

Appendix C: Contributions of the Aeronomy Laboratory Staff to State-of-Understanding Scientific Assessments

Staff members of the Aeronomy Laboratory have helped to take stock of the scientific understanding of global and regional phenomena. Their contributions have included serving as assessment cochair, steering committees, lead authors, coauthors, contributors of scientific information, reviewers, technical editor, and panel review staff. Their roles and names (in bold) are identified below.

1993 – 1998

Scientific Assessment of Ozone Depletion: 1994. World Meteorological Organization, Global Ozone Research and Monitoring Project - Report No. 37, Geneva, 578 pp., 1995. Cochairs of the Montreal Protocol Ozone Scientific Assessment Panel: **D.L. Albritton**, P.J. Aucamp, and R.T. Watson.

This report was the fourth in the series of international assessments of the state of the science of stratospheric ozone depletion for governments, industry, and the public.

- o *Common Questions About Ozone*, a first-of-a-kind set of questions and answers based on the assessment and written for the general public). **S. Solomon** and F.S. Rowland.
- o Chapter 3. *Polar Ozone*. **D.W. Fahey**, G. Braathen, D. Cariolle, Y. Kondo, W.A. Matthews, M.J. Molina, J.A. Pyle, R.B. Rood, J.M. Russell III, U. Schmidt, D.W. Toohey, J.W. Waters, C.R. Webster, and S.C. Wofsy.
- o Chapter 4. *Tropical and Midlatitude Ozone*. R.L. Jones, L. Avallone, L. Froidevaux, S.Godin, L. Gray, S. Kinne, M.E. McIntyre, P.A. Newman, R.A. Plumb, J.A. Pyle, J.M. Russell III, M. Tolbert, R. Toumi, **A.F. Tuck**, and P. Wennberg.
- o Chapter 5. *Tropospheric Ozone*. A. Volz-Thomas, B.A. Ridley, M.O. Andreae, W.L. Chameides, R.G. Derwent, I.E. Galbally, J. Lelieveld, S.A. Penkett, M.O. Rodgers, **M. Trainer**, G. Vaughan, and X.J. Zhou.
- o Chapter 8. *Radiative Forcing and Temperature Trends*. K.P. Shine, K. Labitzke, V. Ramaswamy, P.C. Simon, **S. Solomon**, and W.C. Wang.
- o Chapter 12. *Atmospheric Degradation of Halocarbon Substitutes*. R.A. Cox, R. Atkinson, G.K. Moortgat, **A.R. Ravishankara**, and H.W. Sidebottom.
- o Chapter 13. *Ozone Depletion Potentials, Global Warming Potentials, and Future Chlorine/Bromine Loading*. **S. Solomon**, D.J. Wuebbles, I.S.A. Isaksen, J.T. Kiehl, M. Lal, P.C. Simon, and N.-D. Sze.

Aeronomy Laboratory staff also served as Technical Editor (**C. Ennis**), key workshop support staffer (**J. Waters**), contributors of scientific information, mail reviewers, and panel reviewers.

ASSESSMENTS

Climate Change 1994: Radiative Forcing of Climate Change and an Evaluation of the IPCC IS92 Emission Scenarios. Intergovernmental Panel on Climate Change, Cambridge University Press, 339 pp., 1995. Editors: J.T. Houghton, L.G. Meira Filho, J. Bruce, H. Lee, B.A. Callander, E. Haites, N. Harris, and K. Maskell.

This report provided an update on the scientific understanding of atmospheric trace gases and their effect on the radiation balance: the carbon cycle, chemically active trace gases, aerosols, radiative forcing, and radiative forcing indices.

- o Chapter 4. *Radiative Forcing.* K.P. Shine, Y. Fouquart, V. Ramaswamy, **S. Solomon**, and J. Srinivasan.
- o Chapter 5. *Trace Gas Radiative Forcing Indices.* **D.L. Albritton**, R.G. Derwent, I.S.A. Isaksen, M. Lal, and D.J. Wuebbles.

The Aeronomy Laboratory staff also were contributors of scientific information and served as reviewers.

Climate Change 1995: The Science of Climate Change, Intergovernmental Panel on Climate Change, Cambridge University Press, 572 pp., 1996. Editors: J.T. Houghton, L.G. Meira Filho, B.A. Callander, N. Harris, A. Kattenberg, and K. Maskell.

This comprehensive assessment report provided an updated state-of-the-understanding of the climate system to governments, industry, and the public. Its topics included the radiative forcing of climate, observed climate variability and change, modeling climate processes, changes in sea level, detection and attribution of climate changes, and terrestrial and marine biotic responses to climate change.

- o Chapter 2. *Radiative Forcing of Climate Change.* **D. Albritton**, P. Jonas, M. Prather, D. Schimel, K. Shine, D. Alves, R. Charlson, R. Derwent, D. Ehhalt, I. Enting, Y. Fouquart, P. Fraser, M. Heimann, I. Isaksen, F. Joos, M. Lal, V. Ramaswamy, D. Raynaud, H. Rodhe, S. Sadasivan, E. Sanhueza, **S. Solomon**, J. Srinivasan, T. Wigley, D. Wuebbles, and X. Zhou.

An Aeronomy Laboratory researcher served as a reviewer.

Interagency Assessment of Oxygenated Fuels. National Science and Technology Council, Committee on Environment and Natural Resources, 160 pp., June 1997.

This report assessed the understanding of the issues associated with oxygenated automotive fuels. The chapters covered the following topics: air quality effects, fuel oxygenates and water quality, fuel economy and engine performance issues, and potential health effects. The assessment served as scientific input for the evaluation of the costs and benefits of the U.S. wintertime oxyfuel program.

- o Steering Committee: Chairs - R.T. Watson and R.M. Bierbaum (Office of Science and Technology Policy). Members: **D.L. Albritton (National Oceanic and Atmospheric Administration)**, J.F. Canny (Department of Transportation), S.N. Fidler (Council on Environmental Quality), L.R. Goldman (Environmental Protection Agency), R. Hirsch (Department of Interior), E. Holstein (National Economic Council), R.J. Jackson (Health and Human Services), J.W. McClelland (Department of Agriculture), B. McNutt (Department of Energy), M.D. Nichols (Environmental Protection Agency), K. Olden (Health and Human Services), and R. Prince (Council of Economic Advisors).
- o Chapter 1. *Air Quality Effects of the Winter Oxyfuel Program.* **C.J. Howard**, A. Russell, R. Atkinson, and J. Calvert.

Forthcoming Assessments

Scientific Assessment of Ozone Depletion: 1998, World Meteorological Organization, Global Ozone Research and Monitoring Project - Report No. 44, Geneva, 1999. Cochairs of the Montreal Protocol Ozone Scientific Assessment Panel: **D.L. Albritton**, P.J. Aucamp, G. Mégie, and R.T. Watson. In press.

This report provides an updated state of the understanding of the science of stratospheric ozone depletion to governments, industry, and the public. Its chapters cover changes in ozone-depleting gases, ozone itself, and stratospheric temperature; the understanding of the atmospheric processes involved; the impacts of ozone changes on climate and ultraviolet radiation; and the prediction of future changes.

- o Chapter 7. *Lower Stratospheric Processes.* **A. Ravishankara**, T.G. Shepard, M. Chipperfield, P.H. Haynes, R. Kawa, T. Peter, R.A. Plumb, **R. Portmann**, W.J. Randel, D.W. Waugh, and D. Worsnop.
- o Chapter 10. *Climate Effects of Ozone and Halocarbon Changes.* **C. Granier**, K.P. Shine, **J. Daniel**, J. Hansen, S. Lal, and F. Stordal.
- o Chapter 11. *Scenarios for the Future Ozone Layer and Related Consequences.* S. Madronich, G. Velders, **J. Daniel**, M. Lal, A. McCulloch, and H. Slaper.

Aeronomy Laboratory staff also served as Technical Editor (**C. Ennis**), key workshop support staff (**J. Waters** and **C. Burgdorf**), contributors of scientific information, mail reviewers, and panel reviewers.

ASSESSMENTS

Aviation and the Global Atmosphere: 1999. Intergovernmental Panel on Climate Change, Montreal Protocol Ozone Scientific Assessment Panel, and International Civil Aviation Organization. Cambridge University Press, 1999. Cochairs: D. Lister and J. Penner. In review.

This assessment will be a state-of-understanding report on the atmospheric role of aviation. It will be a first of a kind report for three reasons: (i) the first devoted to the atmospheric science and technology associated with aviation; (ii) the first devoted to ozone depletion and climate change associated with the aviation issue; and (iii) the first to be jointly sponsored by three relevant United Nations organization (listed above).

The chapter topics include aviation impacts on ozone, other atmospheric gases, aerosols, and cloudiness; modeling aviation impacts; perturbations of surface solar ultraviolet; potential climate change from aviation; aircraft technology and relation to emissions; and air transport and relation to emission; aviation emission inventories and growth scenarios; and institutional, regulatory, and economic frameworks.

- o Steering Committee: **D.L. Albritton**, J. Crayston, J. Houghton, N. Sundararaman, M. Sarma, R.T. Watson, and H. Wesoky.
- o Chapter 3. *Aviation-Produced Aerosols and Cloudiness.* **D.W. Fahey**, U. Schumann, S. Ackerman, P. Artaxo, O. Boucher, M.Y. Danilin, B. Kärcher, P. Minnis, T. Nakajima, and O.B. Toon.

The Aeronomy Laboratory staff also were contributors of scientific information and served as reviewers.

Tropospheric Ozone Pollution: A State-of-Science Assessment With a North American Perspective: 1999. North American Research Strategy for Tropospheric Ozone and Aerosols (NARSTO). Cochairs: W.L. Chameides and K.L. Demerjian. In final preparation.

This assessment will be an updated statement of the understanding of tropospheric ozone pollution. It is being sponsored by NARSTO, which is an international (United States, Canada, and Mexico) research-coordinating organization with members from governments (Federal, Provincial, and States), industry, and academia. The assessment report is a synthesis of 26 critical review papers that will published in *Atmospheric Environment*.

- o Synthesis Team: **D.L. Albritton**, P. Amar, A. Berrara, A. Dunker, H. Feldman, F. Guzman, A. Hanson, C. Olivotto, P. Roth, R. Scheffe, and L. Schultz.
- o Critical Review Paper: *Methods for gas-phase measurements of ozone, ozone precursors, and aerosol precursors.* **D.D. Parrish** and **F.C. Fehsenfeld**. *Atmos. Environ.*, submitted, 1998.
- o Critical Review Paper: *Regional factors influencing ozone concentrations.* **M. Trainer**, **D.D. Parrish**, **P.D. Goldan**, **J.M. Roberts**, and **F.C. Fehsenfeld**. *Atmos. Environ.*, submitted, 1998.

Aeronomy Laboratory staff are contributors of scientific information and serving as reviewers.