

Biomass Burning and Global Change



March 13-17, 1995 • Williamsburg, Virginia

Convener

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Conference Purpose

The aim of this Chapman Conference is to assess the role and importance of biomass burning as a process for global change. The conference will consider the impact of gaseous and particulate emissions from biomass burning on atmospheric chemistry, on the biogeochemical cycling of elements, and on climate.

Conference Program

The conference will consist of 10 half-day oral sessions featuring tutorials, review talks, and contributed talks. Public lectures in the evening are also planned.

Topics to be Discussed

- Measurements of biomass burning from space
- The global geographical and temporal distribution of biomass burning
- The burning and combustion characteristics of diverse ecosystems: tropical, temperate, and boreal forests, grasslands, agricultural lands, etc.
- Gaseous and particulate emissions from biomass burning
- Impact of biomass burning emissions on atmospheric chemistry and climate
- Biomass burning as a global source of chlorine and bromine in the stratosphere
- The impact of biomass burning on the biogeochemical cycling of gases
- Modeling the impacts of biomass burning
- History and future of biomass burning
- Social, economical, and political implications of biomass burning
- Future biomass burning experiments

Abstract Format and Deadline

Abstract Deadline - November 23, 1994

A camera-ready original and two copies of all abstracts must be submitted in standard AGU abstract format to the address listed in the next column.

If you wish to submit your abstract using e-mail, contact the AGU Meetings Department.

Preregistration Deadline - February 10, 1995

Program Committee

M. O. Andreae, Max Planck Institute for Chemistry, Germany; D. C. Cahoon, Jr., NASA Langley Research Center, USA; W. R. Cofer III, NASA Langley Research Center, USA; P. J. Crutzen, Max Planck Institute for Chemistry, Germany; R. A. Delmas, Universite Paul Sabatier, France; J. G. Goldammer, University of Freiberg, Germany; V. W. J. H. Kirchhoff, Instituto de Pesquisas Espaciais (INPE), Brazil; J.-C. Menaut, Ecole Normale Supérieure, France; J. E. Penner, Lawrence Livermore National Laboratory, USA; R. G. Prinn, Massachusetts Institute of Technology, USA; F. S. Rowland, University of California, Irvine, USA; A. W. Setzer, Instituto de Pesquisas Espaciais (INPE), Brazil; B. J. Stocks, Forestry Canada, Canada; W. S. W. Trollope, University of Fort Hare, South Africa; R. P. Turco, University of California, Los Angeles, USA; and R. G. Zepp, EPA Environmental Research Laboratory, USA.

Travel Support

Funding is being requested from several agencies. If funding is received, a limited amount of travel support will be available. Applications for travel support can be obtained from the American Geophysical Union at the address listed below. The deadline date is November 23, 1994.

Site

Williamsburg, Virginia, the colonial capital of Virginia. Colonial Williamsburg offers visitors an opportunity of reliving the history of former Williamsburg residents, including George Washington, Thomas Jefferson, and Patrick Henry. Colonial Williamsburg is one of the major tourist attractions on the east coast. The College of William and Mary is also located in Williamsburg. William and Mary is the second oldest college in the United States and celebrated its 300th birthday in 1993. Nearby attractions include Jamestown Festival Park, the Yorktown Battlefields, Busch Gardens The Old Country theme park, and the NASA Langley Research Center. Williamsburg also offers the shopper the opportunity of visiting over 100 factory outlet stores.

Further Information

Future information pertaining to this conference (i.e., scientific program, housing, registration) will be sent to those who have either submitted an abstract or have asked to be placed on the mailing list.

Those not submitting abstracts who wish to be placed on the mailing list, please contact the AGU Meetings Department, Biomass Burning, 2000 Florida Avenue, N.W., Washington, DC 20009; phone 202-462-6900, fax 202-328-0566, e-mail meetinginfo@kosmos.agu.org.

PRELIMINARY PROGRAM

AGU Chapman Conference on Biomass Burning and Global Change March 13-17, 1995 Williamsburg, Virginia

Convener: Joel S. Levine, Atmospheric Sciences Division,
NASA Langley Research Center

SUNDAY, MARCH 12, 1995

- 5:30 - 7:30 P.M. Registration
6:00 - 7:30 P.M. Opening Reception

MONDAY, MARCH 13, 1995

8:00 A.M. J S Levine Welcome Remarks

SESSION I: REMOTE SENSING OF BIOMASS BURNING

Chairs: D C Cahoon, J-P Malingreau, A W Setzer

- 8:30 A.M. J-P Malingreau, J-M Grégoire Developing a Global Vegetation Fire Monitoring System for Global Change Studies: Current Possibilities and Perspectives
- 8:45 A.M. C O Justice, J D Kendall, Y J Kaufman Global Fire Mapping Using Satellite Data: An Overview
- 9:00 A.M. B J Stocks, D R Cahoon, J G Goldammer, R J Bauer Documenting the Seasonal Distribution of Vegetation Fires in Eastern Africa Using DMSP and NOAA/AVHRR Satellite Imagery
- 9:15 A.M. P R Dowty, B Stocks The Use of Simulated AVHRR Data to Validate Fire Detection Algorithms
- 9:30 A.M. J D Kendall, R J Scholes, C O Justice A Multi-Sensor Approach to Estimation of the Areal Extent of Biomass Burning in Southern Africa
- 9:45 A.M. J R de A França, J Fontan, M-M Brustet The Use of Multispectral NOAA/AVHRR to Determine an Improved Budget in Intertropical Africa
- 10:00 A.M. COFFEE BREAK
- 10:30 A.M. B Koffi, J-M Grégoire, P Legeay-Janvier, A Tournier Satellite Monitoring of Multiannual Biomass Burning Activity for the African Continent
- 10:45 A.M. A W Setzer, E M Miranda AVHRR Operational Detection of Fires in Brazil Since 1987 - A Summary of the Experience and Results

11:00 A.M.	J A Brass, P J Riggan, V G Ambrosia, R N Lockwood, J A Pereira, R G Higgins	Brazil Fire Characterization and Burn Area Estimation Using the Airborne Infrared Disaster Assessment (AIRDAS) System
11:15 A.M.	C A Hlavka, V G Ambrosia, J A Brass	Mapping Fire Scars in the Brazilian Cerrado Using AVHRR Imagery
11:30 A.M.	E M Prins, W P Menzel	Monitoring Biomass Burning With the Next Generation of Geostationary Satellites
11:45 A.M.	E M Prins, W P Menzel	Investigation of Biomass Burning and Aerosol Loading and Transport in South America Utilizing Geostationary Satellite Data
12:00 P.M.	LUNCH BREAK	
1:30 P.M.	P Le Canut, J S Levine, D R Cahoon	Biomass Burning in Western Europe in 1987
1:45 P.M.	D R Cahoon, B J Stocks, J S Levine, W R Cofer, J A Barber	Monitoring the 1992 Forest Fires in the Boreal Ecosystem Using NOAA AVHRR Satellite Imagery
2:00 P.M.	B J Stocks, D R Cahoon, W R Cofer, J S Levine	Monitoring Large-Scale Forest Fire Behavior in Northeastern Siberia Using NOAA-AVHRR Satellite Imagery
2:15 P.M.	L T Steyaert, F G Hall, B C Reed, D E Knapp, T R Loveland, P J Sellers, R A Pielke	Investigating Landscape Disturbance Patterns and Associated Vegetation Succession in the Boreal Forest with Multitemporal 1-Km AVHRR Data
2:30 P.M.	E S Kasischke, P Camille, N H French, L L Bourgeau-Chavez, H H Shugart	Estimating Carbon Storage and Release in a Fire-Disturbed Boreal Forest Using Multi-Sensor Satellite Data
2:45 P.M.	C D Elvidge, H K Kroehl, E A Kihn, K E Baugh, E R Davis	Algorithm for the Retrieval of Fire Pixels From DMSP Operational Line Scanner Data
3:00 P.M.	E V Browell, M P McCormick, C F Butler, M A Fenn, G D Nowicki, W B Grant, S Ismail	Airborne and Spaceborne Lidar Observations of Biomass Burning Plumes Over Africa and South America
3:15 P.M.	E R Rignot	On the Measurement of Aboveground Biomass Burning Using Imaging Radars
3:30 P.M.	T L DeLiberty, W P Menzel, E M Prins	An Investigation of the Hydrologic Cycle in the Amazon Using Remotely Sensed Variables
Poster	C D Elvidge	Survey of Fires in Southeast Asia and India During 1987

Poster	J G Goldammer, M R Helfert	Vegetation Fires from Space: The use of the Earth Observation System in the Space Shuttle Program for Research and Documentation of Global Vegetation Fires: A Case Study from Madagascar
Poster	E A Kihn	Sub-Pixel Source Detection and Area Estimation Algorithms Applied to DMSP Operational Linescan System (OLS) Imagery
Poster	H M Worden, R Beer, C P Rinsland	Airborne High Resolution Infrared Spectroscopy of Western Wildfires
3:45 P.M.	COFFEE BREAK	
SESSION II: GASEOUS EMISSIONS		
Chairs: M O Andreae, W R Cofer III, R A Delmas		
4:15 P.M.	M O Andreae, SAFARI/SA'ARI Science Team	<i>INVITED:</i> Emissions of Trace Gases and Aerosols from Fires in the Savannas of Southern Africa and Their Impact on the Atmospheric Environment
4:45 P.M.	E Atlas, W Pollock, A deKock	Characterization of Organic Compounds in Biomass Burning Plumes During SAFARI#'93
5:00 P.M.	D Brocard, C Lacaux, J P Lacaux, G Kouadio, V Yoboué, M Assa Achy, B Ahoua, M Koffi	Emissions From the Combustion of Biofuels in the African Tropics
5:15 P.M.	R Koppmann, A Khedim, J Rudolph, G Helas, M Welling	Emission of Medium Molecular Weight Organic Trace Gases From Savanna Fires in Southern Africa
5:30 P.M.	J P Lacaux, R Delmas	NO _x Emissions From African Savanna Burning
5:45 P.M.	ADJOURN	
8:00-10:00 P.M.	EVENING ACTIVITY	PUBLIC LECTURE: BIOMASS BURNING AND GLOBAL CHANGE

TUESDAY, MARCH 14, 1995

SESSION II: GASEOUS EMISSIONS Continued

Chairs: M O Andreae, W R Cofer III

8:00 A.M.	P Le Canut, M O Andreae, G W Harris, F G Wienhold, T Zenker	Pyrogenic Emission and Regional Distribution of Trace Gases and Aerosols Over Southern Africa During SAFARI-92
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8:15 A.M.	D L Mauzerall, J A Logan, D J Jacob, B E Anderson, A S Bachmeier, G W Sachse, D R Blake, J D Bradshaw, H Fuelberg, B G Heikes	Relationships Between Biomass Burning Emissions and Photochemical Tracers Over Source Regions and the Tropical South Atlantic - Analysis of TRACE-A Expedition Measurements, September-October 1992
8:30 A.M.	D E Ward, R A Susott, W M Hao, C Doughty, R W Shea, J B Kauffman, E Chidumayo	Chitemene Agriculture in Southern Africa-- Emissions and Sustainability
8:45 A.M.	R E Babbitt, W M Hao, R A Susott, D E Ward, S P Baker, G Olbu	Emissions of Trace Gases and Particulate Matter From Fires in Brazilian Forest and Savanna Ecosystems
9:00 A.M.	P M Fearnside	Land Use Change in Brazilian Amazonia: Annual Balance of Greenhouse Gas Emissions in 1990
9:15 A.M.	A Ezcurra, I Ortiz de Zárate, J P Lacaux, P Van Dihn	Atmospheric Impact of Cereal Waste Burning in Spain
9:30 A.M.	L Trabaud	Gaseous Emissions from Fires in Mediterranean Shrublands
9:45 A.M.	J M Vose, W T Swank, A E Major, C D Geron	Modeling Emissions from Forest Burning in the Southeastern United States
10:00 A.M.	COFFEE BREAK	
10:30 A.M.	W R Cofer, J S Levine, D R Cahoon, E L Winstead, B J Stocks, J G Goldammer	Trace Gas Chemistry of Canadian and Siberian Boreal Forest Fires
10:45 A.M.	Y H Zhuang, M Q Cao, X K Wang	Nitrous Oxide and Carbonyl Sulfide Emissions from Biomass Burning and the Spatial Distribution of Nitrous Oxide in China
11:00 A.M.	D F Hurst, D W T Griffith, G D Cook	Trace Gas Emissions From Savanna Burning in Australia
11:15 A.M.	W M Hao, M-H Liu, M Lorenzini, K D Singh, D E Ward	Spatial Distribution of Tropical Biomass Burning in 1990 with 1° x 1° Resolution
Poster	T Zenker, F G Wienhold, P Le Canut, M O Andreae, G W Hariis, R Koppmann, A M Thompson, D P McNamara, T L Kuscera	Regional Trace Gas Distribution and Airmass Characteristics in the Haze Layer Over Southern Africa During the Biomass Burning Season (Sep./Oct. 92): Observations and Modeling from the STARE/SAFARI-92 DC-3

SESSION III: BIOGENIC SOIL EMISSIONS

Chairs: R G Zepp, R A Delmas

- 11:30 A.M. **I C Anderson, M A Poth, H S
Miranda, A C Miranda** The Magnitude and Persistence of Soil NO,
N₂O, CH₄, and CO₂ Fluxes from Burned
Tropical Savannas
- 11:45 A.M. **E L Winstead, J S Levine,
W R Cofer III, D R Cahoon
Jr, D I Sebacher** Biomass Burning and Biogenic Soil Emissions
of Nitric Oxide in the Boreal Forest
- 12:00 P.M. **LUNCH BREAK**
- 1:30 P.M. **J S Levine, W R Cofer, D R
Cahoon, E L Winstead, D I
Sebacher** Biomass Burning, Biogenic Soil Emissions,
and the Global Nitrogen Budget
- 1:45 P.M. **R G Zepp, R A Burke, W L
Miller, M A Tarr, D A B
Parsons, M C Scholes** Soil-Atmosphere Exchange of Trace Carbon
Gases in Southern African Savanna Fire Scars

SESSION IV: PARTICULATE EMISSIONS

Chairs: R G Prinn, D E Ward

- 2:00 P.M. **P Artaxo, F Gerab, M A
Yamasoe, J V Martins,
A Setzer, A H Miguel** Large Scale and Long Term Biomass Burning
Monitoring in the Amazon Basin
- 2:15 P.M. **W Maenhaut, G Koppen,
P Artaxo** Long-term Atmospheric Aerosol Study in
Cuiaba, Brazil: Multielemental Composition,
Sources, and Impact of Biomass Burning
- 2:30 P.M. **J V Martins, P Artaxo,
C Liousse, H Cachier, Y
Kaufman** Size Distribution, Elemental Composition and
Carbon Measurement in Aerosols During the
SCAR-C Experiment
- 2:45 P.M. **R Serpolay, P Van Dinh,
J P Lacaux** Laboratory Investigations on Aerosols
Produced by Combustion of Savanna Grass and
Cereal Straw
- 3:00 P.M. **S J Piketh, H J Annegarn,
M A Kneen** Regional Scale Impacts of Biomass Burning
Aerosols Over Southern Africa
- 3:15 P.M. **F Echalar, A Gaudichet,
H Cachier, P Artaxo** Trace Element Particulate Emissions in
Tropical Savana and Forest Fire Plumes
- 3:30 P.M. **COFFEE BREAK**
- 4:00 P.M. **M A Mazurek, C Laterza,
L Newman, P Daum, W R
Cofer, III, J S Levine, E L
Winstead** Molecular Composition of Carbonaceous
Smoke Particles from Prescribed Burning of a
Canadian Boreal Forest

4:15 P.M.	K L Carleton, D M Sonnenfroh, W T Rawlins, B E Wyslouzil	Activation of Carbon Aerosol by Deposition of Sulfuric Acid
4:30 P.M.	S J Pyne	<i>INVITED:</i> Flame and Fortune: Americans Fight Fire
5:00 P.M.	ADJOURN	
8:00-10:00 P.M.	EVENING ACTIVITY	BIOMASS BURNING EXPERIMENT (BIBEX) MEETING
	POSTER SESSION	All Posters Viewed

WEDNESDAY, MARCH 15, 1995

SESSION IV: PARTICULATE EMISSIONS Continued

Chair: R G Prinn, D E Ward

8:00 A.M.	B R T Simoneit, M Radzi bin Abas, G R Cass, W R Rogge, M A Mazurek, L M Hildemann	Natural Organic Compounds as Tracers for Biomass Combustion in Aerosols
8:15 A.M.	L A Currie	Biomass Burning Tracers: Elements, Isotopes, and Isomers
8:30 A.M.	T Novakov, C E Corrigan	Thermal and Optical characterization of Biomass Smoke Particles: Implications for Organic and Black Carbon Determination
8:45 A.M.	V C Turekian, S A Macko, W Gilhooly, R J Swap, D C Ballentine, M Garstang	Bulk and Molecular Level Isotope Analysis of Products of Vegetation Burns
9:00 A.M.	C Liousse, J E Penner, C Chuang, C R Molenkamp, J J Walton, H Eddleman, I Shult, H Cachier	Modeling Biomass Burning Aerosols
Poster	D C Ballentine, S A Macko, B Martincigh	Chemical and Isotopic Characterization of Aerosols Collected During Sugar Cane Burning in South Africa
Poster	M A Yamasoe, P Artaxo, A Miguel, A Allen	Aerosol Emissions from Forest and Cerrado Fires in the Amazon Basin

SESSION V: FUTURE EXPERIMENTS

Chairs: R A Delmas, J G Goldammer

9:15 A.M.	R A Delmas, J P Lacaux, B Cros, P Zimmerman, G Brasseur, J P Malingreau, J M Gregoire, M O Andreae, F Meixner	Overview of the EXPRESSO Project (EXPERiment for the Regional Sources and Sinks of Oxidants)
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4:15 P.M.	K L Carleton, D M Sonnenfroh, W T Rawlins, B E Wyslouzil	Activation of Carbon Aerosol by Deposition of Sulfuric Acid
4:30 P.M.	S J Pyne	<i>INVITED:</i> Flame and Fortune: Americans Fight Fire
5:00 P.M.	ADJOURN	
8:00-10:00 P.M.	EVENING ACTIVITY	BIOMASS BURNING EXPERIMENT (BIBEX) MEETING
	POSTER SESSION	All Posters Viewed

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8:30 A.M.	T Novakov, C E Corrigan	Thermal and Optical characterization of Biomass Smoke Particles: Implications for Organic and Black Carbon Determination
8:45 A.M.	V C Turekian, S A Macko, W Gilhooly, R J Swap, D C Ballentine, M Garstang	Bulk and Molecular Level Isotope Analysis of Products of Vegetation Burns
9:00 A.M.	C Liousse, J E Penner, C Chuang, C R Molenkamp, J J Walton, H Eddleman, I Shult, H Cachier	Modeling Biomass Burning Aerosols
Poster	D C Ballentine, S A Macko, B Martincigh	Chemical and Isotopic Characterization of Aerosols Collected During Sugar Cane Burning in South Africa
Poster	M A Yamasoe, P Artaxo, A Miguel, A Allen	Aerosol Emissions from Forest and Cerrado Fires in the Amazon Basin

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9:15 A.M.	R A Delmas, J P Lacaux, B Cros, P Zimmerman, G Brasseur, J P Malingreau, J M Gregoire, M O Andreae, F Meixner	Overview of the EXPRESSO Project (EXPeriment for the Regional Sources and Sinks of Oxidants)
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9:30 A.M.	J G Goldammer, FIRESCAN Science Team	The Bor Forest Island Fire Experiment, Fire Research Campaign Asia-North (FIRESCAN): Results and Global Implications
9:45 A.M.	J G Goldammer, M O Andreae	State and Further Planning of the Regional Vegetation Fire Research Campaigns SAFARI, FIRESCAN, FIREScheme, and SEAFIRE
10:00 A.M.	COFFEE BREAK	

SESSION VI: PARTICULATES AND SOLAR RADIATION

Chairs: J E Penner, R P Turco

10:30 A.M.	J E Penner, C C Chuang, C Liousse, K Taylor	<i>INVITED:</i> The Contribution of Aerosols From Biomass Burning to Climate Change
11:00 A.M.	S A Christopher, V S Connors, D V Vulcan, R M Welch	Biomass Burning as a Source of CO and Aerosols as Measured by Space Shuttle (MAPS) and Satellite (AVHRR) Measurements
11:15 A.M.	Y J Kaufman, L A Remer, P V Hobbs, D E Ward, R Ottmar, L Flynn	SCAR-C - Smoke Cloud and Radiation Experiment: California
11:30 A.M.	P V Hobbs, J A Herring, D A Hegg	Airborne in Situ and Remote Sensing Measurements of Smoke From Biomass Fires in the Pacific Northwest
11:45 A.M.	F P J Valero, I Sokolik, P Pilewskie	Airborne Measurements of the Radiative and Optical Properties of Smoke Produced by the Biomass Burning During the SCAR-C Field Mission
12:00 P.M.	LUNCH BREAK	
1:30 P.M.	P Artaxo, R Babbit, T Eck, B Holben, A Lucia, A Pereira, A Setzer, D Ward	Airborne and Ground Based Characterization of Regional Smoke Events from Biomass Burning in Alta Floresta Brazil
1:45 P.M.	T F Eck, B N Holben, I Slutsker	Measurements of the Effects of Biomass Burning Smoke in the Amazon Basin on Solar Radiation Incident at the Surface
2:00 P.M.	B Holben, T Eck, I Slutsker, W Newcomb, A Setzer, A Pereira	Aerosol Climatology During the Burning Season from Ground Based Spectroradiometer Measurements
2:15 P.M.	L F Radke, K K Laursen	Biomass Smoke in the Tropics: From Sources to Sinks
2:30 P.M.	L A Remer, Y J Kaufman, B Holben	Comparison of Smoke and Industrial Aerosol Optical Properties
2:45 P.M.	C H Whitlock, D R Cahoon, T Konzelmann	Effects of Biomass Burning on Satellite Estimates of Surface Radiation in Central Africa

SESSION VII: FIRE CHARACTERISTICS, BIOMASS, FUEL, CHARCOAL

Chairs: B J Stocks, S W Trollope

3:00 P.M.	B Bilbao, E Medina	Burn Types and Nitrogen in Tropical Savannas of Calabozo, Venezuela
3:15 P.M.	M Moula, J M Brustet, J Fontan, J M Grégoire, H Evea	Contribution of Spread-Fire Model in the Study of Savannah Fires
3:30 P.M.	COFFEE BREAK	
4:00 P.M.	M I Bird, A R Chivas	The Carbon-Isotope Composition of Terrestrial Biomes
4:15 P.M.	J B Kauffman, R F Hughes, D L Cummings, D E Ward	Biomass Burning and Carbon Dynamics Along Anthropogenic Disturbance Gradients in the Amazon Basin
4:30 P.M.	L M McKenzie, D E Ward, W M Hao	Chlorine and Bromine in the Biomass of Tropical and Temperate Ecosystems
4:45 P.M.	R W Shea, B W Shea, J B Kauffman, D E Ward	Fuel Biomass and Nutrient Dynamics Associated With Savanna Fires in South Africa and Zambia
5:00 P.M.	R A Susott, S P Baker, G Olbu, D E Ward, J B Kauffman	Carbon, Hydrogen and Nitrogen Content of Tropical Ecosystem Fuels
5:15 P.M.	P R Thomas	Sustainable Biomass Burning - An Important Factor in Global Economy and Climate Change
5:30 P.M.	ADJOURN	
8:00-10:00 P.M.	EVENING ACTIVITY	GLOBAL EMISSIONS INVENTORY ON BIOMASS BURNING (IGAC/GEIA)
8:00 P.M.	J S Levine, D R Cahoon, W R Cofer, J G Goldammer, B J Stocks, K S Reightler, K P Lulla, C D Elvidge, J L McElroy, W S W Trollope, V W J H Kirchhoff, A W Setzer	A Global Inventory for the Geographical and Temporal Distribution of Biomass Burning and its Gaseous and Particulate Emissions
8:15 P.M.	J G Goldammer and Global Vegetation Fire Inventory Science Team	The Global Vegetation Fire Inventory (GVFI): Objectives and Progress Report
8:30 P.M.	D W Sproles	A Global Biomass Burning Data Repository
Poster	R C Dunkum, J O Olson, S E Sorlie	An Overview of the EOSDIS Langley Research Center Distributed Active Archive Center
	POSTER SESSION	All Posters Viewed

THURSDAY, MARCH 16, 1995

8:00 A.M.	R Yevich, J A Logan	Assessment of the Spatial Distribution of Biomass Fuel Consumption and Burning of Agricultural Waste
8:15 A.M.	W S W Trollope	Biomass Burning in the Savannas of Southern Africa With Particular Reference to the Kruger National Park in South Africa
8:30 A.M.	T A J Kuhlbusch, P J Crutzen	Black Carbon, the Global Carbon Cycle, and Atmospheric Carbon Dioxide
8:45 A.M.	D W Griffith, R J Yokelson, D E Ward	FTIR Studies of Laboratory Biomass Fires
Poster	W P Gilhooly, D J Verardo, S A Macko, V C Turekian, R J Swap, M Garstang	Stable Carbon Isotopic Analysis of Charcoal From Controlled and Natural Burns

SESSION VIII: TRANSPORT OF GASES AND PARTICULATES

Chairs: A M Thompson

9:00 A.M.	M Garstang, P D Tyson, E Browell, R Swap	Determination and Verification of Atmospheric Transport of Biomass Burning Products
9:15 A.M.	R J Swap, M Garstang, S Macko, P D Tyson, P Källberg	Contributions of Biomass Burning Emissions vs. Biogenic Emissions to the Tropical South Atlantic
9:30 A.M.	P D Tyson, M Garstang, R Swap, M Edwards, P Källberg, E V Browell	Horizontal and Vertical Transport of Aerosols and Trace Gases from Southern Africa: Implications for Global Change

SESSION IX: CARBON DIOXIDE

Chairs: P J Crutzen, R G Zepp

9:45 A.M.	G Bovio	Burnt Biomass and CO ₂ Produced by Forest Fires in Italy
10:00 A.M.	E S Kasischke	Fire, Global Warming, and the Carbon Balance of Boreal Forests
10:15 A.M.	COFFEE BREAK	
10:30 A.M.	A Shvidenko, S Nilsson, V Rojkov	Burning of Biomass in the Territories of the Former Soviet Eurasia: Impact on the Carbon Budget
10:45 A.M.	X Wang	Forest Fires in China: Carbon Dioxide Emissions to the Atmosphere
11:00 A.M.	S F Iacobellis, R Frouin, H Razafimanilo, R C J Somerville	Biomass Burning in the Savannas of North Africa and Atmospheric CO ₂

11:15 A.M.	A D Kambis, J S Levine	A Numerical Model of the Global Carbon Cycle to Assess the Impact of Biomass Burning on Levels of Atmospheric Carbon Dioxide
Poster	F Mack, G Esser, J G Goldammer	The Influence of Vegetation Fires on the Global Carbon Cycle
SESSION X: CARBON MONOXIDE AND METHANE		
Chairs: V W J H Kirchhoff, J A Logan		
11:30 A.M.	V S Connors, H G Reichle, M Flood	Global Distribution of Biomass and Carbon Monoxide in Middle Troposphere in April and October 1994
11:45 A.M.	S A Christopher, D V Vulcan, R M Welch	AVHRR and ERBE Investigations of Biomass Burning in the Tropics
12:00 P.M.	LUNCH BREAK	
1:30 P.M.	D O Neil	Refined Analysis of MAPS 1984 Global CO Measurements
1:45 P.M.	J A Logan, R Yevich, C M Spivakovsky, A D Alberts, P Novelli	An Analysis of the Causes of Recent Observed Decreases in the Concentrations of Carbon Monoxide Using a 3-Dimensional Chemical Tracer Model
2:00 P.M.	R D Saylor, R C Easter, E G Chapman, M K Brown	Estimates of Emissions Inferred from Satellite Measurements of Mid-Tropospheric Carbon Monoxide
2:15 P.M.	L N Yurganov, E E Grechko, E V Fokeeva	IR Solar Spectroscopy for Studying Total Column Carbon Monoxide Abundance: Manifestations of Biomass and Fossil Fuel Burnings on Global and Regional Scales
2:30 P.M.	J M Conny, L A Currie	The Isotopic Composition of Tropospheric CO in Brazil: A Model Scenario During the Biomass Burn Season
2:45 P.M.	V W J H Kirchhoff, M A da S Oliveira, P C Alvala	Biomass Burning Effects on the Distribution of Atmospheric Methane in Brazil: Observations at the Atlantic Coast and Amazonian Cerrado
Poster	A M Thompson, K E Pickering, D P McNamara, C O Justice, J D Kendall, R J Scholes, R G Zepp, M O Andreae, G T Helas, T Zenker	The Carbon Monoxide Budget in Southern Africa During TRACE-A/SAFARI-92

SESSION XI: OZONE

Chairs: F S Rowland, J Fishman

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| 3:00 P.M. | J Fishman, E V Browell, V G Brackett, J R Olson | <i>INVITED:</i> Large-Scale Impact of Biomass Burning on the Composition of the Troposphere as Determined from Analysis of Satellite Measurements |
| 3:30 P.M. | COFFEE BREAK | |
| 4:00 P.M. | A M Thompson | <i>INVITED:</i> Model Evaluation of Biomass Burning Effects on Tropical Ozone and Oxidizing Capacity: Overview and Examples From Safari-92/Trace-A |
| 4:30 P.M. | B Cros, B N Ahoua, D Nganga | Tropospheric Ozone on Both Sides of the Equator in Africa |
| 4:45 P.M. | K M Fakhruzzaman, J Fishman, V G Brackett | Tropospheric Ozone Over Equatorial Atlantic: Ozonesonde-Trajectory Analysis |
| 5:00 P.M. | J H Kim, R D Hudson, A M Thompson | A New Method of Deriving Time-Averaged Tropospheric Column Ozone in the Tropics Using TOMS Radiances: Intercomparison and Analysis |
| 5:15 P.M. | R D Hudson, C Sieber, J H Kim | Comparison of Tropospheric Ozone Determined From TOMS Radiances Between October 1989 and October 1992 |
| 5:30 P.M. | ADJOURN | |
| 7:00-9:30 P.M. | CONFERENCE BANQUET | |

FRIDAY, MARCH 17, 1995**SESSION XI: OZONE Continued**

Chairs: F S Rowland, J Fishman

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| 8:00 A.M. | V W J H Kirchhoff | The Biomass Burning Sequence of the Brazilian Savanna and Observations of Atmospheric O and CO. |
| 8:15 A.M. | G P Brasseur, W M Hao, J F Muller | Land Use Practices and Biomass Burning: Impact on the Chemical Composition of the Atmosphere |
| 8:30 A.M. | R B Chatfield, J A Vastano | Explaining the Accumulation of Intercontinental Biomass-Burning Pollution: High vs. Low Processes, Africa vs. South America, Cooking vs. Mixing |

8:45 A.M.	K E Pickering, A M Thompson, Y Wang, W-K Tao, D P McNamara, G W Sachse, G L Gregory, V Kirchhoff, J D Bradshaw, D R Blake	Simulation of Convective Transport of Biomass Burning Emissions Over Brazil During TRACE-A: Effects on Tropospheric O ₃ Production
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SESSION XII: GLOBAL CHANGE/ECOLOGY

Chairs: J C Menaut, G P Brasseur

9:00 A.M.	C Li, C Lai	A Study of Climate Change Related to Deforestation in the Dehong Area, Yunnan, China
9:15 A.M.	C Li, C Lai	The Impact of Deforestation on Eco-system Disasters in Yunnan Province, China
9:30 A.M.	D W Schindler	The Effects of Boreal Biomass Burning on Aquatic Ecosystems
9:45 A.M.	M A Sofronov, A V Volokitina	On Possible Escalation of Global Warming due to Increasing the Fire Occurrence in the Boreal Zone
10:00 A.M.	COFFEE BREAK	
10:30 A.M.	S Marshall, R J Oglesby, J A Taylor, J W Larson, D J Erickson III	Climatic Effects of Biomass Burning
Poster	W G Egan, A W Hogan	Carbon Dioxide, Water Vapor and Climate Change

SESSION XIII: HISTORIC BIOMASS BURNING

Chairs: J S Clark, J G Goldammer

10:45 A.M.	J S Clark	<i>INVITED:</i> What are the Spatial and Temporal Scales of Past Combustion Recorded in Sediments?
11:15 A.M.	L C Ivany, R J Salawitch	Ancient Wildfires: Biomass Burning at the Cretaceous-Tertiary Boundary
11:30 A.M.	D M McLean	The K-T Mass Extinctions: Wildfire Soot and Dust-Induced Global Cooling or CO ₂ -Induced Warming? New Insights
11:45 A.M.	G H Miller, B J Johnson	Is Persistent Drought in the Australian Outback Linked to Vegetation Change Caused by late Pleistocene Aboriginal Burning?
12:00 P.M.	J L Betancourt, T W Swetnam, S W Leavitt	Biospheric and Atmospheric Impacts of Regional-Scale Forest Fires During the Past Century
12:15 P.M.	LUNCH BREAK	

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| 1:30 P.M. | C Tymstra, M E Alexander,
P J Murphy, B Janz | The 1950 Wildfire in Peace River Region of Alberta/British Columbia, Canada |
| Poster | J G Goldammer, P Cwielong,
N Rodriquez | One Thousand Years of Fire History of Andino-Patagonian Forests Recovered from Sediments of the Rio Epuyén River, Chubut Province, Argentina |
| Poster | K F Weiss | Prehistoric Fire Regimes in East Africa by Lake Sediment Analysis |

SESSION XIV: KUWAIT OIL FIRES

Chairs: P V Hobbs, W R Cofer III

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| 1:45 P.M. | W R Cofer, J S Levine, D R Cahoon, E L Winstead, J P Pinto, R K Stevens | Gaseous Composition of Kuwaiti Oil Fire Smoke Determined From Individual Wellfires |
| 2:00 P.M. | J A Herring, R J Ferek, P V Hobbs | Heterogeneous Chemistry in the Smoke Plume from the 1991 Kuwait Oil Fires |
| 2:15 P.M. | I Sokolik, F P J Valero, P Pilewski | Spatial and Temporal Variations of the Radiative Characteristics of Airborne Smoke Clouds from the Kuwait Oil Fires |
| 2:30 P.M. | J A Herring, P V Hobbs | Radiatively Driven Dynamics of the Plume from the 1991 Kuwait Oil Fires |
| 2:45 P.M. | P K Dowling, J S Levine | The Kuwait Oil Fires and Their Regional Meteorological Impacts |
| 3:00 P.M. | J L Ross, R J Ferek, P V Hobbs | Particle and Gas Emissions from an In-Situ Burn of Crude Oil on the Ocean During the Newfoundland Offshore Burn Experiment |
| 3:15 P.M. | J L Ross, A P Waggoner, P V Hobbs | Lidar Measurements of a Smoke Plume Produced During the Newfoundland Offshore Burn Experiment |
| 3:30 P.M. | CONFERENCE ADJOURNS | |