

**CFMIP 2018 Agenda**  
**NCAR Mesa Lab**  
**Boulder, Colorado October 16-19, 2018**  
**Last Updated: October 9, 2018**

**October 16 - TUESDAY**

***8:00-9:00 am: Coffee and Tea Available***

***8:15 am: Bus Departs Hilton Garden Inn for NCAR Mesa Lab***

**Session 1: Welcome, CFMIP/CMIP6**

**Chair: Jennifer Kay, Andrew Gettelman**

9:00-9:05 am - Welcome/Logistics, Local Organizing Committee

9:05-9:20 am - Overview of CFMIP Activities and Updates, Masahiro/George

9:20-9:30 am - CMIP6 Status, Karl Taylor

**Session 2: Model development toward a better representation of clouds**

**Chair: Jennifer Kay, Andrew Gettelman**

9:30-9:45 am - Early Results from the DYAMOND Global Cloud Resolving Model  
Intercomparison, Chris Bretherton

9:45-10:00 am - Progress and challenges in utilising the global cloud resolving  
model ICON, Thorsten Mauritsen

**Session 3: Forcing, feedbacks, and climate sensitivity**

**Chair and Discussion Leader: Mark Webb, Angeline Pendergrass**

10:00-10:15 am - Defining feedbacks, while they change through time, Maria Rugenstein

***10:15-10:45 am: BREAK (Coffee and Tea, Morning Treat), Please put up posters for  
Poster Session #1.***

10:45-11:00 am - Historical time-variation in climate sensitivity related to the nature of the  
forcing, Jonathan Gregory

11:00-11:15 am - Commensurate comparisons of models with energy budget observations  
reveal consistent climate sensitivities, Kyle Armour

11:15-11:30 am - Evaluating Emergent Constraints on Equilibrium Climate Sensitivity,  
Peter Caldwell

11:30-11:45 am - An observational strategy for constraining cloud feedback, Patrick Taylor

11:45-12:00 pm - A refined model for the Earth's global energy balance, Paulo Ceppi

**12:00-12:30 pm - Discussion**

***12:30-2:00 pm: LUNCH, NCAR Mesa Lab Cafeteria (self-pay, cash/card accepted)***

## **October 16 - TUESDAY (Continued)**

### **Session 4: Convective organization and Radiative Convective Equilibrium**

**Co-Chairs and Discussion Leaders: Sandrine Bony, Chris Bretherton**

2:00-2:15 pm - Convective aggregation, clouds, and climate sensitivity in RCE simulations, Alison Wing

2:15-2:30 pm - Observed variability of shallow convective organization over the tropical Atlantic, Sandrine Bony

2:30-2:45 pm - Convective aggregation over a slab ocean, Adrian Tompkins

2:45-3:00 pm - Convection as a predator-prey process, Steve Sherwood

### ***3:00-3:30 pm: BREAK (Coffee/Tea, Afternoon Treat), Poster Session #1 Viewing***

3:30-3:45 pm - Moisture memory, cold pools, and convective aggregation, Chris Holloway

3:45-4:00 pm - A study of convective clouds and their feedbacks in an idealized radiative convective equilibrium using the GFDL non-hydrostatic atmospheric model with horizontal resolutions of 1 to 24km, Ming Zhao

4:00-4:15 pm - Radiative-convective Equilibrium Study with a Global Nonhydrostatic Model: Sensitivity of High Clouds to Vertical Resolution, Tomoki Ohno

**4:15-4:45 pm - Discussion**

***4:45 pm RECEPTION, NCAR Mesa Lab Cafeteria***

***7:00 pm: Bus Departs NCAR Mesa Lab for Hilton Garden Inn***

## **October 17 - WEDNESDAY**

***8:00-9:00 am: Coffee and Tea Available***

***8:15 am: Bus Departs Hilton Garden Inn for NCAR Mesa Lab***

### **Session 5: Coupling of clouds with atmospheric and oceanic circulation**

**Co-Chairs and Discussion Leaders: Thorsten Mauritsen, Jen Kay**

9:00-9:15 am – Understanding global feedback response to sea-surface warming patterns using a Green's function approach, Yue Dong

9:15-9:30 am - Dependence of climate feedbacks to the spatial pattern of SST warming, Chen Zhou

9:30-9:45 am - Cloud Feedbacks, SST Patterns and Natural Variability, Cristian Proistosescu

9:45-10:00 am - Spatial cloud feedbacks from interannual variability, Jonah Bloch-Johnson

10:00-10:15 am – Contribution of cloud radiative feedbacks and ocean dynamics to sea surface temperature variability in subtropical Northeastern ocean basins, Eleanor Middlemas

***10:15-10:45 am: BREAK (Coffee and Tea, Morning Treat), Poster Session #1 Viewing***

10:45-11:00 am - Uncertainty of climate feedback traced to the strength of Atlantic meridional overturning circulation (AMOC) recovery, Yuan-Jen Lin

11:00-11:15 am - Distinct tropical climate response to subpolar energy perturbations from the Northern or Southern Hemisphere, Sarah Kang

11:15-11:30 am - Using machine learning to understand nonlinear cloud-circulation couplings in climate models, Mark Webb

**11:30-12:15 pm – Discussion**

***12:15-12:30 GROUP PHOTO***

***12:30-2:00 pm: LUNCH, NCAR Mesa Lab Cafeteria (self-pay, cash/card accepted)***

***1:00-2:00 pm: COSP Side Meeting, NCAR Mesa Lab Directors Conference Room***

**October 17 – WEDNESDAY (Cont.)**

**Session 6: Extratropical cloud processes and feedbacks**

**Co-Chairs and Discussion Leaders: Yen-Ting Hwang, George Tselioudis**

2:00-2:15 pm - Quantifying the role of local and remote processes in polar amplification, Malte Stuecker

2:15-2:30 pm - Atmospheric eddies mediate lapse rate feedback and Arctic amplification, Nicole Feldl

2:30-2:45 pm – The influence of cloud radiative feedbacks on the North Atlantic Ocean, Elizabeth Maroon

2:45-3:00 pm - A thermodynamic constraint on the height of the extratropical tropopause, Dave Thompson

***3:00-4:30 pm: Poster Session #1 and BREAK (Coffee and Tea, Afternoon Treat)***

4:30-4:45 pm – Thermodynamic Control on the Poleward shift of the Jet in Climate Change Simulations, Ying Li

4:45-5:00 pm - Midlatitudes feedbacks in an aquaplanet model, Alejandro Bodas-Salcedo

5:00-5:15 pm – Understanding the role of cloud radiative effects in extratropical subseasonal-to-seasonal variability, Kevin Grise

5:15-5:30 pm - Assessing the robustness and mechanisms of cloud responses to poleward jet shifts in observations and models, Mark Zelinka

**5:30-6:00 pm – Discussion**

***6:15 pm: Bus Departs NCAR Mesa Lab for Hilton Garden Inn***

## **October 18 - THURSDAY**

***8:00-9:00 am: Coffee and Tea Available***

***8:15 am: Bus Departs Hilton Garden Inn for NCAR Mesa Lab***

### **Session 7: Low cloud processes, feedbacks, and adjustments**

**Co-Chairs and Discussion Leaders: Brian Medeiros, Florent Briant**

9:00-9:15 am - A new mechanism for positive low cloud feedback?, Tomoo Ogura

9:15-9:30 am - Large eddy simulations of stratocumulus deck instability under greenhouse warming, Colleen M. Kaul

9:30-9:45 am - Modeled and observed diurnal cycle of oceanic trade-wind cumulus cloudiness, Jessica Vial

9:45-10:00 am - Characterizing boundary-layer top-down features in large-eddy simulations, Florent Briant

10:00-10:15 am - Low-level wind shear, surface winds and cloud-topped boundary layers, Louise Nuijens

***10:15-10:45 am: BREAK (Coffee and Tea, Morning Treat), Please take down posters for Poster Session #1. Please put up posters for Poster Session #2.***

10:45-11:00 am - A conceptual model for the BL structure and radiatively driven shallow circulations in the trades, Ann Kristin Naumann

11:00-11:15 am - A Multi-Scale Perspective on Low-Cloud Feedbacks in the Tropics and Sub-Tropics, Leo Donner

11:15-11:30 am - Seasonally variant low cloud adjustment over cool oceans, Youichi Kamae

11:30-11:45 am - At what model resolution does SCu-top entrainment become reasonable?, Johannes Muelmenstaedt

**11:45-12:30 pm - Discussion**

***12:30-2:00 pm: LUNCH (self-pay, cash/card accepted)***

## **October 18 – THURSDAY (Continued)**

### **Session 8: Precipitation and hydrological sensitivity**

**Co-Chairs and Discussion Leaders: Masahiro Watanabe, Sarah Kang**

2:00-2:15 pm - The tropical precipitation-buoyancy relationship: insights from forward and reverse-engineered solutions, and applicability to climate model diagnostics, Fiaz Ahmed

2:15-2:30 pm - The uneven nature of precipitation and its change, Angeline Pendergrass

2:30-2:45 pm - Sensitivity of tropical circulation, high clouds, and precipitation simulations to deep convective parameters and cloud microphysics in CESM, Jonathan Jiang

2:45-3:00 pm - On the Temporal Evolution of the Tropical Precipitation Patterns under Anthropogenic Climate Change, Yen-Ting Hwang

### ***3:00-4:30 pm: POSTERS SESSION #2 and BREAK (Coffee and Tea, Afternoon Treat)***

4:30-4:45 pm - Energetic constraints on the ITCZ position in idealized simulations with a seasonal cycle, Simona Bordoni

4:45-5:00 pm - Energetic constraints on the ITCZ position in the observed seasonal cycle, Ho-Hsuan Wei

5:00-5:15 pm - Land surface control of shifts in tropical precipitation under climate change, Hugo Lambert

5:15-5:30 pm - Interactions between the mean climate and regional projections of precipitation change, Brian Soden

### **5:30-6:00 pm – Discussion**

***6:00 pm: Bus Departs NCAR Mesa Lab for Hilton Garden Inn***

***6:30 pm: Conference Dinner – BJ's Restaurant***

***(<https://www.bjsrestaurants.com/locations/co/boulder-29th-street>)***

***Note: BJ's is located at the Northeast corner of 28th and Canyon, across the street from the Hilton Garden Inn.***

## **October 19 - FRIDAY**

### **Session 9: Observations and model evaluation for process-level understanding of clouds**

**Chair and Discussion Leader: Steve Klein, Andrew Gettelman**

9:00-9:15 am - Using CloudSat/CALIPSO to evaluate the sensitivity of GCM-based radiative kernels to cloud distribution, Ryan Kramer

9:15-9:30 am - Global Weather States from the new ISCCP-H dataset and their use in evaluating GCM cloud simulation improvements, George Tselioudis

9:30-9:45 am - Processes controlling the thickness of tropical anvil cirrus clouds and their radiative effects. Blaž Gasparini

9:45-10:00 am - Space lidar observations constrain longwave cloud feedback, Helene Chepfer

**10:00-10:15 am - Discussion**

***10:15-10:45 am: BREAK (Coffee/Tea, Morning Treat), Poster Session #2 Viewing***

### **Session 10: Discussion of CFMIP Activities, Collaborations, and Next Steps**

**Co-Chairs and Discussion Leaders: George Tselioudis, Masahiro Watanabe**

11:00-11:15 am - Planned Activities of the GEWEX Global Atmospheric System Studies (GASS), Xubin Zeng

11:15-11:30 am - Updates on the Grand Challenge, Sandrine Bony

11:30-11:45 am - Update on CFMIP3 Experiments, Mark Webb

11:45-12:00 am - Update on Informal CFMIP Experiments, Yen-Ting Hwang

**12:00-12:30 pm Discussion**

***12:30 pm - Meeting Ends***

***12:30 pm: Bus Departs NCAR Mesa Lab for Hilton Garden Inn***

**CFMIP 2018 Posters**  
**NCAR Mesa Lab**  
**Wednesday October 17 3:00-4:30 pm**

- 1) Cloud trends from 15 years of Atmospheric Infrared Sounder observations, Brian Kahn
- 2) Patterns of Tropical SST and Precipitation Responses to Extratropical Thermal Forcings: The Role of Clouds, Hsiao, Wei-Ting
- 3) Cloud Resolving and General Circulation Model Simulations of an Idealized Walker Circulation, Levi Silvers
- 4) Understanding mesoscale organization of closed-cell marine stratocumulus using large-eddy simulation, Xiaoli Zhou
- 5) Mechanisms behind the low-cloud optical depth response to temperature in ARM site observations, Christopher Terai
- 6) Evaluation and tuning of a single column model using satellite data, Matt Lebsock
- 7) Underestimation of the equilibrium climate sensitivity associated with overly active deep convection in CMIP5, Nagio Hirota
- 8) Effects of Midwinter Arctic Leads on Clouds and the Surface Energy Budget, Steve Krueger
- 9) Climate sensitivity and Cloud feedbacks in the IPSL-CM6 climate model, Anna Lea Albright
- 10) Changes in Marine Fog in CMIP5 Multi-Model Simulations, Hideaki Kawai
- 11) Re-examining the first climate models: A modern radiative-convective equilibrium model, Lukas Kluft
- 12) Idealized Climate Change of Polar Clouds under Consistent Large-Scale Forcing, Xiyue Zhang
- 13) Warm Season U.S. Mesoscale Convective Systems in E3SM-MMF, Christopher Jones
- 14) Links between convective self-aggregation, updraft and extreme precipitation, Jiawei Bao
- 15) Cloud Feedbacks in Large Eddy Simulations Driven by Climate Models, Kyle G. Pressel
- 16) Spectral Decomposition of Cloud Radiative Feedbacks and Its Applications in Data-Model Comparisons, Xianglei Huang
- 17) Observed interannual variability of the organization of deep convection in tropics, Addisu Semie
- 18) Testing models using feedbacks derived from atmospheric temperatures, Andrew Dessler
- 19) Examining Clouds and Precipitation Changes in a Warmer Climate using TaiESM, Chein-Jung Shiu
- 20) Transient Climate Response Constrained by 1970-2005 Warming, Diego Jimenez de la Cuesta Otero
- 21) A Systematic Tropospheric Dry Bias in the Tropics in CMIP5 Models: Relationship between Water Vapor and Rainfall Characteristics, Hiroshi G. Takahashi
- 22) Comparing cloud feedbacks in CanAM5 and CanAM4, Jason Cole
- 23) Regime-oriented evaluation of ice clouds, Lisa Bock
- 24) Impact of cloud-induced solar radiation biases on Antarctic sea ice variability in the Community Earth System Model (CESM), Matthew Gentry



- 25) Aerosol Induced Modification of Organised Convection and Top-of-Atmosphere Radiation, Nidhi Nishant
- 26) Implementation of an inline diagnostic tool for warm rain statistics to COSP2 satellite simulator, Takuro Michibata
- 27) Low and High Level Cloud Fraction Feedback over Tropical Oceans, Toni Mitovski
- 28) As cold clouds warm, their lifetime increases: a negative feedback, Johannes Muelmenstaedt
- 29) Evaluating Models' Response Of Tropical Low Clouds To SST Forcings Using CALIPSO Observations, Gregory Cesana
- 30) Water vapor variability in the tropics from modelling and airborne lidar, Ann Kristin Naumann
- 31) Temporal and Spatial Characteristics of Short-term Cloud Feedback on Global and Local Interannual Climate Fluctuations from A-Train Observations, Qing Yue
- 32) Investigating the high climate sensitivity of the new DOE climate model E3SM, Mark Zelinka

**CFMIP 2018 Posters**  
**NCAR Mesa Lab**  
**Thursday October 17 3:00-4:30 pm**

- 1) The Relationship Between Cloud Radiative Effect and Surface Temperature at ENSO Frequencies in CMIP5 Models, Nicholas Lutsko
- 2) Application of a two-layer energy balance model to evaluate E3SMv1's sensitivity and aerosol forcing, Jean-Christophe Golaz
- 3) Understanding Negative Subtropical Shallow Cumulus Cloud Feedbacks in a Near-Global Aquaplanet Model Using Limited-Area Cloud-Resolving Simulations, Pornampai Narenpitak
- 4) Moist Processes and Tipping Points in Weather-Climate Interactions, Derek Posselt
- 5) Process-oriented constraint on cloud microphysics: Implication for aerosol-cloud interactions, Kentaro Suzuki
- 6) The interplay among SST, precipitation change and cloud feedback in the Atlantic Ocean, Tianle Yuan
- 7) Changes in the Flood Potential of Future Mesoscale Convective Systems, Andreas Prein
- 8) The Climate of the Cloudy Boundary Layer from Space, Joao Teixeira
- 9) The influence of organization of convection on the tropical large-scale circulation, Max Popp
- 10) Impact of ITCZ width changes on the higher latitude circulation response to warming, Oliver Watt-Meyer
- 11) Impact of local cloud feedback on northeast Pacific marine heatwave and dominant patterns of climate variability, Timothy Myers
- 12) Use of a Perturbed Parameter Ensemble to Understand the Impact of Convective Entrainment on Climate and Climate Feedbacks, Yoko Tsushima
- 13) Simulation of Stratocumulus-to-Cumulus Transition using an Extended Eddy-Diffusivity Mass-Flux Scheme, Colleen M. Kaul
- 14) Radiative effects of clouds and moisture on subseasonal tropical variability, James Benedict
- 15) Investigating the tropical rainfall response to CO<sub>2</sub> forcing, using a Single Column Model under the Damped Gravity Wave framework, Marion Saint-Lu
- 16) Climate Variability and Cloud Responses as Observed by MISR and Simulated by HadGEM3, Roger Marchand
- 17) Machine Learning Based Closures of a Unified Parameterization for Boundary Layer Turbulence, Shallow and Deep Convection, Yair Cohen
- 18) An evaluation of the spread of transient climate responses in CMIP5, David Fuchs
- 19) Ice Clouds and Their Response to Global Warming in the E3SM Atmosphere Model, Kai Zhang
- 20) Atmospheric processes regulating cloud responses to temperature and aerosol perturbations in the Energy Exascale Earth System Model (E3SM) Atmosphere Model version 1 (EAMv1), Po-Lun Ma
- 21) Clouds, circulations, and their changes due to global warming, Akira Noda
- 22) Coupling cloud microphysics and EDMF dynamics, Anna Jaruga
- 23) A new cloud climate dataset, Dave Winker
- 24) Effects of stratocumulus clouds in the Southeast Atlantic Ocean on the position of the Atlantic ITCZ, Gabriel Cazes Boezio

- 25) Linearity of Cloud Feedbacks in Idealized Climate Modeling Experiments, Jason Chalmers
- 26) Consistency between subgrid-scale representation of low-level clouds and overlap scheme, Jean Jouhaud
- 27) Eddy-diffusivity/Mass-flux parameterization in the global NASA GEOS5 model, Kay Suselj
- 28) Low clouds link equilibrium climate sensitivity to hydrological sensitivity: An update, Masahiro Watanabe
- 29) Understanding Southern Ocean Cloud Controlling Factors on Daily Timescales in the Context of Extratropical Cyclones, Mitchell Kelleher
- 30) Climate sensitivity in CNRM-CM6, Olivier Geoffroy
- 31) Convective Precipitation Efficiency, Cloud Feedback, and Climate Sensitivity, Ryan Li
- 32) Linearity of Feedbacks to Aerosol and CO<sub>2</sub> Forcing in CanESM2, Takuro Michibata
- 33) The Robust Relationship Between Extreme Precipitation and Convective Organization in Idealized Numerical Modeling Simulations, Jiawei Bao