CFMIP-CloudSense Meeting Agenda

V11: last updated July 1, 2025 – talks and chairs synced with what is posted at
https://sites.exeter.ac.uk/cfmip2025/programme/

DAY #1: Monday July 7

Day 1 starts in the early afternoon, leaving time for informal discussions in the morning

10am-1 pm - Registration
10:45 am – Coffee
12:30 pm – Welcome Lunch

Session #1: Cloud Processes
Chairs: Paulo Ceppi and Hugo Lambert
1:00-1:15 - Welcome and Introductory Remarks
1:15-1:30 - Insights into cloud properties from EarthCARE synergy retrievals and radiative closure – Robin Hogan
1:30-1:45 - Vertical motions inside convection analyzed from EarthCARE satellite Cloud Radar observations and a global storm-resolving simulation - Masaki Satoh
1:45-2:00 - The INCUS Mission: Measuring Convective Mass Flux from Space - Susan C. van den Heever
2:00-2:15 - Determining cloud-base mesoscale vertical velocity with satellites – Geet George
2:15-2:30 - Discussion

2:30-3:00 pm - Break

Session #2: Cloud Processes and Feedbacks
Chairs: Paquita Zuidema and Paul Field
3:00-3:15 - From thermals to cloud mesoscale patterns: Insights from field campaigns, theory and a simple statistical model – Sandrine Bony
3:15-3:30 - Climate feedbacks: Can we close the loop? – Mark Webb
3:30-3:45 - Decomposing Cloud Radiative Feedbacks By Cloud-Top Phase – Casey Wall
3:45-4:00 - Causes of recent trends and extreme anomalies in cloud-radiative effects, Mark Zelinka
4:00-4:15 - The impact of relationships between components of radiative feedback on assessments of Earth's climate sensitivity, Hugo Lambert
4:15-4:30 - Discussion

4:30-6:30 pm - Poster Session #1

6:30 pm Welcome Reception and Networking event sponsored by CLOUDSENSE

DAY #2: Tuesday July 8

Day 2 and Day 3 follow the same format.

Session #3: Cloud Processes, Microphysics, and Feedbacks
Chairs: Xinyi Huang and Alejandro Bodas-Salcedo
9:00-9:15 - Using cold-air outbreaks as natural laboratories to understand the production of ice in shallow mixed-phase clouds and their role in climate – Ben Murray
9:15-9:30 - A quasi-Lagrangian LES-SCM case library of marine cold-air outbreaks to investigate cloud phase feedback – Florian Tornow
9:30-9:45 - Projected changes in low cloud albedo in Southern Ocean extratropical cyclones induced by morphological transitions - Shuoyun Tong
9:45-10:00 - Arctic radiator fin and its simulation in the GCMs – Yi Huang
10:00-10:15 - Where does snow become rain with atmospheric warming? – Jennifer Kay
10:15-10:30 - Discussion

10:30-11:00 - Break

Session #4: Cloud Processes, Microphysics and Feedbacks
Chairs: Monisha Natchiar and Florent Brient
11:00-11:15 - Positive High-Cloud Feedback in Storm-Resolving Model - Jakob Deutloff
11:15-11:30 - Climate Models Underestimate Global Decreases in High-Cloud Amount With Warming - Sarah Wilson Kemsley
11:30-11:45 - An Analytical Model of the Lifecycle of Tropical Anvil Cloud Radiative Effects – Nicolas Lutsko
11:45-12:00 - Determining tropical cirrus origin and their radiative effects with the help of passive tracers - Blaž Gasparini
12:00-12:15 - More positive climate feedbacks with higher resolution in the km-scale ICON - Masaki Toda
12:15-12:30 - discussion

12:30-2:00 - Lunch

Session #5: Energy Imbalance
Chairs: Declan Finney and Nicolas Lutsko
2:00-2:15 - Ocean heat uptake along the South American coast is crucial for the efficiency of Southern Ocean teleconnections – Maria Rugenstein
2:15-2:30 - New insights on aerosol indirect forcing due to ship emissions from both bottom up and top down - Tianle Yuan
2:30-2:45 - Southern Ocean clear-sky brightening caused by wind-driven sea spray aerosol increase – Clare Singer
2:45-3:00 - discussion

3:00-3:30 - Break

Session #6: Energy Imbalance
Chairs: Jonah Bloch-Johnson and Mark Zelinka
3:30-3:45 - New Ocean Heat Uptake Estimate from Space and In-Situ Data Resolves Planetary Energy Budget variability and trend Since 2005, but Conflicts with Observation-Based Forcing and Radiative Response Estimates – Benoit Meyssignac
3:45-4:00 - Recent decadal changes in the Earth's energy imbalance in satellite observations and climate model simulations – Tim Andrews
4:00-4:15 - Understanding the contribution of low clouds to the increasing Earth energy imbalance – Paulo Ceppi
4:15-4:30 - discussion

4:30-6:30 pm - Poster Session #2

7 pm Conference Dinner (OPT-IN, pay during registration)

DAY #3: Wednesday July 9

Day 2 and Day 3 follow the same format.

Session #7: Cloud Processes, Microphysics and Feedbacks
Chairs: George Tselioudis and Harry Mutton
9:00-9:15 – A new aerosol-aware parameterization for online representation of INP concentrations in climate models - Ross Herbert
9:15-9:30 – Characterizing the causal impact of aerosols on cloud liquid water path adjustments from observations using machine learning - Daniel Grosvenor
9:30-9:45 – Response of Arctic mixed-phase clouds to aerosol perturbations and warming - Britta Schäfer
9:45-10:00 – Impact of CO2 and SST increases on the tropical land-sea precipitation partitioning in global km-scale simulations - Marius Schulz
10:00-10:15 – Water Vapor Spectroscopy and Thermodynamics Constrain Earth's Tropopause Temperature – Brett A. McKim
10:15-10:30 - discussion

10:30-11:00 - Break

Session #8: Convection and Cloud Processes
Chairs: Jacqueline Nugent and Adrian Tompkins
11:00-11:15 - Weakening deep convection in the tropics weakens lower tropospheric moisture convergence and causes a reduction of subtropical low clouds in an atmosphere-only GCM - Danny McCulloch
11:15-11:30 - CoMorph-B: a new convection scheme with different radiative feedbacks - Alison Stirling
11:30-11:45 - Stratocumulus-cumulus transitions in a mixed layer energy balance model - George Datseris

11:45-12:00 - Investigating the Upscale Growth of Mesoscale Cellular Structures in Stratocumulus Using Turbulent Cascades – Florent Brient
12:00-12:15 - Observations of convective development and anvil cloud optical depth during the Deep Convection Microphysics Experiment (DCMEX) – Declan Finney
12:15-12:30 - Discussion

12:30-2:00 - Lunch

Session #9: Convection and Organization
Chairs: Danny McCulloch and Paulo Ceppi
2:00-2:15 - Tropical cloud aggregation and climate feedbacks in global storm-resolving models - Emilie Fons
2:15-2:30 - Convective Organization in Mock-Walker Simulations in RCEMIP-II – Allison Wing
2:30-2:45 - Does mesoscale organisation modify the trade cumulus feedback? Lessons from idealised large-eddy simulations - Martin Janssens
2:45-3:00 - discussion

3:00-3:30 - Break

Session #10: Convection
Chairs: Deepak Gopalakrishnan and Allison Wing
3:30-3:45 - Green's Function Model Intercomparison Project (GFMIP) Results: A First Look - Jonah Bloch-Johnson
3:45-4:00 - A Synergistic Description of Upper Tropospheric Cloud Systems and Diabatic Heating: Towards Enhanced Process Understanding - Claudia J. Stubenrauch
4:00-4:15 - Convective Invigoration vs. Enervation by Anthropogenic Aerosols in a Perturbed Parameter Ensemble - Jacqueline Nugent
4:15-4:30 - discussion

4:30-6:30 pm - Poster Session #3

6:40 pm - Informal Social (optional) – 40-min Walk to The Prospect / Samuel Jones (by the Exeter Quay) – led by Danny McCulloch and Anna Mackie

Evening: CFMIP Committee Dinner (by invitation only)

DAY #4: Thursday July 10

Day 4 ends 3 pm, leaving time for informal discussions in the late afternoon

Session #11: Circulation and Climate Dynamics
Chairs: Maria Rugenstein and Sarah Kang
9:00-9:15 - Spatial controls of Global and Regional Lower Tropospheric Inversion Strength - Senne Van Loon
9:15-9:30 - Increases in Southeast Pacific low-cloudiness during ENSO warm phases - Aakash Manapat
9:30-9:45 - Contrasting drivers of regional monsoon circulation and precipitation responses to CO2 forcing - Robin Chadwick
9:45-10:00 - Cloud-circulation coupling in convection-permitting simulations - Anna Mackie
10:00-10:15 - Observations show greater temperature and rainfall memory than simulations – Anna Lea Albright
10:15-10:30 - Discussion

10:30-11:00 - Break

Session #12: Circulation and Climate Dynamics
Chairs: Anna Mackie and Masahiro Watanabe
11:00-11:15 - Contrasting tropical Pacific response to global warming in two climate models: the role of winds, clouds, evaporative cooling, and the ocean thermostat – Alexey Federov
11:15-11:30 - CO2 forcing over land cools the Equatorial and Eastern Pacific Ocean – Moritz Günther
11:30-11:45 - Shifting dynamics of the ITCZ: from widening to narrowing in response to abrupt 4xCO2 - Jiayu Zhang
11:45-12:00 - Climate models without an East Pacific Double ITCZ better simulate tropical Pacific climate variability and change – Robert Jnglin Wills
12:00-12:15 - The importance of stratocumulus clouds for projected warming patterns and circulation changes - Philipp Breul
12:15-12:30 - Discussion

12:30-2:00 - Lunch

Session #13: Final Discussions, Early Career Award, Next CFMIP
Chairs: Jen Kay and Hugo Lambert
2:00-2:15 - CFMIP Plans
2:15-2:30 - CloudSense Plans
2:30-3:00 - Final Discussion, Awards, Next CFMIP

3:00 pm meeting ends

Poster Session #1 - Monday July 7 4:30-6:30 pm

1. Gnanaraj Abisha Mary: The dependence of relative humidity changes on the large-scale circulation response to surface warming: Insights from experiments varying the Coriolis parameter
2. Pouriya Alinaghi: Cold pools warm the trades in large-eddy simulations
3. Ezri Alkilani-Brown: Characterising graupel development in deep convective cloud
4. Anthony Baran: Are observed small, rounded ice particles important in a climate model?
5. Paul Barrett: Towards future cloud representations in Met Office models through Unified Physics and Machine Learning
6. Aditi Bhattacharyya: Effect of historical SST patterns on Tropical precipitation response
7. Alan Blyth: Observations of cloud phase transitions and growth regimes during the Deep Convection Microphysics Experiment (DCMEX)
8. Alejandro Bodas-Salcedo: Development of a GC5 configuration with a constrained climate sensitivity using a perturbed parameter ensemble
9. Elisa Carboni: Self-consistent datasets of cloud, aerosol and radiative fluxes from satellite data.
10. Yan-Ting Chen: Instantaneous atmospheric forcing differentiates tropical high cloud adjustments between greenhouse gases
11. Yong-Jhih Chen: Evolution of Atmospheric Energy Budget under Global Warming Linking to the Changes of Walker Circulation
12. Xi Chen: How Underestimated Western American Orography Affects Pacific Precipitation and Clouds in CESM1/CAM5
13. Boriana Chtirkova: Decadal-scale Global Redistribution of Clouds Linked to the PDO pattern
14. Sam Clarke: Representation of cold-air outbreaks in regional models: Sensitivity of Liquid Water Path (LWP) and atmospheric radiation to Ice-Nucleating Particle (INP) concentrations
15. David Considine: From CALIPSO/CloudSat to AOS: Active Remote Sensing and its role in Cloud Science
16. Frankie Cottrell: Informing the Unification of a Single Cloud Scheme in the Met Office's Unified Model
17. Deepti Dahiya: Cloud feedbacks on the MJO in Kilometre-scale simulations
18. Anzhuo (David) Dai: Understanding the climate response to different vertical patterns of radiative forcing
19. Luke Davis: Links between internal variability and forced climate feedbacks: The importance of patterns of temperature variability and change
20. Emma Dawson: Exploring Drivers of Intermodel Spread in Tropical High Cloud Feedbacks
21. Hairu Ding: Large-Scale Circulation Impact on Stratocumulus Regions: A Wave Perspective
22. Shuangchen Du: The factors controlling marine low clouds Across Multiple Timescales
23. Jean-Louis Dufresne: Robustness of the Simpson effect, and implications for the assessment of feedbacks and their uncertainties

24. Matt Evans: Characterising the Spatial Overlap Between Liquid and Ice in Mixed-Phase Clouds
25. Jing Feng: A Strong Constraint on Radiative Forcing of Greenhouse Gases
26. Luk Fleddermann: SST pattern differences explain feedback variations across forcing agents?
27. Leif Fredericks: Quantifying the radiative response to surface temperature change: A critical comparison of current methods
28. Astrid Bragstad Gjelsvik: Arctic cloud feedbacks and their state dependence
29. Deepak Gopalakrishnan: Cloud radiative effects of tropical high clouds: an analysis using Himawari-8 observations
30. Flo Greaves: Discovering the dynamics of cloud development through the embedding space of a self-supervised neural network
31. Robin Guillaume-Castel: Objectively identifying modes of sea surface temperature variability associated with the pattern effect
32. Stephan Havemann: Implementation of COSPv2.0 in LFRic, the new weather and climate modelling system
33. Christopher Holloway: Connections Between Sub-Cloud Coherent Updrafts and the Life Cycle of Maritime Shallow Cumulus Clouds in Large Eddy Simulation
34. Anna Tippett: Necessary conditions for accurate simulations of ship tracks in a high resolution model.

Poster Session #2 - Tuesday July 8 4:30-6:30 pm

1. Li-Wei Chao: Detailing Cloud Feedbacks in DOE's Global Storm Resolving Model (SCREAM)
2. Xinyi Huang: Model emulation and sensitivity analysis reveal the importance of aerosols on radiative properties of mixed-phase cold-air outbreak clouds
3. Matthew Igel: Better Modeling and Parameterizing Convective Cloud Dynamics with the DoNUT
4. Andrea Jenney: Factors controlling the ITCZ's negative CRE and small anvil cloud fraction
5. Jonathan Jiang: Exploring Climate Tipping Points and Surface Temperature Projections through Advanced Modeling
6. Hyoji Kang: Observationally Constrained Radiative-Convective Equilibrium Modeling of Tropical Upper-Level Cloud Radiative Effects and Feedback
7. Koh Kawaguchi: Responses to lower tropospheric stability dominate intermodel differences in the historical pattern effect
8. Hideaki Kawai: Vertical Profile Analysis of Cloud Feedbacks
9. Clarissa Kroll: Investigating the influence of explicit deep convection on global radiative feedbacks and climate sensitivity
10. Jo Lecuyer: Unravelling the mechanism of the Pattern Effect with a conceptual model of the Walker Circulation
11. Donghyun Lee: Role of SST patterns and tropical tropospheric stability for decadal variations in hydrological sensitivity

12. Jung-Eun Lee: Changing Large-Scale Dynamics and the Intensification of Summer Convection over New England
13. Jingyuan Li: Understanding changes in ocean memory in CMIP6 models
14. Wengui Liang: Confronting historical precipitation trends in models with observations: disentangling forced signal and atmospheric internal variability
15. Yongxiao Liang: Reducing uncertainty in climate projections for the mid-high latitudes of the Northern Hemisphere
16. Li Lijuan: Quantifying the Resolution Sensitivity of the Kain‚ÄìFritsch Scheme Across the Gray Zone by Isolating Interactions: A TWP-ICE Case Study
17. Yueh Chi Lin: North Atlantic influence reconciling model-observation discrepancy in the tropical Pacific warming pattern
18. Gary Lloyd: Early Ice Particles in Growing Convective Clouds over a New Mexico Mountain Range during DCMEX
19. Cameron MacDonald: On the influence of surface friction on the Madden-Julian Oscillation
20. Penelope Maher: Aerosols influence trends in historical simulations of the tropical Pacific SST gradient
21. Brian Mapes: Convective efficiency improves with age by natural selection
22. Alexander Matus: An Observational Climate Data Record of Radiative Forcing and Feedbacks
23. Biggart Michael: Secondary ice production within mixed-phase clouds in cold air outbreaks over the Labrador Sea
24. Aleena Moolakkunnel Jaison: The role of QBO for high-cloud radiative variability in CMIP6 models and observations
25. Mark Muetzelfeldt: Using changes in reflectivity over short time periods to estimate updraft strength
26. Harry Mutton: Biases in Climate Model Global Warming Trends Related to Deficiencies in Southern Ocean Sea Ice Evolution Over Recent Decades
27. Pritthijit Nath: RAIN: Reinforcement Algorithms for Improving Numerical Weather and Climate Models
28. Oscar O'Flanagan: Observational estimates of the impact of aerosol on Arctic cloud albedo
29. Tomoo Ogura: Mechanism of low cloud feedback induced by changes in latent heat flux in MIROC5
30. Xiao Pan: A Robust Delay in Southeast Pacific Surface Warming
31. Zuidema Paquita: An Overview of the Cold-Air outbrEaks over the Sub-Arctic Region (CAESAR) cam8paign
32. Chanyoung Park: Negligible Contribution from Aerosols to Recent Trends in Earth's Energy Imbalance
33. Basile Poujol: How boundary layer dynamics shape the inner ITCZ
34. Dian Putrasahan: Do Global Storm-Resolving Models Reveal Stronger Atmospheric Circulation Shifts Under Warming?
35. Yang Qinlan: Understanding Energetic Teleconnections through Atmospheric Transport Associated with El Nino-Southern Oscillation (ENSO)
36. Filip von der Lippe: Narrowing of the Arctic Cold Air Outbreak Season Detected with a Phenomenological Machine Learning Approach

37. Kexin Qiu: A Global Aviation Emission Inventory of Contrail-Processed nvPM Particles
38. George Manville: Analysis of atmospheric dimethylsulfide uncertainties using a global synthesis of ship and aircraft observations

Poster Session #3 – Wednesday July 9 4:30-6:30 pm

1. Atlas Rachel: What types of waves form cirrus clouds in the tropical tropopause layer?
2. Erin Raif: Life-cycle of ice-nucleating particles in a cold-air outbreak
3. Kristen Rasmussen: Extreme Weather in Current and Future Climates: Perspectives from km-scale Regional and Global Climate Models
4. Mark Ringer: Contributions of surface warming pattern, sea-ice loss, and atmospheric CO2 level to global and regional climate feedbacks
5. Mathilde Ritman: Linking convective mass flux and cloud anvil development in km-scale climate models
6. Paula Romero Jure: Observational quantification of high cloud radiative effects and feedbacks, and links to aerosols in the Pacific ITCZ
7. Pietro Salvi: Non-linearities in combining forcing patterns
8. P Parth Sarthi: Possible causes of Large Scale and Convective Precipitation over the Gangetic Plain of India
9. P Parth Sarthi: Relation among Aerosol, Cloud and Precipitation over the Gangetic plain in CMIP6
10. Kathleen Schiro: Examining potential sources of CMIP6 inter-model spread in large-scale convective aggregation.
11. Øyvind Seland: Comparing cloud feedback and aerosol forcing using a process based or absolute ice particle limiter.
12. Levi Silvers: ENSO and the Atlantic Overturning Circulation
13. Daniel Smith: The impact of mixed-phase cloud processes on simulating Southern Ocean clouds and their radiative effect
14. Malte Stuecker: Global climate mode resonance due to rapidly intensifying El Niño-Southern Oscillation
15. Monisha Natchiar Subbiah Renganathan: Probing the formation pathways of Aitken-mode particles over the Southern Ocean using UKESM1.0
16. Mengyu Sun: Influence of secondary ice formation on tropical deep convective clouds simulated by the Unified Model
17. Mark Tarn: Contrasting ice-nucleating particle measurements in the northern and southern hemispheres
18. Bijita Thapa Magar: Prominent regime shift in bimodal Arctic winter boundary layer due to CO2 increase
19. ~~Anna Tippett: Necessary conditions for accurate simulations of ship tracks in a high resolution model.~~
20. Lorenzo Tomassini: Changes in clouds and the tropical circulation in global km-scale simulations under different warming patterns
21. Adrian Tompkins: Dynamical controls of mesoscale water vapor variability in the tropical western Pacific.

22. George Tselioudis: Contraction of the world's storm-cloud zones and the relationship to atmospheric circulation changes
23. Yoko Tsushima: Impact of Data Period and Length on Cloud Controlling Factor Analysis
24. Caleb Ukaonu: Impacts Of Tropical Deforestation On Seasonal Precipitation Based On Moisture Supply and Surface Heating
25. Alejandro Uribe: Climate Feedbacks in a Global Storm-Resolving Model: Insights from ICON
26. Thibault Vaillant de Guélis: MODIS- vs. CALIOP-derived longwave cloud feedback decomposition
27. Senne Van Loon: Reanalysis-based Global Radiative Response to Sea Surface Temperature Patterns: Evaluating the Ai2 Climate Emulator
28. William van Wijngaarden: Thermal Radiation from Rotating Tops
29. Arianna Varuolo-Clarke: Disentangling warming and circulation influences on winter precipitation using nudging experiments
30. David Winker: CALIPSO Ice Cloud Observations for Model Evaluation
31. Mengxi Wu: Multi-objective optimization for marine stratocumulus feedback in a perturbed physics ensemble
32. Hsiang-Chi Yeh: Walker Cell Westward Shift under Abrupt 4xCO2 Forcing Driven by Atmospheric Energy Gain over Eurasia and Africa
33. Xiyue (Sally) Zhang: Intermodal spread of Southern Ocean teleconnection from Antarctic meltwater depends on the strength of low cloud feedback
34. Chen Zhou: Cloud radiative forcing is the primary driver of regional land temperature variability
35. Chen Zhou: Sensitivity of polar energy budget to the spatial patterns of local sea ice and remote SST
36. Bowen Zhu: Parcel Modelling and Observations of Entrainment Effects on Secondary Ice Production in Deep Convective Clouds during DCMEX