

September 23, 1997

OZONE TRANSPORT ASSESSMENT GROUP

**LIST OF MODELING REPORTS**

**DISCLAIMER:** This list identifies reports on emissions, meteorological, or photochemical modeling work which may be relevant to OTAG. Inclusion in this list does not necessarily imply acceptance of the results or findings by OTAG.

**GENERAL**

- OT-1 "Ozone Transport Assessment Group: Modeling Protocol", Version 3.0, February 29, 1996
- OT-2 "Review of Existing Ozone Measurement and Modeling Studies in the Eastern United States", February 21, 1996, Environ, Inc, Novato, California.
- OT-3 "Ozone Transport Assessment Group: Final Report, Chapter 2: Regional and Urban Scale Modeling", DRAFT, July 1997.
- OT-4 OTAG Policy Papers:   Definition of OTAG's Goal  
                                  Modeling System and Episode Selection  
                                  Future Emission Projections and Emissions Inventories  
                                  Principles for Control Strategy Implementation  
                                  Comparison of Scientific Data with Potential New Ozone Standard(s)  
                                  Budget Considerations  
                                  Resource Needs  
                                  Single/Multi-Sector Trading  
                                  Timing of OTAG Workgroup Outputs  
                                  Formation of Two Additional Modeling Centers and Use of Information From Private Funded Studies
- OT-5 Federal Register, Notice of Intent, "Calls for State Implementation Plan Revisions for Certain States to Reduce Regional Transport of Ozone", January 1997.
- OT-6 Draft Federal Register, Notice of Proposed Rulemaking, "Finding of Significant Contribution and Initiation of a Rulemaking for State Implementation Plan Calls for States in the Ozone Transport Assessment Group for Purposes of Reducing Regional Transport of Ozone, March 13, 1997
- OT-7 "OTAG Round 3 Modeling", March 14, 1997, overheads used for "Data Dump" presentation to OTAG Policy Group, Philadelphia, Pennsylvania.
- OT-8 "Round 3 Strategy Modeling: Set 2 Criteria"
- OT-9 "The Long-Range Transport of Ozone and Its Precursors in the Eastern United States", February 1997, Northeast States for Coordinated Air Use Management.

**September 23, 1997**

- OT-10 "Ozone Attainment: Proceeding in the Right Direction", December 1996, Midwest Ozone Group.
- OT-11 A Technical Review and Appraisal of the Ozone Transport Assessment Group's Ozone Modeling Protocol, February 23, 1996, Tri-State Ozone Attainment Task Force.
- OT-12 "Benchmarking Air Emissions of Electric Utility Generators in the Eastern United States", April 1997, prepared by Natural Resources Defense Council, Public Service Electric and Gas Company of New Jersey, and Pace University's Mid-Atlantic Energy Project.
- OT-13 "Has the Battle Against Urban Smog Become 'Mission Impossible'?", November 1996, Center for the Study of American Business.
- OT-14 "Final Recommendations", July 8, 1997, OTAG Policy Group.
- OT-15 Telling the OTAG Story with Data, 6/2/97, Doug Grano, Bob Collom.
- OT-16 The Ozone Transport Assessment Group: Modeling Activities, M.Koerber & J. Tikvart
- OT-17 Ozone Transport Assessment Group: Ozone Modeling, M.Koerber
- OT-18 New Model for Ozone Transport, reprint from A Environmental Health Perspectives, 4/97
- OT-19 A Regional ozone group ends study; States, EPA near plan to cut Nox, article from Environmental News 3/97.

## **EMISSIONS MODELING**

- EOT-1 "OTAG Emissions Inventory Development Report, Volume I: 1990 Base Year Development", DRAFT, December 1996, E.H. Pechan & Associates, Durham, North Carolina.
- EOT-2 "OTAG Emissions Inventory Development Report, Volume II: Base Year Modeling Inventory Development", DRAFT, Version 1.0, August 1996, Lake Michigan Air Directors Consortium, Des Plaines, Illinois and E.H. Pechan & Associates, Durham, North Carolina.
- EOT-3 AOTAG Emissions Inventory Development Report, Volume III: Projections and Controls, DRAFT, December 1996, E.H. Pechan & Associates, Durham, NC.
- EOT-4 "Preliminary Results of the Review and Quality Assurance of the National Emission Inventory", Memorandum dated January 15, 1996, Systems Applications International, San Rafael, California.
- EOT-5 "Memorandum #2: Preliminary Results of the Review and Quality Assurance of the National Emission Inventory", Memorandum dated January 25, 1996, Systems Applications International, San Rafael, California.
- EOT-6 "Memorandum #3: Preliminary Results of the Review and Quality Assurance of the National Emission Inventory - MOBILE5a Input Files", Memorandum dated February 2, 1996, Systems Applications International, San Rafael, California.

**September 23, 1997**

- EOT-7 "Preliminary Results of the Review and Quality Assurance of the National Emission Inventory: Summary of Point, Area and Nonroad Source Emissions and Mobile Source Input Parameters (Draft Report)", March 1996, Systems Applications International, San Rafael, California.
- EOT-8 "Comparison of the Effects of Biogenic Emission Processors on Biogenic Emissions and UAM-V Simulation Results for Atlanta, Georgia (Draft Report)", April 24, 1996, Systems Applications International, San Rafael, California.
- EOT-9 "Differences in Emissions Files Used for the 1993 Base Case D2 versus the Other OTAG Episodes", September 13, 1996, MCNC, Research Triangle Park, North Carolina.
- EOT-10 "Additional Quality Assurance of the OTAG Emissions Data", February 12, 1996, Alpine Geophysics, Pittsburgh, Pennsylvania.
- EOT-11 Emission Inventory Workgroup Report, December 17-18, 1996.
- EOT-12 Emission Inventory Workgroup Report, March 14, 1997.

#### **METEOROLOGICAL MODELING**

- MET-1 "RAMS Modeling Outputs, Standard Plots, July 1991 Episode", January 22, 1996, Wisconsin DNR, Madison, Wisconsin.
- MET-2 "RAMS Modeling Outputs, Standard Plots, July 1993 Episode", March 18, 1996, Wisconsin DNR, Madison, Wisconsin.
- MET-3 "RAMS Modeling Outputs, Standard Plots, July 1995 Episode", March 25, 1996, Wisconsin DNR, Madison, Wisconsin. (3 Binders)
- MET-4 "Evaluation of the Meteorological Inputs to UAM-V for Four OTAG Modeling Periods, Volume I: Text and Appendices A and B (Draft Report)", July 31, 1996, Systems Applications International, San Rafael, California.
- MET-5 "Evaluation of the Meteorological Inputs to UAM-V for Four OTAG Modeling Periods, Volume II: Appendices C - F (Draft Report)", July 31, 1996, Systems Applications International, San Rafael, California.
- MET-6 "Evaluation of the MM5 Model for Three 1995 Regional Ozone Episodes over the Northeast United States", October 1, 1996, prepared for Southwestern Pennsylvania Clean Air Stakeholders Group by Alpine Geophysics, Covington, Kentucky.
- MET-7 "Superregional Ozone Modeling and Analysis Study - Phase II, Work Element 5 Technical Report: Comparative Evaluation of the MM5 and RAMS Models for the July 1991 OTAG Episode", July 26, 1996, prepared for Robinson & McElwee by Alpine Geophysics, Covington, Kentucky.

September 23, 1997

## PHOTOCHEMICAL MODELING

### GENERAL

- PHM-1 "Implementation of Updated Isoprene Chemistry in Photochemical Models using the CB-IV Chemical Mechanism", July 10, 1996, Systems Applications International, San Rafael, California.
- PHM-2 "Overview of the Implementation of an Updated Isoprene Chemistry Mechanism in CB4/UAM-V (Revised Memorandum)", July 22, 1996, Systems Applications International, San Rafael, California.
- PHM-3 "Preparation of Air Quality and Other Inputs for Applications of the UAM-V Model for the 1-15 July 1988 OTAG Modeling Episode", DRAFT Technical Memorandum, August 1996, Systems Applications International, San Rafael, California.
- PHM-4 "Classification of Monitoring Sites", July 17, 1996.
- PHM-5 "Southeast Modeling Center UAM-V Modeling Analysis in Support of the Ozone Transport Assessment Group (OTAG) Modeling Effort", December 21, 1995, Southeast Modeling Center.
- PHM-6 "Classification and Regression Tree Analysis to Support the Selection of Episodes for Regional Scale Photochemical Modeling of the Southeastern U.S.", December 1995, Systems Applications International, San Rafael, California.
- PHM-7 "Regional Ozone Patterns in the Eastern U.S.: Statistical Pattern Analysis and Classification and Regression Tree Analysis in Support of the Ozone Transport Assessment Group (OTAG) Modeling Effort (Draft Report)", August 9, 1996, Systems Applications International, San Rafael, California.
- PHM-8 "Ozone Return Frequency (1954 - 1995)", February 7, 1997, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina.
- PHM-9 "Stakeholder Superregional Ozone Modeling and Analysis Study - Phase II: Comparative Evaluation of the SAQM and UAM-V Modeling for the 13-21 July 1991 OTAG Episode", January 24, 1997, prepared for the Midwest Ozone Group by Alpine Geophysics, Covington, Kentucky.
- PHM-10 "Stakeholder Superregional Ozone Modeling and Analysis Study: Assessment of the Reliability of the OTAG Modeling System", April 28, 1997, prepared for the Midwest Ozone Group by Alpine Geophysics, Covington, Kentucky.
- PHM-11 "Classification of Ozone Episodes for Four Southern Cities According to Transport Characteristics", March 1977, prepared for Southern Company Services by Systems Applications International, San Rafael, California.
- PHM-12 Episode-Specific Information: Daily Weather Maps, Surface Ozone Concentration Plots, and Wind Trajectory Plots
- PHM-13 "Ozone Source Apportionment Modeling Using OTAG Photochemical Modeling Databases", Environ.
- PHM-14 "Effect of Threshold Value on Modeling Results"

September 23, 1997

**BASECASE MODELING**

- BCM-1 Basecase A Modeling Results - Standard Documentation:  
(a) 1988 8 1993  
(b) 1991 (d) 1995
- BCM-2 Preliminary OTAG Basecase Modeling Results, April 19, 1996
- BCM-2a Basecase A Modeling Results - Handouts from May 3/4 Meeting
- BCM-4 Basecase B2 Modeling Results - Handouts from June 4/5 Meeting  
  
Miscellaneous Basecase B2 and C2 Results  
  
Basecase D2 Modeling Results - Handout from July 23/24 Meeting
- BCM-6 Basecase D2 Modeling Results - Standard Documentation:  
(a) 1988 8 1993  
(b) 1991 (d) 1995
- BCM-7a Basecase D2 Modeling Results - Spatial Concentration Plots (July 1996)
- BCM-7b Basecase D2 Modeling Results - Time Series Plots (July 1996)
- BCM-7c Basecase D2 Modeling Results - Scatterplots (July 1996)
- BCM-8 A Comparison of Modeled and Measured Ozone, NO<sub>x</sub>, and CO at Nine Regional Monitoring Stations During the 1995 OTAG Episode (Draft Report)<sup>®</sup>, October 1996, ESE Environmental Inc., Durham, North Carolina.
- BCM-9 A Evaluation of the UAM-V Model Performance in OTAG Simulations, Phase I: Summary of Performance Against Surface Observations<sup>®</sup>, January 1997, STI-996120-1605-FR, Sonoma Technology, Inc., Santa Rosa, California.
- BCM-9a DRAFT of BCM-9
- BCM-10 "An Analysis of Measured and Predicted Concentrations Aloft of Ozone and Total Reactive Oxides of Nitrogen in the Lake Michigan Airshed During 12-14 July, 1995", DRAFT, Wisconsin Department of Natural Resources, Madison, Wisconsin. of
- BCM-11 "An Analysis of Measured and Predicted Concentrations Aloft of Ozone and Total Reactive Oxides of Nitrogen in the Eastern U.S. During July, 1995", DRAFT, January 25, 1997, Wisconsin Department of Natural Resources, Madison, Wisconsin.
- BCM-12 "Lake Michigan Aircraft Data Analysis", letter dated February 10, 1997 from John Roth (State of Wisconsin) to Michael Koerber.

- BCM-13 "List of Researchers Analyzing Model Performance Aloft", November 22, 1996.  
**September 23, 1997**
- BCM-14 "Progress Report on OTAG 1995 Aircraft Data Analysis", October 11, 1996, State of Wisconsin.
- BCM-15 "Assessment of UAM-V Model Performance in Northeast Region for OTAG Episodes", March 1997, prepared for a consortium of utilities in the Northeast by Earthtech, Inc., Concord, Massachusetts.
- BCM-16 "Phase I Comparison of OTAG UAM-V/BEIS2 Modeling Results with Ambient Isoprene and Other Related Species Concentrations", March 11, 1997, prepared for the American Automobile Manufacturers Association by Environ, Inc., Novato, California.
- BCM-17 "UAM-V Simulations in Support of the Base-Case Modeling Analysis for the 1-15 July 1988 OTAG Episode", August 1996, Systems Applications International, San Rafael, California.
- BCM-18 Preparation of Air Quality Data, April 1996

#### **DIAGNOSTIC ANALYSES**

- DAN-1 Investigation of the Effects of Horizontal Grid Resolution on UAM-V Simulation Results for Three Urban Areas, Report SYSAPP-96\98, October 21, 1996, Systems Applications International, San Rafael, California.
- DAN-2 "Analysis of the Effects of Grid Resolution on UAM-V Simulated Results for the Atlanta Nonattainment Area", Technical Memorandum SYSAPP-96\98, October 21, 1996, Systems Applications International, San Rafael, California.
- DAN-3 "Assessment of Model Grid Resolution"
- DAN-4 Letter from John Jansen (Southern Company Services) to Michael Koerber and Joseph Tikvart, September 1, 1996, concerning model grid resolution, with attachments
- DAN-5 "Transmittal of Plots of the MOCA Sensitivity Simulation Results", October 4, 1996, Systems Applications International.
- DAN-6 "Model Diagnostic/Sensitivity Tests (April - May 1996)", May 16, 1996, Lake Michigan Air Directors Consortium, Des Plaines, Illinois.
- DAN-7 "Model Diagnostic/Sensitivity Tests (June - August 1996)", September 3, 1996, Lake Michigan Air Directors Consortium, Des Plaines, Illinois.
- DAN-8 "Examination of the UAM-V Simulation Processes in the Lake Michigan Area for Selected OTAG Baseline and Control Strategy Simulation", June 1977, prepared for the Illinois EPA by Systems Applications International, San Rafael, California.
- DAN-9 The Effect of the Updated Isoprene Chemistry on Ozone Concentrations in OTAG, Brian Timin, Jay

Lawrimore, Carey Jang, Harvey Jeffries.

**September 23, 1997**

**SENSITIVITY MODELING**

SNM-1	July 1988:	Standard Documentation for First Round Model Sensitivity Tests
SNM-2	July 1991:	"Emissions Sensitivity Tests (April/May 1996)", July 1, 1996, Lake Michigan Air Directors Consortium, Des Plaines, Illinois.
SNM-3		"Special Model Sensitivity Tests (September 1996)", October 7, 1996, Lake Michigan Air Directors Consortium, Des Plaines, Illinois.
SNM-4		Standard Documentation for First Round Model Sensitivity Tests
SNM-5	July 1993:	Standard Documentation for First Round Model Sensitivity Tests
SNM-6	July 1995:	Standard Documentation for First Round Model Sensitivity Tests
SNM-7		"First Round Model Sensitivity Tests (June/July/August 1996)"
SNM-8		"Nox Benefits and Disbenefits", December 1996, Lake Michigan Air Directors Consortium, Des Plaines, Illinois.
SNM-9		"Geographic Sensitivity Runs (October/November 1996)"
SNM-10		"Ozone Source Apportionment Modeling Using the July 1991 OTAG Episode for the Northeast Corridor and Lake Michigan Regions", March 1997, prepared for the Midwest Ozone Group by Environ, Inc., Novato, California.
SNM-11		"Photochemical Modeling Analysis of the Northwest 'OTAG Free' States Using the July 1995 Ozone Modeling Results", March 11, 1997, prepared for the Northwest OTAG States by Alpine Geophysics, Golden, Colorado.
SNM-12		"Stakeholder Superregional Ozone Modeling and Analysis Study - Phase II: Comparison of SAQM and UAM-V Response to Emissions Reduction Scenarios", February 8, 1997, prepared for the Midwest Ozone Group by Alpine Geophysics, Covington, Kentucky.
SNM-13		"State-Specific Photochemical Modeling Analysis Using the July 1995 and July 1991 OTAG Modeling Episodes", June 28, 1997, prepared for the Ohio EPA by Alpine Geophysics, Covington, Kentucky.
SNM-14		State-Specific Photochemical Modeling Analysis Using the July 1995 OTAG Modeling Episode for the State of Michigan, prepared for the Michigan DEQ by Alpine Geophysics, Covington, Kentucky.
SNM-15		Results of Rollout Runs (Tables and Bar Charts)

**September 23, 1997**

**STRATEGY MODELING**

- STM-1 "First Round Control Strategy Modeling (September/October 1996)"
- STM-2 "Second Round Control Strategy Modeling (November/December 1996)"

**ADDITIONAL MODELING**

- ADM-1 "Review of Alternative Future Year Baseline" (May 1997)
- ADM-2 "Impact of Coarse Grid States" (May 1997)
- ADM-3 "Urban/Regional Linkage Runs - Part I" (June 1997)
- ADM-4 "Urban/Regional Linkage Runs - Part II" (June 1997)

**ADDITIONAL MATERIAL RELATED TO STAKEHOLDER PRESENTATIONS**

- AM-1 Information for Southwestern States
- AM-2 Northwest OTAG States
- AM-3 "Quality of Explanation: Thinking about and using air quality models", Dr. Harvey Jeffries
- AM-4 May 1, 1997 Letter from Dwight Wylie (State of Mississippi) to Merrylin Zaw-Mon and Bill Baker
- AM-5 "Least Cost Options to Reduce Ozone Concentrations in OTAG Regions", February 13, 1997, Hagler Bailly Services, Inc.
- AM-6 "Estimating Emission Weights for Metro East and Greater Chicago Metropolitan Area", July 25, 1997, Hagler Bailly Services, Inc.

**September 23, 1997**

**CONFERENCE CALLS**

RUSM Conference Calls - Announcements and Notes

**MEETINGS**

July 14, 1995, Modeling and Assessment Subgroup, and Strategies and Control Subgroup Meetings

August 24, 1995, Modeling and Assessment Subgroup, and Strategies and Control Subgroup Meetings

November 13, 1995, RUSM Meeting

December 18, 1996, Policy Group Meeting

January 16, 1997, Policy Group Meeting

January 23, 1997, Emissions Market Systems Workshop

March 14, 1997, Policy Group Meeting

April 16-17, 1997, Policy Group Meeting

May 13-14, 1997, Policy Group Meeting

June 19-20, 1997, Policy Group Meeting

Meeting Summary, May 18, 1995, Policy Group

Meeting Summary, June 24, 1995, Policy Group

Meeting Summary, July 14, 1995, Modeling and Assessment Subgroup, and Strategies and Control Subgroup

Meeting Summary, August 24, 1995, Policy Group

Meeting Summary, September 6-7, 1995, Strategies and Controls Subgroup

Meeting Summary, September 12-13, 1995, Strategies and Controls Subgroup

Meeting Summary, October 5-6, 1995, Policy Group

Meeting Summary, December 4, 1995, Policy Group

Meeting Summary, December 4, 1995, Implementation Strategies and Issues Workgroup

Meeting Summary, December 4, 1995, Modeling and Assessment Subgroup

Meeting Summary, December 4, 1995, Strategies and Controls Subgroup

**September 23, 1997**

Meeting Summary, January 24, 1996, Strategies and Controls Subgroup

Meeting Summary, February 26, 1996, Implementation Strategies and Issues Workgroup

Meeting Summary, February 29, 1996, Modeling and Assessment Subgroup

Meeting Summary, February 29, 1996, Strategies and Controls Subgroup

Meeting Summary, April 11, 1996, Policy Group

Meeting Summary, June 5, 1996, Policy Group

Meeting Summary, June 19, 1997, Policy Group