The EarthCARE Workshop 2009

Kyoto Royal Hotel, Kyoto, Japan   2009/06/10-2009/06/12

Science Committee:
  Prof. Teruyuki Nakajima, University of Tokyo
  Prof. Yasushi Fujiyoshi, Hokkaido University
  Mr. Yuichi Ohno, NICT
  Prof. Anthony Illingworth, University of Reading
  Dr. Jacques Pelon, Universite Paris VI
  Dr. David Donovan, Royal Netherlands Meteorological Institute (KNMI)
  Prof. Graeme L. Stephens, Colorado State University
  Dr. David M. Winker, NASA Langley Research Center
Organising Committee:
  Dr. Tobias. Wehr, ESA/ESTEC
  Dr. Nobuhiro Takahashi, NICT
  Dr. Riko Oki, JAXA/EORC

Introduction

EarthCARE is a joint European-Japanese mission addressing the need for a better understanding of the interactions between cloud, radiative and aerosol processes that play a role in climate regulation.
The EarthCARE mission aims to improve the representation and understanding of the Earth's radiative balance in climate and numerical weather forecast models by acquiring vertical profiles of clouds and aerosols, as well as the radiances at the top of the atmosphere.

Background

The Earth Clouds, Aerosols and Radiation Explorer (EarthCARE) is a satellite mission aiming for global simultaneous observations of cloud-aerosol-radiation and cloud-aerosol-precipitation-convection processes. These processes are thought to be important since they have uncertainty in the global warming prediction. It was selected by ESA's Programme Board for Earth Observation for implementation as the sixth Earth Explorer Mission. ESA, JAXA, and NICT is carrying out the mission preparation aiming for satellite launch in 2013.

EarthCARE has four instruments: millimeter-wave cloud profiling radar (CPR), high spectral resolution lidar (ATLID), visi

The EarthCARE will contribute to succeeding observations after NASA's A-Train (CloudSat and CALIPSO), and will pro
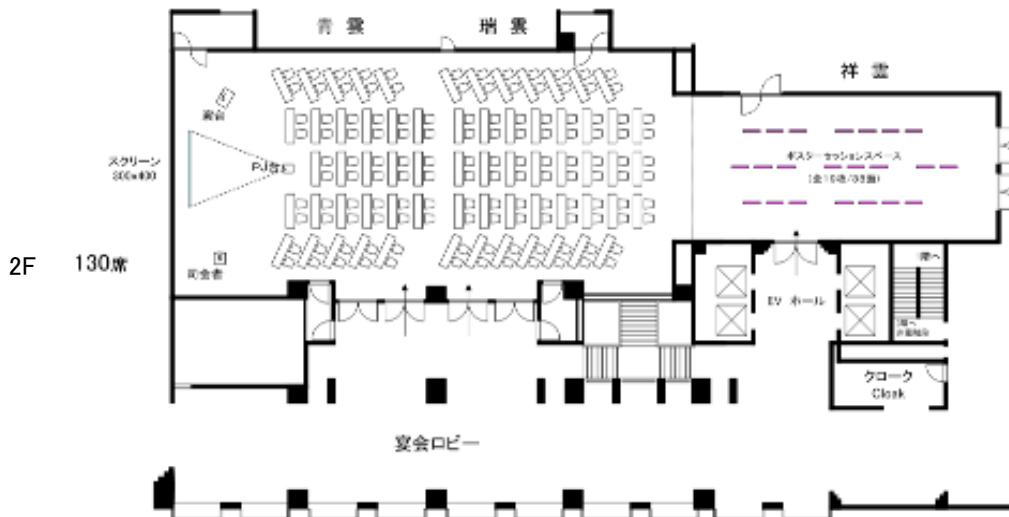
Presentation Program
The First Day

Tuesday, 9 June 2009

17:00~19:00 Registration

Wednesday, 10 June 2009

8:30 Workshop registration

Welcome session	Chair: Toshiyoshi Kimura
9:00 Welcome from JAXA	Toshio Doura
9:10 Welcome from NICT	Hiroshi Kumagai
9:20 Welcome from ESA	Stephen Briggs

Session A EarthCARE Mission	Chair:Tobias Wehr & Riko Oki
9:30 Key note: Current Status of eCARE Science Studies in Japan	Teruyuki Nakajima
9:55 Key note:	Anthony Illingworth
10:20 A-Train observations of the impact of aerosols on the cloud radiative properties and precipitation formation	Tristan L'Ecuyer
10:40 Program stataus from ESA	Alain Lefebvre
11:00 Program status from JAXA	Toshiyoshi Kimura
11:20 Program status: Status of the Satellite and Instrument Design including Performance and Calibration Aspects	Ralf Münzenmaye

11:40 Lunch

Session B Cloud profiling radar	Chair: Nobuhiro Takahashi & Pavlos Kollias
12:40 Development status of EarthCARE CPR	Hirotaka Nakatsuka
13:00 Atmospheric moist processes as revealed by A-train Earth Observations	Graeme Stephens
13:20 EarthCARE CPR Level 1algorithm & doppler measurement	Yuichi Ohno
13:40 Spaceborne Cloud Profiling Radars at JPL: from CloudSat to ACE	Simone Tanelli
14:00 Simulations of the EarthCARE CPR Doppler measurements using ARM observations	Pavlos Kollias
14:20 Observation of particle fall velocity in cirriform cloud by VHF and millimeter-wave Doppler radars	Masayuki Yamamoto

14:40 Poster View

Session C Lidar	Chair: Jacques Pelon & Nobuo Sugimoto
15:20 The CALIPSO Mission	Dave Winker
15:40 Analysis of Cloud and Aerosol properties from combined IR and lidar observations in the frame of the CALIPSO Mission.	Jacques Pelon
16:00 Aerosol retrieval algorithm using 1α+1β+1δ data of ATLID/EarthCARE	Tomoaki Nishizawa
16:20 A potential Feature Mask algorithm for the EarthCARE lidar	Gerd-Jan van Zadelhoff
16:40 Polar Cloud-Radiation Climatology, Stratosphere-Troposphere Interaction and MST Radar	Takashi Yamanouchi
17:00 The EARLINET contribution to the EarthCARE mission	Gelsomina Pappalardo

17:20 First day end

18:00 Reception

The Second Day	

Thursday, 11 June 2009

Session C Lidar (continue)		Chair: Gelsomina Pappalardo & Tomoaki Nishizawa
8:30	ICAROHS - Inter-Comparison of Aerosol Retrievals and Observational Requirements for Multi-wavelength HSRL Systems	Andreas Petzold
8:50	Lidar network for observing tropospheric aerosols in East Asia	Nobuo Sugimoto
9:10	The Canadian Operational Aerosol Lidar Network (CORALNet): A Tool To Monitor Air Quality On Local, Regional and National Scales	Kevin Strawbridge
9:30	Value-Added Ocean Products from Space-based Lidar Measurement	Yongxiang Hu

9:50	Coffee break

Session D Imager		Chair: Franz Berger & Shuichiro Katagiri
10:10	Determination of Cloud Mask inferred from future EarthCARE/MSI	Franz Berger
10:30	A Unified Aerosol Retrieval System for Multi-channel Imagers on Past, Current and Future Polar- & Geo-orbital Satellites	Xuepeng Zhao
10:50	Lessons from Simulation Study of Fifteen MODIS Bands using MODIS Cloud	B.J. Sohn
11:10	Plan for synergetic observation of cloud properties by using EarthCARE/MSI and active instruments	Haruma Ishida

Session E Synergy algorithm		Chair: Hajime Okamoto & David Donovan
11:30	Global analyses of ice cloud properties from CloudSat and CALIPSO	Hajime Okamoto
11:50	Results from the Cloud and Aerosol Synergetic Products from EarthCARE retrievals project (CASPER)	David Donovan

12:10	Lunch

13:10	Verifying EarthCARE's active-passive retrievals	Howard Barker
13:30	From A-Train to EARTHCARE: Calibration validation and assessment of radiative effect of absorbing aerosol	Damien Josset
13:50	Cloud microphysics and dynamical characteristics inferred from cloud radar, lidar and satellite data	Kaori Sato
14:10	ICE CLOUD PROPERTIES FROM SPACE, COMBINIG RADAR, LIDAR AND RADIOMETERS ON THE A-TRAIN	Julien Delanoe

Session F Model and cloud feedback		Chair: Bo-Wen Shen & Yukari Takayabu
14:30	Numerical Study to Estimate the Effect of Hygroscopic Seeding on Warm Rain	Naomi Kuba
14:50	Evaluation of cloud properties of global/local cloud-resolving model using the split window analysis and the CloudSat/Calipso simulators	Masaki Satoh

15:10	Poster View

16:40	Analysis of cloud processes in a general circulation model using community satellite simulators	Johannes Quaas
17:00	LES Modeling and Observational Analysis of the Low Cloud Feedback	Kuan-Man Xu
17:20	Use of lidar in space observations to evaluate cloudiness in climate model	Helene Chepfer
17:40	Sensitivity of cloud microphysical properties, precipitation, and brightness temperature to nucleation processes in Arctic stratus and tropical convective cloud system	Tempei Hashino
18:00	Properties of precipitation and in-cloud vertical velocity in global cloud-system resolving simulations	Tomoe Nasuno
18:20	A-Train analysis of warm cloud microphysics and its application to evaluation of cloud-resolving models.	Kentaroh Suzuki

18:40	Second day end

	The Third Day	
Friday, 12 June 2009		
Session G	Rain and cloud	Chair: Anthony Illingworth & Yasushi Fujiyoshi
9:00	Comparison of drizzle rates inferred from CloudSat/Calipso and their representation in the ECMWF model	Anthony Illingworth
9:20	Shallow and deep latent heating modes over tropical oceans observed with TRMM PR Spectral Latent Heating data	Yukari Takayabu
Session H	Radiation	Chair: Terry Nakajima & Howard Barker
9:40	EarthCARE L2b Retrieval Algorithms: Longwave instantaneous TOA Fluxes	Tobias Wehr
10:00	On the Development of Japanese EarthCARE simulator	Toshihisa Matsui
10:20	Coffee break	
10:40	Three-dimensional radiative effects on spatial and angular distribution of cloud reflectance	Hironobu Iwabuchi
11:00	Realistic simulations of EarthCARE observations	Bernhard Mayer
11:20	Cirrus cloud radiative forcing on surface-level shortwave and longwave irradiances at regional and global scale	Martial Haeffelin
11:40	Study on the impact of aerosols above stratocumulus on radiation fluxes based on radiative transfer simulations and lidar observations	Juergen Fischer
12:00	CALIPSO, CloudSat, CERES, and MODIS merged product	Seiji Kato
12:20	Lunch	
Session I	Validation	Chair: Gelsomina Pappalardo
13:20	The properties of mid latitude cirrus over the Atlantic basin revealed by combined A-Train and Seviri data	Jay Mace
13:40	Coordinated airborne high spectral resolution lidar and in-situ observations of different aerosol types	Michael Esselborn
14:00	Long-term aerosol and cloud database from space-borne lidar and ground-based lidar network observations	Ulla Wandinger
14:20	Validation of EarthCARE Cloud Microphysics Retrieval with the airborne HALO Microwave Package	Martin Hagen
14:40	The evaluation of CloudSat-derived microphysical products using ground-based and airborne Doppler cloud radar and lidar observations	Alain Protat
15:00	Coffee break	
Session J	Assimilation	Chair: Masaki Sato & Marta Janiskova
15:20	USE OF CLOUD RADAR AND LIDAR DATA FOR MODEL VALIDATION AND EXPERIMENTATION AT ECMWF	Marta Janiskova
15:40	Comparison and data assimilation for global aerosol climate model with measured data from active sensors	Toshihiko Takemura
16:00	A Global Aerosol Assimilation System	Nick Schutgens
Session K	Future mission	Chair: Deborah Vane &Yuichi Ohno
16:20	Atmospheric Spin-off products from ESA's ADM-Aeolus mission	Pierre Flamant
16:40	The Phased Aerosol Cloud Ecosystem Mission (PACE)	Mark Schoeberl
17:00	Sub-Millimeter Wave Radiometer for Observation of Cloud Ice -Studying Retrieval Capabilities from 2-band Instrument	Jana Mendrok
17:20	Final remark	Anthony Illingworth Teruyuki Nakajima
17:30	End of workshop	

#	Title	Author
1	Vertical air motion in midlevel shallow-layer clouds observed by 47-MHz wind profiler and 532-nm Mie lidar	Masayuki Yamamoto
2	Vertical Distributions and Relationships of Cloud Occurrence Frequency as Observed by MISR, AIRS, MODIS, OMI, CALIPSO, and CloudSat	Dong Wu
3	Diurnal cycles of radar echo area over the central Indochina	Takehiko Satomura
4	Observations from the Langley Airborne HSRL	Chris Hostetler
5	Characteristics of deep convection measured with A-train satellites	Suginori Iwasaki
6	Range-imaging observation of turbulence by the Equatorial Atmosphere Radar: Initial results	Tomoaki Mega
7	Surface reference Normalized Radar Cross Section values observed by TRMM precipitation radar	Ken'ichi Okamoto
8	A study of the aerosol direct forcing using ESSP/CALIPSO and GCM simulation	Eiji Oikawa
9	AN EXTRATROPICAL AIR-SEA INTERACTION OVER THE NORTH PACIFIC IN ASSOCIATION WITH A PRECEDING EL NIÑO EPISODE IN EARLY SUMMER	Yafei Wang
10	Aerosol optical properties and their vertical structures in an industrial area in wintertime pollution using sun photometer, Lidar and mass concentration measurement	Neda Boyouk
11	High-level cloud classified by the split window and CALIOP observation	Toshiro Inoue
12	Dust altitude and infrared optical depth retrieved from 6 years of AIRS observations: a focus on Saharan dust using A-Train synergy (MODIS, CALIOP)	Sophie Peyridieu
13	The retrieval of the ice cloud microphysics from Doppler 94-GHz radar measurements and temperature	Aleksandra Tatarevic
14	The use of ECSIM to simulate ground-based and space-borne observations	Simone Placidi
15	Capability of Water Vapor and Ice Cloud Observation in UT/LS region from JEM/SMILES onboard International Space Station	Yasuko Kasai
16	An Optimal-Estimation based hybrid Rayleigh-Mie Extinction and Backscatter retrieval Method for HSRL lidars	David Donovan
17	Global Multiscale Modeling on NASA Supercomputers: Preliminary Extended-range Simulations of Madden-Julian Oscillations and African Easterly Waves	Bo-Wen Shen
18	Particulate Elemental Pollution in Central India	Khageshwar Patel
19	ASSESSMENT OF CHEMICAL COMPOSITION OF ATMOSPHERIC AEROSOL	Sapana Gupta
20	Dynamics and Characteristics of Laminar Layers in the Free Atmosphere	Yasushi Fujiyoshi
21	Development of CloudSat/CALIPSO synergy cloud mask	Yuichiro Hagihara
22	Microphysical properties of cirrus cloud particles as derived from CloudSat/CALIPSO	Boesche Eyk
23	Physical and chemical properties of clouds in the UTLS and above	Vincent Noel
24	Global Aerosol Distributions Above Clouds and Snow/ice Cover Observed by CALIPSO	Chieko Kittaka
25	Helsinki Testbed: A mesoscale measurement, research and service platform	Jarkko Koskinen
26	Distribution of Water Soluble Inorganic Aerosols in Coarse (PM10) and Fine (PM2.5) Particles in an Urban Area of Eastern Central India	Santosh Verma
27	Evaluation of Microphysical Quantities with Radar Reflectivity of FALCON-I	Jun Yamaguchi
28	Chemical and Optical properties of atmospheric aerosols at the Observatory of Atmospheric Research in Phimai, Thailand	Haruo Tsuruta
29	Comparison of cirrus properties between cloud-resolving model simulations and CALIPSO/CloudSat over the tropical open ocean	Woosub Roh
30	Preliminary Results of Satellite Radar Simulator using Cloud-resolving Model by the Japan Meteorological Agency	Takuji Kubota
31	Geostationary Satellite Re-Analysis: Estimation of radiation budge	Hideaki Takenaka
32	Global cloud geometrical properties retrieved from ADEOS-II / GLI data	Makoto Kuji
33	Bread-board Model Testing of the EarthCARE CPR	Kazuyuki Okada
34	Conceptual study on post-GPM mission	Nobuhiro Takahashi
35	Study for external calibration method for Cloud Profiling Radar on EarthCARE	Hiroaki Horie
36	Cloud response in a climate sensitivity test using global cloud resolving model NICAM	Yoko Tsushima
37	COSP: a multi-instrument satellite simulator for model evaluation	Alejandro Bodas Salcedo
38	Synergy algorithms for EarthCARE	Julien Delanoe
39	Overview of EarthCARE Ground Segment	Tomohiro Kawahatsu