
**ESRL Atmospheric Chemistry
Synthesis and Assessment Products
2004-2007**

IPCC Climate Science Assessments and Special Reports

Susan Solomon, Co-Chair, Working Group I of the Intergovernmental Panel on Climate Change, 2002-present

A. Climate Change 2007: The Physical Science Basis, Working Group I, Intergovernmental Panel on Climate Change, 2007

- Susan Solomon, Author, Summary for Policymakers
- Susan Solomon, Author, Technical Summary
- David Fahey, Lead Author of Chapter 2, Changes in Atmospheric Constituents and in Radiative Forcing
- George Reid, Contributing Author of Chapter 2, Changes in Atmospheric Constituents and in Radiative Forcing.
- Karen Rosenlof, Contributing Author of Chapter 2, Changes in Atmospheric Constituents and in Radiative Forcing
- Reviewers of the AR4 WGI report: John Daniel, David Fahey, Graham Feingold, Edward Lovejoy, Daniel Murphy, A.R. Ravishankara, Susan Solomon
- Stephen Montzka, Contributing Author
- James Elkins, Contributing Author
- John Miller, Contributing Author

B. *Synthesis Report: Climate Change 2007*

- Susan Solomon, Author
- Susan Solomon, Author, Summary for Policymakers

C. Special Report, *Safeguarding the Ozone Layer and the Climate System: Issues Related to Hydrofluorocarbons and Perfluorocarbons*, IPCC and Technology and Economic Assessment Panel, 2005.

- Susan Solomon, Steering Committee Member
- Susan Solomon, Co-editor
- Susan Solomon, Lead Author, Technical Summary

- John Daniel, Contributing Author, Chapter 2 on Chemical and Radiative Effects of Halocarbons and Their Replacement Compounds
- Reviewers of the 2005 Special Report: John Daniel, David Fahey, A.R. Ravishankara, Karen Rosenlof

IMPACT: Since its inception in 1988, the IPCC Working Group I has provided assessments and special reports that have informed policy makers worldwide on the topic of climate change. The 2007 IPCC Report is the most influential scientific assessment report on climate change to date. Upon its release, it made headlines and paved way for action on climate change. The recognition of the IPCC with the 2007 Nobel Peace Prize is recognition, at the highest international level, of the contributions of the IPCC's endeavors at the nexus of climate science and world peace.

WMO/UNEP Stratospheric Ozone Layer Assessment

- A.R. Ravishankara, Cochair, Scientific Assessment Panel of the United Nations Montreal Protocol, September 2007–present
D.L. Albritton, Cochair, Scientific Assessment Panel of the United Nations Montreal Protocol, 1988–September 2007
A.R. Ravishankara, Scientific Steering Committee, 2004-September 2007
C.A. Ennis, Coordinating Editor, Scientific Assessment Panel, 1994-present

Scientific Assessment of Ozone Depletion: 2006, Global Ozone Research and Monitoring Project – Report No. 50, World Meteorological Organization, Geneva, 2007.

- John Daniel, Lead Author of Chapter 8, Halocarbon Scenarios, Ozone Depletion Potentials, and Global Warming Potentials
- David Fahey, Lead Author of 20 Questions and Answers about the Ozone Layer: 2006 Update
- Jim Burkholder, Coauthor of Chapter 2, Halogenated Very Short-Lived Substances

- Claire Granier, Coauthor of Chapter 5, Climate-Ozone Connections
- David Fahey, Coauthor of Chapter 6, The Ozone Layer in the 21st Century
- Robert Portmann, Coauthor of Chapter 6, The Ozone Layer in the 21st Century
- Karen Rosenlof, Contributor to Chapter 5, Climate-Ozone Connections
- Reviewers of the assessment: Dan Albritton, John Daniel, Chris Ennis, David Fahey, Claire Granier, Bob Portmann, A.R. Ravishankara, Karen Rosenlof, Robyn Schofield, Susan Solomon
- Stephen Montzka and John Miller, Co-Authors of Chapter 1, Long-lived compounds, Contributor to Chapter 8, Liaison between Chapters 1, 2 and 8
- Jim Butler, Co-Author of Chapter 2, Contributor to Chapter 1
- Geoff Dutton, Contributor to Chapter 1
- Dale Hurst, Reviewer for Chapter 8
- David Hofmann, Reviewer for Chapters 4 and 6

IMPACT: Since its inception in 1987, the Scientific Assessment Panel has provided state-of-scientific-understanding assessments to underpin the decisions associated with the protection of the Earth's ozone layer through the U.N. Montreal Protocol on Substances that Deplete the Ozone Layer. Based on the information in the periodic assessment reports (1988, 1991, 1994, 1998, 2002, 2006), the Parties to the Protocol have taken steps to strengthen the provisions of the original Protocol. Through those actions, the use of ozone-depleting substances has been curtailed and the ozone layer is expected to recover from their effects gradually over the next several decades.

NARSTO Air Quality Assessments

Improving Emission Inventories for Effective Air Quality Management Across North America - A NARSTO Assessment, 153-195, NARSTO-05-001, 2005.

- David Parrish, Emission Inventory Steering Committee Member
- David Parrish, Lead Author, Chapter 7 - Top-Down Assessments of Emission Inventories
- David Parrish, Contributing Author, Chapter 2 - Vision for Future North American Emission Inventory Programs
- David Parrish, Contributing Author, Chapter 6 - Innovative Technologies and Applications
- David Parrish, Contributing Author, Chapter 9 - Recommendations and Conclusions

IMPACT: The assessment of emission inventories is fundamental information needed by air quality managers in the U.S., Mexico, and Canada who are charged with protecting the public from the hazards of poor air quality. NARSTO, a tri-national consortium of scientists, industry professionals, and air quality experts, has conducted state-of-understanding assessments on the topics of surface ozone, particulate matter, and emission inventories, with the aim of enhancing the efforts of those three nations to improve understanding of air quality issues and develop effective, scientifically sound approaches to air-quality improvement.

Rapid Science Synthesis Report, 2006 Texas Air Quality Study

NOAA Lead: David Parrish, ESRL Chemical Sciences Division
ESRL Participants: Wayne Angevine, Bob Banta, Chuck Brock, Steve Brown, Lisa Darby, Joost de Gouw, Mike Hardesty, John Holloway, Siwan Kim, Stuart McKeen, Ann Middlebrook, Andy Neuman, John Nowack, Hans Osthoff, Jim Roberts, Tom Ryerson, Christoph Senff, Michael Trainer, Sara Tucker, Carsten Warneke, Allen White, Jim Wilczak, Eric Williams

DESCRIPTION AND IMPACT: The field campaign of the Second Texas Air Quality Study (TexAQS II) took place in August to October 2006, with the objective of finding the causes of poor air quality experienced in the region of Houston and Dallas-Ft. Worth. These southeast Texas urban regions often experience the poorest air quality in the nation. Answers to critically important policy-relevant

questions were needed by the Texas Commission on Environmental Quality (TCEQ), which has the responsibility to develop and submit to the US Environmental Protection Agency scientifically sound State Implementation Plans (SIPs) by which to attain the recently implemented 8-hour National Ambient Air Quality Standards (NAAQS) for Ozone and Related Photochemical Oxidants. Both Houston and Dallas-Ft. Worth were designated as Non-Attainment Areas for the ozone standards, and SIPs were scheduled to be completed during the early months of 2007.

NOAA air quality scientists in ESRL worked closely with the leaders of TCEQ to design the field mission so that the urgent questions could be addressed, and then developed the strategy of instituting a Rapid Science Synthesis Team (RSST) so that results from the field mission could be given to Texas air quality leaders as quickly as possible. The Rapid Science Synthesis Team was charged to address a series of 12 High Priority SIP-Relevant Science Questions identified by leaders within the Texas Commission on Environmental Quality. The RSST was led by ESRL scientist David Parrish, and several ESRL scientists served on the 12 working groups that were formed to address the TCEQ's questions. On the basis of the information, TCEQ submitted State Implementation Plans for the Houston and Dallas-Ft Worth Ozone Non-Attainment Areas in June 2007.

The major deliverables of the Rapid Science Synthesis Team were:

- **Oral "Work-in-Progress" Briefings Throughout the Actual Field Campaign.** A series of 7 weekly briefings were given to Texas air quality leaders *during* the field mission, from August through September.
- **October 31 2006 Preliminary Report.** Within a month of the conclusion of the field campaign, preliminary findings were presented both orally and in written form to the TCEQ.
- **August 31 2007 Final Report.** This final report contains carefully crafted statements of research findings to be used by TCEQ and other stakeholders.

U.S. Climate Change Science Program (CCSP) Synthesis and Assessment Products

A. SAP 2.2: The North American Carbon Budget and Implications for the Global Carbon Cycle, 2007. ESRL personnel were “Agency Executive Committee (AEC) and Carbon Cycle Interagency Working Group (CCI WG) members who facilitated the development of this report”:

- David Hofmann, Member AEC and CCIWG
- James Butler, Member AEC and CCIWG

B. SAP 2.3: Aerosol Properties and Their Impacts on Climate, in preparation for 2008.

- Graham Feingold, Author team

C. SAP 2.4: Trends in Emissions of Ozone-Depleting Substances, Ozone Layer Recovery, and Implications for Ultraviolet Radiation Exposure, in preparation for 2008 (a review draft was prepared and presented to a panel convened by the NRC/National Academy of Sciences, September 2007).

- A.R. Ravishankara, Convening Lead Author,
- Steve Montzka, Convening Lead Author
- David Fahey, Convening Lead Author
- A.R. Ravishankara, John Daniel, David Fahey and Steve Montzka, Authoring team members
- Chris Ennis, Coordination and Technical Assistance

IMPACT: A series of 21 “synthesis and assessment products” are being produced by the U.S. Climate Change Science Program, to provide a synthesis of the cumulative knowledge on climate and to evaluate the implications of that knowledge for scientific research and policy formulation. As a key component of the CCSP Strategic Plan (released July 2003), they integrate research results focused on important science issues and questions frequently raised by decision makers. The S&A products are intended to meet the requirements of the Global Change Research Act of 1990. The law directs agencies to “produce information readily usable by policymakers attempting to formulate effective strategies for preventing, mitigating, and adapting

to the effects of global change” and to undertake periodic scientific assessments.

Other Synthesis and Assessment Products

A. UNEP/TEAP “Task Force on Emissions Discrepancies Report”, Nairobi, Kenya, October, 2006.

- S. Montzka, co-chair and author

B. AMAP Assessment 2006: Acidifying Pollutants, Arctic Haze and Acidification in the Arctic. Arctic Council, Arctic Monitoring and Assessment Programme (AMAP), Oslo, Norway.

- E. Andrews contributor to Chapter 4 ‘Arctic Haze’, pp 31-40.
- E. Dutton contributor to Chapter 4 ‘Arctic Haze’, pp 31-40.

C. WCRP-GEWEX Radiative Flux Assessment (in progress)

- Ellsworth Dutton