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第9回レーザーレーダー国際会議報告

9th International Laser Radar Conference

稲場文男 Humio INABA 東北大通研 Tohoku University
五十嵐 隆 Takashi IGARASHI 電波研 Radio Research Labs
竹内延夫 Nobuo TAKEUCHI 国立公害研 Natl. Inst. for Env. Studies

第9回レーザーレーダー国際会議(9ILRC)は、1979年7月2～5日に、ドイツのミュンヘンで開かれた。主催者は米国気象学会で、米国光学会(OSA)など7機関が共催しており、会議はドイツ航空宇宙局(DFVLR)と大気物理研究所(Inst. of Atm. Phys.)がホストとなって開催された。参加者は24ヶ国から206人で、そのうち西ドイツから56人、アメリカから45人であった。日本からの参加は稲場、五十嵐、竹内の3人であった。会議は9つのセッションに分かれている。セッション別・国別の講演研数を下表に示した。全体118件のうち、約半数の50件が米国から提出された。主催地の西ドイツも16件提出している。その他、中国からの参加があり、大きな関心を呼んだ。

次ページにプログラムを示した。

9th International Laser Radar Conference Munich, July 2-5, 1979

Session	total	USA	FRG	USSR	China	Japan	Fra	Can	UK	Swe	Ita	Ausr	Den	Neth	Jam	Ind
1. Wind, new instruments, and analysis techniques	19(1)	6(1)	3	3		2	1	1	1				1	1		
2. Tropospheric aerosols: characteristics and distributions	19(3)	7	2	4(1)	2(1)	2(1)								1	1***	
3. Multiple scattering and visibility	16(1)	5(1)	4	0	2			2			2	1				
4. Stratospheric aerosols	13(1)	9*(1)	1	1			1								1	
5. Spacelab lidar applications	11	9	2	0												
6. Atomic and molecular species	18(1)	6(1)	2	1		1	2		2	3						1
7. Spacelab lidar design	4	3	1**	0												
8. Meteorological applications	6	0	1	3	3								1			
9. Plumes and inhomogeneous aerosol distributions	12	5	0	1	1	1	1	1				1				
Total	118(7)	50(4)	16	13(1)	7(1)	6(1)	5	4	3	3	2	2	2	2	2	1

* (4-5) with Brazil & Australia, (4-11) with UK

** (7-1) with France & Netherland, *** (2-13) with FRG

( ) 内は invited talk の数

9TH INTERNATIONAL LASER RADAR CONFERENCE

ON

LASER ATMOSPHERIC STUDIES (9ILRC)

2 - 5 JULY 1979

MÜNCHEN - MUNICH - FAIR GROUNDS

Monday, July 2

OPENING SESSION 13:00 - 14:15

0- 1 Welcoming Address
Ch. Werner, Chairman of the 9 ILRC Committee
DFVLR-Institute of Atmospheric Physics, Oberpfaffenhofen, Fed.Rep. of Germany

0- 2 Opening
Staatsminister A. Dick
Bayerisches Staatsministerium für Landesentwicklung und Umweltfragen

0- 3 Atmospheric constituents of importance for radiative transfer
H.-J. Bolle
University of Innsbruck, Innsbruck, Austria

SESSION 1: WIND, NEW INSTRUMENTS, AND ANALYSIS TECHNIQUES
Chairman: T.H. Jacobsen 14:20 - 18:00
O.R.E.V., Courcelette, Quebec, Canada

1- 1 Invited Paper: The dual-frequency Doppler lidar technique for wind measurement
R.M. Schotland
University of Arizona, Tucson, Arizona, USA

1- 2 Atmospheric effects on infrared Doppler lidar
R.K. Schwiesow, R.E. Cupp, and V.E. Derr
ERL/NOAA, Boulder, Colorado, USA

1- 3 Recent developments in CO_2 laser-velocimetry
R. Foord, R. Jones, W.R.M. Pomeroy, J.M. Vaughan, D.V. Willetts
Royal Signals and Radar Establishment, Gt. Malvern, Worcestershire, U.K.

1- 4 Remote measurement of wind velocity with a time-of-flight laser anemometer
L. Lading, E. Rasmussen, C. Fog, and A.S. Jensen
Riso National Laboratory, Roskilde, Denmark

1- 5 Experimental study of optical interference fringes generated over great distances in the atmosphere
H.J. Pfeiffer, M. König, B. Koch
German-French Research Institute, Saint-Louis, France

1- 6 Statistics of a postdetector signal in laser sounding of the atmosphere
V.G. Astafurov, G.N. Glazov, and G.M. Igonin
Institute of Atmospheric Optics, Tomsk, USSR

1- 7 The lidar function at short range
J. Langerholc, and Th. Helldorsson
Messerschmitt Bölkow Blohm GmbH.
München, Fed.Rep. of Germany

Chairman: E.E. Uthe
SRI International, Menlo Park, California, USA

1- 8 Detector power for non-coaxial and coaxial lidar arrangements with central obstruction
J. Harms, W. Lahmann, and C. Weitkamp
GKSS-Forschungszentrum, Geesthacht, Fed.Rep. of Germany

1- 9 Experimental determination of the geometrical form factor in the laser radar equation
Y. Sasano, H. Shimizu, N. Takeuchi, and M. Okuda
National Institute for Environmental Studies, Ibaraki, Japan

1-10 Hidden errors in lidar signals
G.J. Kunz
Physics Laboratory TNO, The Hague, Netherlands

1-11 Improved display techniques for laser radar measurements
H. Shimizu, Y. Sasano, Y. Yasuoka, N. Takeuchi, and M. Okuda
National Institute for Environmental Studies, Ibaraki, Japan

1-12 Remarks on the operational use of a lidar-system
K. Klapheck
Meteorologisches Observatorium Hamburg, Hamburg, Fed.Rep. of Germany

1-13 Narrowband IR lidar-receiver: Atomic vapor quantum counter
J.A. Gelbwachs, C.F. Klein, and J.E. Wessel
Chemistry & Physics Laboratory, Los Angeles, USA

1-14 Operating characteristics of a UV (solar blind) lidar
John Cooney
Drexel University, Philadelphia, USA
Kenneth Petry
Naval Air Development Center, Warminster, USA

1-15 Laser methods for searching mineral deposits
I.M. Nazarov, and Sh.D. Fridman
Hydrometeorological Service of the USSR, Moscow, USSR

1-16 CO_2 (10.6μm) atmospheric propagation enhancement due to off line center operation
G.W. Sutton, and D.H. Douglas-Hamilton
Avco Everett Research Laboratory, Everett, USA

1-17 Dual wavelength laser
T.V. Jacobsen
Defence Research Establishment Valcartier, Courcelette, Canada

1-18 A double-frequency polarization lidar-loza-3
V.E. Zuev, B.V. Kaul, A.F. Kuteliev, I.V. Samokhvalov, A.A. Tikhomirov, V.V. Burkov, and G.V. Ushakov
Institute of Atmospheric Optics, Tomsk, USSR

1-19 A theoretical approach to the lidar measurement of differential absorption for non-homogeneous media
G.L. Korb
NASA/Goddard Space Flight Center, Greenbelt, USA
Chi Y. Weng
Systems & Applied Science Corporation, Riverdale, USA

Tuesday, July 3

SESSION 2: TROPOSPHERIC AEROSOLS: CHARACTERISTICS AND DISTRIBUTIONS 09:00 - 13:00
Chairman: R.K. Schwiesow
ERL/NOAA, Boulder, Colorado, USA

2- 1 Invited Paper: Studies on laser remote sensing of the atmosphere
X.J. Zhou
Academia Sinica, Beijing, China

2- 2 Invited Paper: Laser radar studies and applications in Japan
H. Inaba
Tohoku University, Sendai 980, Japan

2- 3 Invited Paper: Laser sounding of aerosols
V.E. Zuev
Academy of Sciences, Tomsk, USSR

2- 4 Some results of continuing lidar slant path measurements at Tucson, Arizona
J.A. Reagan, T.V. Bruhns, R.M. Schotland, and B.M. Herman
University of Arizona, Tucson, USA

2- 5 The vertical distribution of atmospheric extinction coefficient on lower troposphere measured by a ruby lidar
LU Da-ren, Wei Chung, and Lin Hai
Academia Sinica, Beijing, China

2- 6 Statistical methods for interpreting lidar measurements of atmospheric transmittance
S.I. Kavkayonov, and G.M. Krekov
Academy of Sciences, Tomsk, USSR

2- 7 Vertical aerosol distributions over the north atlantic and mediterranean
J.M. Livingston, and E.E. Uthe
SRI International, Menlo Park, California, USA

Chairman: H. Quenzel
Meteorologisches Institut, Universität München, München, Fed.Rep. of Germany

2- 8 Statistical characteristics of the lidar ratio vertical structure in the lower troposphere
Yu.S. Balin, V.E. Zuev, and I.V. Samokhvalov
Academy of Sciences, Tomsk, USSR

2- 9 Lidar measurements of concentration and size distribution profiles of tropospheric aerosol
H. Retter, M. Littfaß, W. Carnuth, and W. Funk
Fraunhofer Institute for Atmospheric Environmental Research, Garmisch-Partenkirchen, Fed.Rep. of Germany

2-10 Measurement of the optical extinction coefficient of atmospheric aerosols by means of a high spectral resolution lidar
S.T. Shipley, E.W. Eloranta, and D.H. Tracy
University of Wisconsin, Madison, USA

2-11 Inversion of the aerosol size distribution from backscatter- and extinction coefficients at four lidar wavelengths
H. Müller, and H. Quenzel
Meteorologisches Institut der Universität München, München, Fed.Rep. of Germany

2-12 Aerosol size distribution inference from scattering
W.A. Pearce
EG&G/Washington Analytical Services Center
Riverdale, USA
Alfred C. Holland
National Aeronautics and Space Administration
Wallops Island, USA

2-13 A joint lidar-radiometer experiment
G.S. Kent
University of the West Indies, Jamaica, West Indies
F. Köpp, and Ch. Werner
Institute for Atmospheric Physics (DFVLR)
Oberpfaffenhofen, Fed.Rep. of Germany

2-14 The investigation of an aerosol microstructure of the ground layer using a three-frequency lidar
V.E. Zuev, B.S. Kostin, and I.E. Neats
Academy of Sciences, Tomsk, USSR

2-15 Statistical analysis of lidar measurements
C.W. Lamberts
Physics Laboratory TNO
The Hague, Netherlands

2-16 Pattern recognition of observed aerosols by laser radar
Y. Murakami, O. Yamashita, M. Yamamoto, and M. Hishinuma
Faculty of Engineering, University Osaka, Japan
W. Takeuchi
National Institute for Environmental Studies, Tsukuba, Japan

2-17 Lidar studies of the convective boundary layer
R. Boers, E. Eloranta, and J. Sroga
University of Wisconsin, Madison, USA
R. Coulter
Argonne National Laboratory, Argonne, USA

2-18 Coagulation in two common liquid aerosols
G.C. Holst
Chemical System Laboratory,
Aberdeen Proving Ground, USA

2-19 Aerosol coagulation affects on visible/infrared laser transmissometry
A. Deepak, and G.K. Yue
Institute for Atmospheric Optics and Remote Sensing (IFAORS) Hampton, USA

SESSION 3: MULTIPLE SCATTERING AND VISIBILITY 14:00 - 17:10
Chairman: A.I. Carswell
Dept. of Physics and CRESS
York University, Toronto, Canada

3- 1 The slant meteorological visibility, a physical-basis of lidar visibility measurements
G.H. Ruppersberg
DFVLR-Institute of Atmospheric Physics
Oberpfaffenhofen, Fed.Rep. of Germany

3- 2 An experiment for slant visibility measurement by lidar
Zhao Yan-zeng, Tao Li-jun, and Mao Nan-jun
Academia Sinica, Peking, China

3- 3 Lidar visibility measurements
L. Pantani, and L. Stefanutti
Istituto di Ricerca sulle Onde Elettromagnetiche del C.N.R., Firenze, Italy

3- 4 Portable lidar for slant range visibility and cloud height measurements
Ch. Werner
Institute of Atmospheric Physics (DFVLR)
Oberpfaffenhofen, Fed.Rep. of Germany

3- 5 Invited Paper: A solution for multiple scattering
E.W. Eloranta, and S.T. Shipley
University of Wisconsin, Madison, USA

3- 6 An approximate lidar equation taking consideration of double scattering
Lu Da-ren
Academia Sinica, Peking, China

3- 7 Multiple scattering contribution to lidar returns from non-homogeneous fogs
P. Bruscaglioni, A. Ismaelli, G. Millioni, and G. Zaccanti
Istituto di Fisica Superiore dell' Universita di Firenze, Italy

3- 8 Multiple scattering of laser beam in aerosols: The small angle approximation and beyond
W.G. Tam, and A. Zardecki
DREV, Courcelette, Canada

3- 9 Scattering of radiation by hexagonal ice crystals
Peter Wendling
Meteorologisches Institut der LM-Universität München, Fed.Rep. of Germany

Chairman: R.W.L. Thomas
EG&G, Riverdale, USA

3-10 Lidar sounding of high clouds
C.M.R. Platt, and A.C. Dilley
CSIRO Division of Atmospheric Physics
Aspendale, Victoria, Australia

3-11 Light scattering by nonspherical ice crystals
Kuo-Nan Liou, and Rich Coleman
University of Utah, Salt Lake City, USA

3-12 Cloud reflectance measurements by laser backscattering
A.I. Carswell, S.R. Pal, and J.S. Ryan
York University, Toronto, Canada

3-13 Recent laboratory studies of the scattering and depolarizing behaviors of clouds
K. Sassen, and Kuo-Nan Liou
University of Utah, Salt Lake City, USA

3-14 Polarization lidar for orographic cloud modification programs: An initial field application
K. Sassen
University of Utah, Salt Lake City, USA

3-15 Characterization of clouds using lidar signals
R.W.L. Taylor
EG&G/Washington Analytical Services Center
Riverdale, USA
A.C. Holland
Wallops Flight Center, Wallops, USA

3-16 Scattering by different types of nonspherical particles
R.H. Zerull, R.H. Giese, S. Schwill, and K. Weiß
Ruhr-University Bochum, Bochum, Fed.Rep. of Germany

Wednesday, July 4

SESSION 4: STRATOSPHERIC AEROSOLS 08:00 - 10:30
Chairman: R. Reiter
Institute for Atmospheric Environmental Research, Garmisch-Partenkirchen, Fed. Rep. of Germany

4- 1 Invited Paper: Stratospheric aerosol measurements
P.B. Russell
SRI International, Menlo Park, USA

4- 2 Satellite measurements of stratospheric aerosols and gases: SAM II and SAGE
M.P. McCormick
NASA Langley Research Center, Hampton, USA

4- 3 An airborne lidar for stratospheric aerosol measurements
W.H. Fuller, Jr., D.M. Robinson, and B.R. Rouse
NASA Langley Research Center, Hampton, USA

4- 4 In-situ measurements of aerosol optical properties for interpretation of profiles of backscattering and extinction by stratospheric aerosols
G.W. Grams
Georgia Tech, Atlanta, USA
M.P. McCormick, and D.C. Woods
NASA Langley Research Center, Hampton, USA

4- 5 A Comparison of lidar and balloon-borne optical counter measurements of the stratospheric aerosol layer in the northern and southern hemispheres
D.J. Hofmann, and J.M. Rosen
University of Wyoming, Laramie, USA
M.P. McCormick, T.J. Swissler, W.P. Chu, and W.H. Fuller, Jr.
NASA Langley Research Center, Hampton, USA
J. Laby
University of Melbourne, Melbourne, Australia
B.R. Clemesha, and D.M. Simonich
INPE/CNPq, Sao Paulo, Brazil

4- 6 Analysis of lidar observations of the stratospheric aerosol layer (1974-1979)
P. Hamill, T.J. Swissler, and M. Osborn
Systems and Applied Sciences Corporation, Hampton, USA
M.P. McCormick, and W.H. Fuller
NASA Langley Research Center, Hampton, USA

4- 7 Short term temporal variations in the stratospheric aerosol layer
M.T. Philip, and G.S. Kent
University of the West Indies, Kingston, Jamaica

4- 8 Study of organized motions in the middle atmosphere 30-100 km by Rayleigh and resonance laser sounding
M.L. Chanin, and P. Jurany
Service d' Aéronomie du CNRS, Verrières-le-Buisson, France

4- 9 Lidar observations of the stratospheric aerosol layer since October 1976
R. Reiter, M. Jäger, W. Carnuth, and W. Funk
Fraunhofer Institute for Atmospheric Environmental Research, Garmisch-Partenkirchen, Fed. Rep. of Germany

4-10 Lidar investigations of light scattering by non-spherical particles of the upper atmosphere
V.E. Zuev, B.V. Kaul, N.V. Kozlov, and I.V. Samokhvalov
Institute of Atmospheric Optics, Tomsk, USSR

4-11 Backscatter, extinction, and mass content of stratospheric aerosols
R.G. Pinnick
US Army Atmospheric Sciences Laboratory
White Sands Missile Range, USA
S.G. Jennings
University of Manchester Institute of Science and Technology, Manchester, U.K.
P. Chylek
Center of Earth and Planetary Physics, Harvard University Cambridge, USA

4-12 Airborne lidar mapping of tropospheric-stratospheric exchange
W.S. Heaps
NASA/Goddard Space Flight Center
Greenbelt, USA

4-13 Simulated backscatter and extinction profiles for the stratospheric aerosol
P. Hamill, and T.J. Swissler
Systems and Applied Sciences Corporation
Hampton, USA
R.P. Turco
R & D Associates, Inc., Marina del Rey, USA
O.B. Toon
NASA-Ames Research Center, Moffett Field, USA

SESSION 5: SPACELAB LIDAR APPLICATIONS 11:00 - 12:50
Chairman: E.D. Hinkley
JPL/CIT, Pasadena, USA

5- 1 NASA Shuttle atmospheric lidar working group study
E.V. Browell
NASA Langley Research Center, Hampton, USA

5- 2 Atmospheric lidar multi-user instrument - a spacelab payload
J.E. Harris
Langley Research Center, Hampton, USA
R.V. Greco
General Electric Space Division
Philadelphia, USA

5- 3 Evolutionary shuttle atmospheric lidar program
J.E. Harris, and E.V. Browell
NASA Langley Research Center, Hampton, USA

5- 4 The German airborne lidar facility, a prestage of a spacelab - borne system
W. Renger, and P. Moerl
DFVLR-Institute for Atmospheric Physics
Oberpfaffenhofen, Fed.Rep. of Germany

5- 5 Global wind monitoring by satellite-borne coherent lidar
R.M. Huffaker, T.R. Lawrence, P.A. Mandics, R.J. Keeler, M.J. Post, J.I. Priestley, and F.F. Hall, Jr.
National Oceanic and Atmospheric Administration Boulder, USA

5- 6 A two wavelength lidar technique for the measurement of atmospheric temperature profiles
C.L. Korb
NASA/Goddard Space Flight Center, Greenbelt, USA
Chi Y. Weng
Systems and Applied Science Corporation, Riverdale, USA

5- 7 Sensitivity analysis of remote sounding of tropospheric aerosols by space borne lidar system
A. Deepak, and U. Farrukh
Institute for Atmospheric Optics and Remote Sensing, Hampton, USA

5- 8 Proposed use of a first-generation space-shuttle lidar in aerosol, cloud, and ozone studies
P.B. Russell
SRI International, Menlo Park, USA
M.P. McCormick
NASA Langley Research Center, Hampton, USA
T.J. Swissler
Systems and Applied Sciences Corporation Hampton, USA
G.W. Grams
Georgia Institute of Technology, Atlanta, USA

5- 9 Meteorological lidar
T.D. Wilkerson
University of Maryland, College Park, USA
G.K. Schwemmer
Goddard Space Flight Center, Greenbelt, USA

5-10 Spaceborne lidar background reduction using Fraunhofer lines of the solar spectrum
H.W. Halsey
General Electric Space Division
Philadelphia, USA

5-11 A proposal for a spacelab borne lidar experiment to measure nitric oxide in the atmosphere
D. Beran
DFVLR-Institute for Optoelectronics
Oberpfaffenhofen, Fed.Rep. of Germany

Lunch

SESSION 6: ATOMIC AND MOLECULAR SPECIES 14:00 - 17:50
Chairman: H. Walther
Section Physics, University München
Garching, Fed.Rep. of Germany

6- 1 Invited Paper: High energy tunable laser application for remote air pollution measurements
R.L. Byer
Stanford University, Stanford, USA

6- 2 Range resolved measurements of atmospheric pollutants
W. Bauwer, K.W. Rothe, and H. Walther
Sektion Physik der Universität München
Garching, Fed.Rep. of Germany

6- 3 Practical implementation of a differential absorption and scattering lidar
W. Lahmann, C. Weitkamp, J. Harms, and W. Michaelis
GKSS-Forschungszentrum, Geesthacht, Fed. Rep. of Germany

6- 4 Vertical profile of tropospheric and stratospheric ozone by differential absorption technique
M.L. Chanin, J.Y. Allain, and J. Pelon
Service d'Aéronomie du CNRS
Verrières-le-Buisson, FRANCE

6- 5 Range-resolved measurements of ozone in ambient atmosphere using differential absorption CO_2 laser radar
K. Asai, T. Itabe, and T. Igarashi
Radio Research Laboratories, Koganei, Tokyo, Japan

6- 6 Development and preliminary operation of a S and 10 μm dial system
P.L. Kelley, D.K. Killinger, M. Menyuk, A. Mooradian, P.F. Moulton, and W.E. DeFeo
Lincoln Laboratory, Lexington, USA

6- 7 Ultraviolet and infrared differential lidars at CERL
D.J. Brassington, S. Sutton, and R.N. Varey
Central Electricity Research Laboratories
Leatherhead, U.K.

Coffee

SESSION 6: (continued)
Chairwoman: M.L. Chanin
Service d' Aéronomie du CNRS
Verrières-le-Buisson, FRANCE

6- 8 Automatical two-waves laser analyser of geseous pollutants
E.M. Artemov, V.M. Artemov, V.P. Biryulin, and V.S. Galkhin
Hydrometeorological Service of the USSR
Moscow, USSR

6- 9 Temperature and pressure dependence of absorption cross sections for CO_2 laser wavelengths
U. Persson, B. Marthinsson, J. Johansson, and S.T. Eng
Department of Electrical Measurements
Chalmers University, Göteborg, Sweden

6-10 UV spectroscopy of SO_2 and NO_2 using a frequency doubled dye laser, with application to the remote sensing of atmospheric pollutants
B.W. Jolliffe, and P.T. Woods
Division of Quantum Metrology, Teddington, U.K.

6-11 Gas concentration measurements with a computerized diode-laser long-path absorption system
C.O. Falt, E. Max, and S.T. Eng
Department of Electrical Measurements
Chalmers University, Göteborg, Sweden

6-12 Absolute fluorescence cross-sections and quenching rates for NO_2
T.J. McGee, T.J. McIlrath, and C. Dulcey
University of Maryland, College Park, USA

6-13 Signal optimization for fluorescence lidar
W.S. Heaps
NASA/Goddard Space Flight Center
Greenbelt, USA

6-14 Asymmetries in the angular distribution of fluorescence from microspheres
R.E. Benner, J.F. Owen, V.A. Korobov, and R.K. Chang
Yale University, New Haven, USA

6-15 Effects of multimode laser beam in saturated flourescence spectroscopy
R. Velusamy, and M.N. Rao
Laser Communication Laboratory
Madras, India

6-16 Recent results of high atmospheric species by lidar sounding
M.L. Chanin, and J.P. Jegou
Service d'Aéronomie du CNRS,
Verrières-le-Buisson, France

6-17 Lidar observations of the atmospheric sodium layer over Urbana, Illinois
C.S. Gardner, and C.F. Sechrist, Jr.
University of Illinois at Urbana-Champaign
Urbana, USA

6-18 A mobile lidar system for measurements of NO_2, SO_2, O_3 and particles
K. Fredriksson, B. Galle, K. Nyström, and S. Svanberg
Chalmers University of Technology
Göteborg, Sweden

Thursday, July 5

SESSION 7: SPACELAB LIDAR DESIGN 09:00 - 09:40
Chairman: J.E. Harris
NASA Langley Research Center, Hampton, USA

7- 1 Laser ranging instrumentation for multiple space applications
Th. Helldörfsen, G. Barthel, and D. Meißner
Messerschmitt Bölkow Blohm GmbH.
München, Fed.Rep. of Germany
M. Clairon
LPTF Observatoire de Paris, Paris, France
H.P. Lutz, and K. David
ESTEC, Noordwijk, Netherlands

7- 2 Spaceborne lidar - system design approach
D.A. Hetzel
General Electric Space Division
Philadelphia, USA

7- 3 Accomodation and operation of an atmospheric lidar facility on shuttle/spacelab
U. Pollvogt
General Electric Space Division
Philadelphia, USA

7- 4 The receiver for a shuttle-borne atmospheric lidar multi-user instrument system
M. Hazen, and W.B. Wetherell
The Itek Corporation, Lexington, USA

SESSION 8: METEOROLOGICAL APPLICATIONS 09:40 - 10:40
Chairman: P.L. Kelley
Lincoln Laboratory, Lexington, USA

8- 1 Determination of water vapor profiles in the atmosphere using a tunable ruby laser
V.E. Zuev, B.P. Ivanenko, V.M. Marichev, I.E. Neats, I.V. Samokhvalov, and A.Y. Sosnin
Institute of Atmospheric Optics, Tomsk, USSR

8- 2 Measurements of the vertical absolute humidity distribution using ruby lasers
Ch. Werner, and H. Herrmann
DFVLR-Institute of Atmospheric Physics
Oberpfaffenhofen, Fed.Rep. of Germany

8- 3 A dial lidar for remote sensing of water vapor profile
Zhao Yan-seng, Wu shao-ming, Jin Hui-shu, Zhang Chun-lin, and Huang Zhong-fang
Academia Sinica, Peking, China

8- 4 Remote measurement of temperature with laser light scattered by molecules
L. Lading, A.S. Jensen, R. Schwiesow, C. Fog, and E. Rasmussen
Riso National Laboratory, Roskilde, Denmark

8- 5 Atmospheric temperature measurements using pure rotational Raman spectra and lidar calibration
Yu.F. Arshinov, S.M. Bobrovnikov, V.E. Zuev, and I.V. Samokhvalov
Institute of Atmospheric Optics, Tomsk, USSR

8- 6 Spectroscopic data provision for laser sounding of atmospheric water vapor using a short wave range
A.B. Antipov, V.E. Zuev, V.A. Kapitanov, V.P. Lopasov, S.F. Lukyanenko, Yu.R. Ponomarev, L.N. Sinitsa, and I.S. Tyryshkin
Institute of Atmospheric Optics, Tomsk, USSR

Coffee

SESSION 9: PLUMES AND INHOMOGENEOUS AEROSOL DISTRIBUTIONS 11:00 - 13:00
Chairman: John Reagan
University of Arizona
Tucson, USA

9- 1 An experimental evaluation of the lidar opacity method for enforcement of stationary source emission standards
E.E. Uthe
SRI International, Menlo Park, USA
A.W. Dybdahl
U.S. Environmental Protection Agency
Denver, USA

9- 2 Diurnal behavior of power plant plumes in the Tennessee (U.S.A.) region
E.E. Uthe
SRI International, Menlo Park, USA

9- 3 Lidar plume dispersion measurements during the Nanticoke environmental study
R.M. Hoff
Atmospheric Dispersion Division
Downsview, Canada

9- 4 Determination of point-source plume dimensions using a downward looking airborne lidar
J.E. Eckert, and D.M. McNelis
U.S. Environmental Protection Agency
Las Vegas, USA

9- 5 Remote measurement of smoke plume concentration using lidar
Sun Jing-qun, Tao Li-jun, and Wu Shao-ming
Academia Sinica, Peking, China

9- 6 Remote probing of the atmospheric diffusion parameters using lidar
Sun Jing-qun, Jin Hui-shu, and Hu Yu-tang
Academia Sinica, Peking, China

9- 7 Lidar measurements of aerosol mass concentration in the plume of industrial enterprises
I.M. Nazarov, Sh.D. Fridman, Y.I. Rozhdestvenskaya, V.F. Zhuravlev, and K.V. Tulinov
Hydrometeorological Service of the USSR
Moscow, USSR

9- 8 A computerized laser radar system and its application for monitoring stack plumes
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9- 9 Thermal plume simultaneous observations by infrared lidar K-band radar and photogrammetry
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9-10 Lidar observations of smoke and dust clouds
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9-11 Lidar studies of the transport and dispersion of pollutants by sea breezes
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9-12 A new lidar technique using fluorescent aerosol: as tracers of air motion and diffusion
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