

Quick introduction to ECARE-Modeling WS

16(Wed)-18(Fri), Feb. 2022, <https://cesd.aori.u-tokyo.ac.jp/ECARE2022/>

- ❑ EarthCARE launch: September 2023
- ❑ Time to start considering the use of EarthCARE data for collaborations with models
- ❑ We plan to hold a follow-up workshop around one year from now (~Feb. 2023)
- ❑ What's unique about EarthCARE (among others)
 - Doppler cloud profiling radar (CPR): Vertical motion of cloud particles
 - High spectral resolution lidar (HSRL): Details of cloud microphysics
- ❑ Topics for model and ECARE collaborations:
 - Models: GCMs, GSRMs, RCMs, ...
 - Simulators: COSP; J-Sim, ECSIM, ...
 - Metrics/Methodologies of model-data comparisons: CFADs, Joint PDFs, categorization based on cloud types (ISCCP matrix), cloud objects, ...
 - Process understanding
 - Synergy with ground validations, other observations

Requests for speakers

How can models and ECARE collaborate?

Specifically

- How to evaluate/improve models by ECARE data?
- What are the major issues/biases of models in representations of cloud, convection, precipitation and aerosols?
- Process understanding: cloud, precipitation, convection, radiation and their coupling.
- New research areas/subjects arising from ECARE.

Main topics

- Evaluation/improvement of cloud/convection/aerosol processes of models through ECARE observations.
- Key questions/issues arising from Global Storm Resolving Models: Lessons from DYAMOND and new initiatives.
- Key questions/issues arising from GCMs or climate modeling: Uncertainties of GCMs related to clouds/convection. Lessons from past COSP analysis on CMIP models and new initiatives.
- Analysis:
Talks on topical analysis studies will be encouraged, including new research initiatives using Doppler cloud radar: e.g. global view of vertical motions/mass flux.
- Satellite simulators:
Overview of existing satellite simulators and tasks for analysis of ECARE using simulators
- Assimilation:
Assimilation is a significant part of the satellite-modeling collaboration. In this workshop, overviews of assimilation activities related to ECARE will be introduced. Technical details will be discussed in a separate assimilation meeting in the future. New ideas of assimilation, such as parameter estimation, might be covered.
- Introduction to forthcoming field campaigns in support of ECARE and modeling collaborations.
- Discussions on sciences connected to NASA/AOS (or ACCP), which is planned for launch around 2030, including possible collaborations with EarthCARE.