

## APPENDIX A

### Workshop Program

# The First International Workshop on Spaceborne Cloud Profiling Radar

Tsukuba, Japan  
24 January - 26 January 2000

Hosted by  
Communications Research Laboratory  
GKSS Research Center  
Laser Radar Sub-group, Cloud Profiling Radar Sub-group, ATMOS-B1 Team/ESTO  
and  
Science and Technology Agency of Japan

## Monday 24 January 2000

8:00

Registration continued through Wednesday, 26 January

9:00

Welcome address

Hiroshi Kumagai (CRL)

## Key note speeches

Chairperson: H. Kumagai

9:10

Do we need a cloud profiling radar in a satellite?

E. Raschke (GKSS, invited) and M. Quante

9:40

On the science of a space borne radar

G. L. Stephens (Colorado State Univ. , invited)

10:10

The use of ground-based cloud radar for continuous cloud observations

T. Ackerman (Pacific Northwest National Laboratory, invited), R.T. Marchand, E. E. Clthiaux and M. Sengupta

10:40-10:55

Coffee break

## Session 1: Models & Simulations

Chairperson: E. Raschke

10:55

1-1 Modeling of clouds and aerosols toward long-range forecasts of Asian summer

monsoon

T. Iwasaki (Tohoku Univ., invited)

11:25

1-2 Suggestion from analysis of TRMM

Y. Takayabu (NIES, invited)

11:45

1-3 Numerical Simulation of a Cirrus Cloud and its Detectability by a Cloud Radar

K. Maruyama(Frontier Research System for Global Change), L.Levkov and  
Y.Fujiyoshi

12:05-13:30

Lunch break

13:30

1-4 Impact of Rain Assimilation on the ECMWF Analysis and Forecasts

V. Marecal and J. Mahfouf (ECMWF) (by Ilgworth, invited)

14:00

1-5 Effect of low clouds and low level water vapor in the diurnal cycle of tropical  
convection

A. Numaguti (Hokkaido Univ., invited) and H.Kubota

14:20

1-6 Global Three-dimensional Simulation and Radiative Forcing of Various Aerosol  
Species

T. Takemura (CCSR,Univ.of Tokyo,invited), H. Okamoto , A. Numaguti , A.  
Higurashi, and T. Nakajima

## **Session 2: Passive Remote Sensing - Ground Base and Airborne**

Chairperson: S. Matrosov

14:40

2-1 Measurement of microphysical and radiative properties of stratiform clouds in the  
Japanese Cloud-Climate Study (JACCS) program.

S. Asano (Tohoku Univ., invited) and JACCS/MRI Observation Team

15:10

2-2 Airborne measurement of the cloud radiation budget for stratocumulus in the Japanese  
Cloud-Climate Study(JACCS)

A. Uchiyama (MRI, invited) and JACCS/MRI Observation Team

15:30

2-3 Observation of polar clouds and aerosols for radiation budget and climate study

T. Yamanouchi (NIPR, invited)

16:00-16:15

Coffee break

## **Session 3: Passive Remote Sensing - Satellite**

Chairperson: J. Testud

16:15

- 3-1 Evaluation of satellite remote sensing of cloud  
T. Hayasaka (Tohoku Univ., invited), H. Iwabuchi and N. Kikuchi

16:40

- 3-2 Cirrus cloud remote sensing using the split window and 6.7 micro-m  
T. Inoue (MRI, invited)

17:00

- 3-3 Spectral aerosol optical thickness retrieval using polarization measurements from space  
K. Masuda (MRI, invited), M. Sasaki, H. Ishimoto and T. Takashima

#### **Session 4: Active Remote Sensing - Radar**

Chairperson: T. Ackerman

17:20

- 4-1 Radiative parameters from cloud profiling radar  
K. Caillault and J. Testud (Univ. de Velizy, invited)

17:45

- 4-2 Retrievals of cloud content and particle characteristic sizes using NOAA ETL cloud radars  
S. Y. Matrosov (NOAA, invited)

18:10

- 4-3 Millimeter wave scattering from cloud ice crystals  
K. Aydin (Pen State Univ., invited)

18:35

- 4-4 Toward a suite of cloud property retrieval algorithms for CloudSat: philosophy + recent progress  
G. Mace (Univ. of Utah, invited), Z. Wang, K. Sassen, R. Marchand, G. Stephens, T. Ackerman and S. Matrosov

19:00

Sessions end for the day

#### **Tuesday 25 January 2000**

#### **Session 4: Active Remote Sensing Radar (continued)**

Chairperson: K. Aydin

8:30

- 3-4 An estimation of the radiative forcing of indirect effects of anthropogenic aerosols from satellite remote sensing and climate model  
T. Nakajima (CCSR Univ. of Tokyo, invited), A. Higurashi, K. Kawamoto, J. E. Penner, T. Takemura and K. Suzuki (from session 3)

8:55

- 4-5 A potential of cloud profig radar for measurements of cloud and precipitation  
T. Kobayashi (MRI, invited), A. Adachi and K. Masuda

9:15

4-6 Preliminary results of the cloud observation with CRL airborne cloud profig radar (SPIDER)

H. Horie (CRL), H. Okamoto, S. Iwasaki, H. Kuroiwa and H. Kumagai

9:35

4-7 Preliminary Field Evaluation of a Ka-band Doppler Radar for Fog and Cloud Observations

K. Hamazu (Mitsubishi Electric co. ltd), T. Wakayama, H. Hashiguchi, T. Matsuda and S. Fukao

9:55

4-8 The NIED Dual-frequency Cloud Radar System under Development

K. Iwanami (NIED, Japan), M.Maki, R.Misum, S.Watanabe and K.Hata

10:15-10:25

Coffee break

### **Session 5: Active Sensors - Lidar**

Chairperson: Y. Sasano

10:25

5-1 Remote Sensing of Aerosol by Lidar at AIOFM, China

H. Hu(Anhui Institute of Optics & Fine Mechanics, invited), Y. Wu, T. Li, S. Hu, Y. Zhang and J. Zhou

10:50

5-2 Co-located airborne lidar and ground-based radar measurements of mid-level mixed phase clouds during CLARE'98

H. Flentje, W. Renger and G. Ehret (DLR, invited)

11:10

5-3 Arctic cloud and aerosol observations using a Micro-pulse Lidar in Svalbard

M. Shiobara (NIPR, Japan)

11:30

5-4 Statistical Analysis of Cloud Distribution Observed with a Ground-Based Lidar

M. Takagiwa (Keio Univ.) , K. Shimizu, I. Matsui and N. Sugimoto

11:50

5-5 Bidirectional Radiative Characteristics of Finite Clouds and Asian Dust (Kosa)

K. Gotoh(Nagoya Univ.), T. Sakai, S. A. Kwon, T. Shibata and Y. Iwasaka

12:10

5-6 Model calculation of multiple scattering for an incident pencil beam and the effect of non-spherical particles

H. Ishimoto(MRI) and K. Masuda

12:30-13:55

Lunch break

Session 6: Synergy Use

Chairperson G. L. Stephens

- 13:55  
6-1 Detection of Ice Clouds by Radar and Lidar and Comparison with Operational NWP Models  
A. Illingworth(Univ. Reading, invited) and R. Hogan
- 14:25  
6-2 The Picasso-Cena mission and synergism from lidar, radiometry and radar measurements to better assess cloud forcing as studied from ground-based and airborne observations  
J. Pelon (Universite Pierre et Marie Curie, invited)
- 14:50  
6-3 Sensor Synergy Algorithms: Development and Validation  
A. V. Lammeren (Royal Netherlands Meteorological Institute), D. Donovan and H. Bloemink
- 15:15  
6-4 Synergy in ice clouds between airborne nadir pointing radar and lidar  
C. Tinel and J. Testud (Univ. de Velizy, invited)
- 15:40  
6-5 Algorithm studies for radar and lidar systems  
H. Okamoto (CRL), S. Iwasaki and H. Horie
- 16:00  
Sessions end for the day

16:00-16:10  
Coffee break

16:10-17:40  
Excursion (NASDA)

18:00-20:00  
Reception

## **Wednesday 26 January 2000**

### **Session 7: Satellite Mission**

Chairperson: A. Illingworth

8:30

- 7-1 PICASSO-CENA  
D. Winker (NASA Langley, invited)

8:55

- 7-2 The Earth Radiation Mission: the role of clouds and aerosols  
J. P. V. Baptista (ESA, invited), A. Culoma, P. Ingmann, W. Leibbrandt, C-C Lin and R. Meynart

9:20

- 7-3 CPR Design and Development Status for the ESA Earth Radiation Explorer Mission

C.C. Lin (ESA), W. Leibrandt, U. Mallow and R. Bordi

9:45

7-4 Cloud ice radiometry at submillimeter wavelengths  
S. Walter (JPL)

10:10

7-5 ELISE (Experimental Lidar in Space Environment): First Japanese spaceborne lidar project  
K. Asai (Tohoku Institute of Technology, invited), Y. Sasano, N. Sugimoto, H. Kobayashi, Y. Kawamura, M. Ishizu and T. Imai

10:30

7-6 Conceptual design of CPR proposed to MDS-3 mission  
H. Kuroiwa (CRL), H. Kumagai, H. Horie and H. Okamoto

10:50

7-7 From TRMM experience  
T. Iguchi (CRL)

11:10-11:20

Coffee break

Session: 8 Summary

11:20

Discussions

Chairperson: H. Kumagai

11:50

Closing remarks

H. Masuko (CRL)

12:00

Workshop ends

# The Workshop on Experimental Lidar In Space Equipment(ELISE)

Tsukuba, Japan  
13:00-17:00 24 January 26, 2000

Hosted by

National Institute for Environmental Studies  
and  
National Space Development Agency of Japan

13:00

Welcome  
NASDA

13:05

Opening remarks and introduction  
Y. Sasano (NIES/NASDA)

13:15

Recent status of MDS-2/ELISE program  
S. Yamamoto(NASDA)

13:35

ELISE development status  
Y. Kawamura (NASDA)

14:25

Overview of MDS-2/ELISE science plan  
N. Sugimoto (NIES)

14:45-15:00

Coffee break

15:00

Simulation study of cloud and aerosol measurements with ELISE  
Z. Liu (NIES), P.Voelger and N. Sugimoto

15:25

Influence of multiple scattering on measurements with ELISE  
P. Voelger (NIES), Z.Liu and N. Sugimoto

15:50

Proposal of MDS-2/ELISE science data processing system  
N. Sugimoto (NIES)

16:20-

Future prospects of space-borne lidar  
T.Moriyama (NASDA)

16:50-

Concluding remarks

17:00

workshop ends