

**ICCP-GSRA Workshop 2023, jointly with
2nd EarthCARE Modeling Workshop
for improving cloud and radiation of climate models**
<https://dpo.aori.u-tokyo.ac.jp/dmmg/ICCP-GSRA/ws2023.html>

Dates: 27(Mon)-29(Wed), March, 2023
with ICCP-GSRA core meeting on 30 (Thu), March, 2023

Venue:
Hotel Laforet Shuzenji
<https://www.laforet.co.jp/en/szj/>

Organizers:

Masaki Satoh (AORI/The University of Tokyo)
Kenta Suzuki (AORI/The University of Tokyo)
Bjorn Stevens (MPI-M)
Hajime Okamoto (RIAM/CIRAP, Kyushu University)
Takuji Kubota (JAXA)

Jointly hosted by JAXA; The Center for Integrated Research on Atmospheric Physics (CIRAP), Kyushu Univ; Research Institute for Applied Mechanics (RIAM), Kyushu Univ.; AORI, The University of Tokyo

Objectives:

This workshop is intended to enhance activities of the cutting-edge atmospheric climate and weather models, including “K-scale” or global storm-resolving models and their collaboration with the EarthCARE satellite.

The EarthCARE satellite is scheduled to be launched in 2024, with the first-ever global observations of the vertical motion of cloud particles from space (by CPR Doppler measurement). Prior to the launch, we would like to invite modeling scientists to discuss possible directions and areas of collaboration between the EarthCARE satellite and modeling communities for advancing model representations of cloud and convection physics. We also aim to facilitate the ongoing discussions of NASA AOS, which is planned for launch around 2030.

This workshop is jointly hosted by International Core-to-Core Project on Global Storm Resolving Analysis (ICCP-GSRA), which enhances activities for promoting international collaboration for global storm-resolving meteorological data analysis and their social implementation.

Primary scopes of discussions:

- Collaboration with EarthCARE and modeling
- How to use EarthCARE and other observational data to improve models
- Future activities of GSRA, including new proposals of inter-comparison of Global

Storm Resolving Models

- Cloud and convective processes revealed by the EarthCARE and modeling collaboration
- Innovative analysis of cloud and convective systems
- New aspects of satellite simulator approaches

Schedule/Agenda:

- 27 March 2023 (Mon) 13:00-18:00, Ice break
- 28 March 2023 (Tue) 8:30-18:00, Banquet
- 29 March 2023 (Wed) 8:30-15:00

Program

Each oral presentation must be within 15 min and Q&A (5 min)

Poster viewing throughout the workshop, with the core time slots on 27 and 29 March.

27 March 2023 (Mon) 13:00-18:00

Introduction talks:

- Masaki Satoh (AORI/The University of Tokyo) Introduction and overview
- Hajime Okamoto (RIAM/CIRAP, Kyushu University) EarthCARE science overview : vertical motions and microphysics
- Takuji Kubota (JAXA) JAXA Overview of the EarthCARE
- Bjorn Stevens (MPI-M) TOOC -- Tropical Oceans and Organized Convection
- Seiji Kato (NASA Langley Research Center) Observation-based radiative heating rate profiles
- Graeme Stephens (NASA JPL) EarthCare in the decade of convection

Break: 14:45-15:15

Simulators, evaluations:

- Tempei Hashino (Kouchi Tech. Univ.) Uncertainty in the simulated cloud radar signals from GCMs
- Robert Pincus (Columbia University) Observation proxies for high-resolution simulation and satellite observation
- Pavlos Kollias (Stony Brook Univ.) Harmonizing Simulated and Observed Views of Convective Dynamics: EarthCARE, INCUS and AOS and the Role of Instrument Simulators
- Silke Gross (DLR, Oberpfaffenhofen) Preparing for EarthCARE – active remote sensing measurement onboard the HALO aircraft
- Florian Ewald (DLR) Preparing for EarthCARE – Representativity of air- and spaceborne radar-lidar measurements [online]
- Mario Mech (U. Cologne) Passive and Active Microwave Transfer (PAMTRA): a tool to simulate observations from space, air, and ground [online]

Poster viewing: 17:15-18:30

Posters:

- Tatsuya Seiki (JAMSTEC) Problems of simplified ice terminal velocities in the collisional growth term
- Tsuyoshi Koshiro (MRI) Estimated cloud-top entrainment index explains positive low-cloud-cover feedback
- Yuhi Nakamura (AORI) Development of a simulator for CPR vertical doppler velocity on COSP2
- Ryusuke Masunaga (JAMSTEC) Global coupled simulations with cloud-resolving atmosphere and eddy-resolving ocean coupled models
- Toshiyuki Tanaka (JAXA) Assessment of Cloud Product Derived from Spaceborne Visible-Infrared Imager (GCOM-C/SGLI) with Cloudsat and CALIPSO
- Moeka Yamaji (JAXA) Precipitation microphysical characteristics derived from spaceborne dual-frequency precipitation radar
- Keiichi Ohara (JAXA) Synergistic observation of ice cloud by EarthCARE/CPR and GPM/GMI
- Akira Yamauchi (AORI) Development and Validation of the Japanese EarthCARE 4-sensor standard algorithm for radiation fluxes
- Yuichi Ohno (NICT) CPR Validation with HG-SPIDER at NICT Koganei [tentative]
- Yasutaka Ikuta (MRI) Evaluation and improvement of cloud microphysics scheme using ground-based polarimetric radar and disdrometer observations
- Masuo Nakano (JAMSTEC) TBD
- Shinichi Kodama (AORI) Statistical Analysis of Remote Precipitation in Japan Caused by Typhoons
- Koryu Yamamoto (AORI) Maintenance Mechanism of Cutoff Lows as Vortex–Vortex Interactions: A Case Study in July 2021 over Europe
- Takashi Nagao (AORI) Characterizing vertical stratification of the cloud thermodynamic phase with a combined use of active and passive remote sensing
- Mayumi Yoshioka (JAXA) TBD
- Kohei Yamasaki (AORI) Large eddy simulation of mixed-phase clouds with aerosol injection
- Yuki Imura (AORI) TBD
- Rino Maki (AORI) Cloud tracking analysis of microphysical properties with Himawari-8
- Kentaroh Suzuki (AORI) Evaluating cloud thermodynamic phase and mixed-phase precipitation in MIROC with multi-sensor satellite observations
- Tomiki Miyakawa (AORI) TBD

[in person without presentation]

- Clara Bayley (MPI-M) n/a
- Chihiro Kodama (JAMSTEC) N/A
- Hisashi Yashiro (JAMSTEC) None
- Yutaro Nirasawa (AORI)
- Yamamoto Fukuda Hikari Viviane (AORI)
- Saito Shigetoshi (AORI)
- Kazuki Kondo (AORI)
- Naohiko Hirasawa (National Institute of Polar Research)
- Kenji Kai (Nagoya University)

Ice break: 18:30-20:00

28 March 2023 (Tue)

Session 3: 8:30-12:00

GSRMs

- Daniel Klocke (MPI-M) Global storm resolving earth system simulations with ICON
- Cathy Hohenegger (MPI-M) Cloud distribution in storm-resolving simulations
- Shuhei Matsugishi (AORI) A global LES simulation: Preliminary results about deep convection and turbulence scheme
- Daisuke Takasuka (AORI) NICAM climate simulations (tentative) TBD
- Pier Luigi Vidale (Reading University) Mesoscale convective organisation in 10-5km GCMs
- Da Silva, Arlindo M (NASA Goddard) Observing System Simulations for the AOS Mission
- Chris Terai (LLNL) Representation of clouds and precipitation in the Simple Cloud Resolving E3SM Atmosphere Model (SCREAM)
- Falko Judt (NCAR) Tropical weather systems in MPAS with and without resolved convection
- William C. Skamarock (NCAR) Development and Testing of EarthWorks

Lunch: 12:00-13:30

Session 4: 13:30-15:30

GSRMs

- Zhiquan Liu (NCAR) Towards global convection-permitting NWP with MPAS and MPAS-JEDI
- Angel Agustin Cesar Peinado Bravo (MPI-M) Convergence of Aqua-planet Experiments with Explicit Convection at resolution from 157 km up to 1.2km
- Marat Khairoutdinov (Stony Brook University) Simulations with Global System for Atmospheric Modeling (gSAM)
- Tsung-Lin Hsieh (Princeton University) Western US wintertime precipitation in GFDL X-SHIELD
- Yi Zhang (PIESAT Information Technology Co. LTD) Resolution Sensitivity of the GRIST Nonhydrostatic Model From 120 to 5 km (3.75 km) During the DYAMOND Winter

Break: 15:30-16:00

Session 5: 16:00-18:00

Process analysis/modeling:

- Hiro Masunaga (Nagoya University) The energetics in the Lagrangian evolution of tropical convective systems as diagnosed from satellite precipitation and radiation measurements
- Tak Yamaguchi (NOAA) Process level understanding gained with geophysical

variable maps

- Toshihisa Matsui (NASA/Goddard) Periods of GoAmazon: Cell- and Thermal-Tracking Analyses of Large Eddy Simulations
- Fridlind, Ann (NASA GISS) A proposal for regime-based LES-GCRM-ESM-observation-forward simulation closure studies
- Tristan L'Ecuyer (Univ. Wisconsin) EarthCARE's Potential for Constraining Models: Learning from the A-Train
- Trude Storelvmo (Univ. Oslo) Constraining climate models with active remote sensing from Space [online]

Banquet: 18:30-20:30

29 March 2023 (Wed)

Session 6: 8:30-12:00

Process analysis/modeling (cont.)

- Roh Woosub (AORI, The University of Tokyo) An evaluation of microphysics schemes using a 94 GHz Doppler radar
- Taka Iguchi (NASA/Goddard) Modeling Study of Life Cycles of Isolated Deep Convection during the TRACER Field Campaign

GCMs

- Ming Zhao (GFDL) A study of storm associated cloud radiative effects and their response to global warming [online]
- Andrew Gettelman (Pacific Northwest National Laboratory) Digital Earths and the Promise and Pitfalls Towards Improved Predictions [online]
- Richard Forbes (ECMWF) Will EarthCARE lead to better weather forecasts?
- Takuro Michibata (Okayama University) Process representations of cloud and precipitation in MIROC6 with prognostic precipitation: Evaluation
- Hideaki Kawai (MRI) Importance of Minor-Looking Treatments in GCMs --- Can satellite observation reduce uncertainty in such treatments? —

Lunch: 12:00-13:00

Poster viewing: 13:00-14:00

Session 7: 14:00-15:00

- wrap-up
- rapporteurs' reports

End of the Workshop

Excursion (tour to Shuzenji-Onsen): 15:30-18:30 (optional)

<https://www.japan-guide.com/e/e6311.html>

https://shuzenji-kankou-com.translate.goog/?_x_tr_sl=ja&_x_tr_tl=en&_x_tr_hl=ja

The following schedule is optionally attended. Those who are interested in the GSRM activity can join.

30 March 2023 (Thu) 9:00-14:00

ICCP-GSRA core meeting

9:00-12:00: ICCP-GSRA core meeting

Overviews of the on-going projects

Discussions on intercomparison experiments of GSRMs

Future plans

12:00-13:00: Lunch

13:00-14:00: Closing