the September meeting of the NASA Solar Radiation and Climate Experiment (SORCE), held in Snowmass... Dan Albritton and Susan Solomon were invited speakers at the September 11 and September 12 symposia marking the retirement of Jerry Mahlman as Director of the NOAA Geophysical Fluid Dynamics Laboratory... In August, Daniel Cziczo presented a poster on observations of meteoritic material in atmospheric aerosols at the 63<sup>rd</sup> Annual Meeting of the Meteoritical Society.

• *Research Workshops:* Ken Gage was on the planning committee and an invited lecturer at the Workshop on Physics of Mesosphere-Stratosphere-Troposphere Interactions with Special Emphasis on MST Radar Techniques, held November 13-19 in Trieste, Italy... In October, Ken Gage and Christopher Williams attended a Science Team Meeting of the Tropical Rainfall Measuring Mission (TRMM) in Maryland... George Kiladis and Katherine Straub presented papers at the Climate Diagnostics Prediction Workshop held October 23-27 at Lamont Doherty Center in Palisades, NY... In October, Adrian Tuck gave a presentation at the 2nd Annual Symposium of the Uninhabited Aerial Vehicle (UAV) Technical Analysis and Applications Center in Las Cruces, NM... Several scientists in the Meteorological Chemistry group attended the SOLVE\*THESEO 2000 Science Team Meeting (SAGE III Ozone Loss and Validation Experiment\*Third European Stratospheric Experiment on Ozone 2000) held in September in Palermo, Italy... Ravi attended a meeting of the NASA Panel for Data Evaluation in September... Ken Gage and George Kiladis attended the U.S. Climate Variability and Predictability (CLIVAR) program's PanAmerican Meeting in Maryland in September. George gave a talk on intraseasonal convection in the eastern tropical Pacific... On September 18-19, Fred Fehsenfeld was in Baltimore to attend a NARSTO planning workshop related to the preparation of the first assessment on particulate matter. Fred will be a chapter lead author.

• *Invited Lectures and Seminars:* Ravi gave a seminar at the University of Toronto/Canadian Middle Atmospheric Modeling Program in December, on the concepts regarding atmospheric lifetime... In November, Dan Cziczo gave a seminar at the University of Illinois on meteoritic material in stratospheric aerosols... Ken Gage gave a series of lectures, aimed at an audience of scientists from developing countries, at the International Centre for Theoretical Physics in Trieste, Italy, in November. The ICTP is part of the United Nations and serves as a bridge between scientists in developing nations and the industrialized world... Ru-shan Gao presented a seminar at NCAR on November 17 on the topic of denitrification in the winter Arctic stratosphere... On November 2, David Fahey gave a seminar at the Chemistry Department of the University of Denver on the topic of atmospheric measurements of nitric acid... On October 30, Susan Solomon gave an invited seminar at the University of Wisconsin in Madison on Antarctic ozone depletion and Robert Falcon Scott's expedition to the South Pole... Adrian Tuck gave a talk on October 20 at CU on atmospheric aerosols and the origin of life.

### Demystifying Contrails

A new interagency "Aircraft Contrails Fact Sheet" has just become available on the web and in printed form. The Environmental Protection Agency, NOAA, NASA, and the Federal Aviation Administration teamed up to develop a concise, user-friendly description that addresses many of the common questions and misconceptions that exist on the topic. David Fahey was a principal author and reviewer of the document, which can be viewed on the web ([www.epa.gov/otaq/aviation.htm](http://www.epa.gov/otaq/aviation.htm)).

**To Media:** Susan Solomon was interviewed by Boulder radio station KWAB on December 4<sup>th</sup> in advance of her talk that evening as the 3<sup>rd</sup> Walter Orr Roberts Distinguished Lecturer... Boulder radio station KGNU interviewed Adrian Tuck, Dan Murphy, Veronica Vaida, and Barney Ellison in October regarding research on atmospheric aerosols and the origin of life. The station, which broadcasts to a wide audience along Colorado's Front Range, later aired two extensive segments on the topic... Newspapers in Texas carried articles about the Texas Air Quality Study-2000 (TexAQS-2000) campaign that occurred in August-September in the Houston area.

**To Industry:** On November 28, David Fahey gave an invited presentation in Washington, DC, on aviation and climate change to transportation professionals of the Eno Transportation Foundation, a private non-profit group dedicated to improvements in transportation. On the following day, David was a featured speaker at the Climate Change Lecture Series of the U.S. Department of Transportation's Center for Climate Change and Environmental Forecasting... Jim Meagher participated in the first constituents workshop on air quality forecasting needs and priorities, held October 16 in Washington, DC... On October 3, Ken Gage attended a meeting regarding the wind profiler Cooperative Research and Development Agreement (CRADA) with Radian Corp.

**To Students and Teachers:** On December 12, Dan Albritton gave a talk at a University of Denver intensive short course on Global Warming and the American Economy. Dan described how experiences with the science/policy interface of the ozone-layer issue may relate to the topic of climate change... On December 8, Dan Albritton gave a talk to over 30 undergraduate and graduate students at the University of Colorado in former Rep. David Skaggs' class on Environment and Public Policy... On September 27, Susan Solomon participated in the National Science Foundation's "Scientists and Engineers in the Schools Week" by visiting with students from Casey Middle School. She described ozone-hole research in Antarctica. Susan also gave a lecture to a group of science teachers at the Colorado Science Convention held in Denver on September 29... Christopher Williams, Stu McKeen, Sandra Laursen, Ru-shan Gao, Ravi, and Chris Ennis developed six exhibits for the NOAA-Boulder Science Festival held on September 15-16. About 2000 students and 1000 members of the general public attended the Festival. Also helping from the Aeronomy Lab were Debe Fisher, Carl Howard, Jim Burkholder, Ed Dunlea, Linda Koch, Dave McCabe, Karl Floyd, Steve Brown, Joachim Curtius, Glenn Morrison, Gary Knight, Ranajit Talukdar, Harald Stark, John Holecek, Megan Northway, Alice Delia, and Jeanne Waters... Sandra Laursen presented a workshop to high school and college science teachers at the Biennial Conference on Chemical Education in Ann Arbor July 30-August 3.

**To Our Visitors:** Dan Albritton and Ravi hosted NOAA visitors Scott Gudes (NOAA's Deputy Undersecretary for Oceans and Atmosphere), Mary Anne Whitcomb (NOAA/OAR Budget and External Affairs

Division Chief), and Eric Locklear (NOAA Senior Budget Analyst) and Congressional staffers Luke Nachbar (Senate Appropriations Committee) and Doug Young (policy adviser, U.S. Rep. Mark Udall) on December 18-19... David Rogers, Associate Director of OAR's Atmospheric Research, and Pai-Yei Whung, of OAR's Office of Weather and Air Quality Research, visited OAR Labs in Boulder on November 28. They met with several AL scientists and visited AL labs associated with air quality research... John Gaynor, also of OAR's Office of Weather and Air Quality Research, visited with Jim Meagher, Fred Fehsenfeld, and Bill Neff (ETL) on November 13 to discuss air quality research planning... Ken Gage participated in a meeting with Sea Grant and Headquarters outreach personnel, held in Boulder on September 26-28. Representatives from Boulder-NOAA Labs explored opportunities for collaboration with Sea Grant on outreach and research endeavors.

**Through Service on Scientific Panels and Boards:**

Susan Solomon is a member of the NOAA Science Advisory Board's Subcommittee on Climate Monitoring, a group that formed in fall of 2000 to identify research needs for long-term climate monitoring... Dan Albritton is serving on the NOAA Climate Council and also the NOAA Climate Services 10-year planning committee. The groups are helping to define NOAA's climate-related research and operational information objectives for the coming decade... David Fahey has been reappointed to a second two-year term as Associate Editor of the *Journal of Geophysical Research-Atmospheres*... Dan Albritton is a member of a group that is drafting the long-term plan of the U.S. Global Change Research Program. He cochairs the Atmospheric Composition and Processes working group... Carl Howard served on the National Research Council's Committee to Review EPA's Mobile Source Emissions Factor Model, which is used by state and local officials to define approaches to air quality improvement. The resulting NRC report, issued in 2000, made recommendations for improving the scientific applicability and evaluation of the model... In December, Joanne Mordhorst attended NOAA's Diversity Network Conference 2000 and Equal Employment Opportunity representatives' meeting.

## DOWN THE ROAD



*January 24-25:* IGAC/ITCT Council Meeting, Bangkok (see related story on page 2).

*March 19-22:* Workshop on Nitrogen Oxides in the Lower Stratosphere and Upper Troposphere, Heidelberg, Germany.

*On the Air!* is a quarterly publication of the NOAA Aeronomy Laboratory. It is posted on the World Wide Web at [www.al.noaa.gov](http://www.al.noaa.gov). Please send comments, suggestions, or questions to: Chris Ennis (phone 303-497-7538; email [Christine.A.Ennis@noaa.gov](mailto:Christine.A.Ennis@noaa.gov)).



