CFMIP/GCSS Boundary Layer WG Workshop on evaluation and understanding of cloud processes in GCMs.

University of British Columbia, Vancouver, Monday 8th - Friday 12th June, 2009.

This meeting is hosted by the University of British Columbia in Vancouver, Canada. We would also like to acknowledge the Canadian Foundation for Climate and Atmospheric Science for their financial support. For further information please see http://www.cfmip.net -> Meetings.

Scientific organisers:

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Adrian Lock (Met Office), Chair, GCSS Boundary Layer Working Group. adrian.lock@metoffice.gov.uk

Local Organiser:

Phil Austin, UBC Phil Austin paustin@eos.ubc.ca

Meeting Programme

Monday 8th June AM

900 REGISTRATION AND COFFEE - IBLC 261 Lobby

CFMIP

Opening session Room IBLC 261 (Chair Steve Klein)

- 930 Opening and welcome - practical issues. (Phil Austin, UBC)
- 940 CFMIP within the context of CMIP5 and AR5 (Sandrine Bony, IPSL)
- 1000 CFMIP-2 techniques for understanding cloud feedbacks in climate models. (Mark Webb, Met Office Hadley Centre)

Developments in global models Room IBLC 261 (Chair Steve Klein)

- 1020 Seasonal-scale Experiments with a Global Cloud-Resolving Model - Resolution Dependency in 7-km and 14-km mesh simulations. (Akira Noda, FRCGC)
- 1040 Preliminary Experiments with a Dynamics-Based PDF Parameterization for Boundary Layers and Associated Clouds in GCMs. (Leo Donner, Huan Guo and Chris Golaz, GFDL)

1100 COFFEE IBLC 261 lobby

- 1130 Boundary Layer parametrisation in the ECHAM5 GCM (Colombe Siegenthaler - Le Drian, ETH Zurich)
- 1150 Shallow convection in the ECHAM5 GCM (Francesco Isotta, ETH Zurich)
- 1210 A cloud scheme including indirect aerosol effects on ice and liquid particles in the MRI Earth System Model" (T. Sakami, T.Ose* and S. Yukimoto, MRI)

1230 LUNCH

Monday 8th June PM Room IBLC 261 (Chair Sandrine Bony)

Understanding and evaluating clouds and cloud feedbacks in global models

- 1400 Towards stability metrics for cloud cover variation under climate change. (Rob Wood , U. Washington)
- 1420 Using stability composites to analyse cloud feedbacks in the CMIP3/CFMIP-1 slab models. (Mark Webb, Met Office Hadley Centre)
- 1440 Impact of convection schemes on cloud feedbacks in the tropics (Mark Ringer, Met Office Hadley Centre)
- 1500 Cloud feedbacks in ECHAM5: preparatory results for CMIP5 (Daniel Klocke, MPI-M)

1520 COFFEE IBLC 261 lobby

- 1550 A study of cloud sensitivity and cloud feedback in a 25km GCM (Ming Zhao, GFDL)
- 1610 Observational and model evidence for positive low-level cloud feedback (Robert Burgman, U. Miami)
- 1630 NICAM simulations (+2K and realistic +SST) (Shin-ichi Iga and Yoko Tsushima, FRCGC)
- 1650 Discussion

1800- 2000 Evening reception at the Sage bistro
http://www.sage.ubc.ca/

Tuesday 9th June AM Room Henn202 (Chair Chris Bretherton)

Understanding and evaluating clouds and cloud feedbacks in global models

- 900 Estimating low cloud feedbacks from CERES Terra monthly data (Zachary Eitzen and Kuan-Man Xu, NASA Langley)
- 920 Evaluating Tropical Water Vapor and Cloud Feedbacks in Climate Models (De-Zheng Sun, CIRES)
- 940 Evaluating clouds and radiative fluxes in the CCCma AGCM using CERES and MODIS data. (Jason Cole, CCCma)

- 1000 Evaluation of ECHAM5 general circulation model using ISCCP simulator with focus to deep convective clouds (Swati Gehlot,MPI-M)

1020 COFFEE Hennings Lobby

- 1050 Evaluation of LMDz cloudiness against Calipso/Parasol observations using COSP simulator and the GCM Oriented Calipso Cloud Product (GOCCP) (Helene Chepfer, IPSL)
- 1110 Evaluation of tropical cloud and precipitation simulations of CAM3 using CloudSat and CALIPSO data. (Yuying Zhang and Steve Klein, LLNL)
- 1130 Discussion

1150 LUNCH BREAK

Parallel session: CFMIP Observational Simulator Package (COSP): (Room IBLC185) (Chair Mark Ringer)

- 1330 CFMIP Observational Simulator Package (COSP): status and CFMIP2 experiments (Alejandro Bodas-Salcedo, Met Office Hadley Centre)
- 1350 Updates and Recent Science Related to the ISCCP Simulator (Stephen Klein, LLNL)
- 1410 Implementation of the 'CALIPSO and CloudSat Satellite Simulator' within the ECHAM5 GCM (Christine Nam, MPI-M)
- 1430 COSP Question and Answer session

Parallel session: Recent field experiments (e.g. VOCALS and POST) (Room IBLC260) (Chair Phil Austin)

- 1330 Summary of VOCALS-REx campaign. Rob Wood
- 1350 VOCALS model assessments (preVOCA and VOCA). Chris Bretherton
- 1410 Summary of POST campaign - overview. Herman Gerber
- 1425 Summary of POST campaign - results. Steve Krueger
- 1440 Discussion (potential for future GCSS cases, upcoming campaigns, etc)

1530 COFFEE IBLC 261 Lobby

GCSS Pacific Cross Section (GPCI) and analysis of CFMIP columnar outputs (Room IBLC 261) (Chair Joao Teixeira)

- 1600 Progress on the GPCI (Joao Teixeira, JPL)
- 1620 What can be learned from high frequency Eulerian column data? (Brian Mapes, U. Miami)
- 1640 Confronting LES and 1D simulations of marine boundary layer clouds in a 3D GCM framework (Alexandre Catarino, LMD)
- 1700 Cloud Vertical Structure along the GPCI transect over the Northeastern Tropical Pacific as exhibited by CloudSat, ECMWF Analysis and two Climate Prediction Models (Jui-Lin (Frank) Li, JPL)

- 1720 Discussion

Wednesday 10th June AM Room Henn202 (Chair Minghua Zhang)

Using SCM/LES/CRMs to assess the credibility of cloud feedback mechanisms in GCMs

- 0900 Preliminary results from the CFMIP-GCSS SCM/LES cloud feedback case study (Minghua Zhang)
- 0940 Cloud-resolving Simulation of Low-Cloud Feedbacks to 2K SST Change for GPCI Configurations. (Anning Cheng, NASA Langley)
- 0955 Preliminary simulations of the CFMIP/GCSS LES intercomparison (Peter Blossey, Chris Bretherton, U. Washington)

1020 COFFEE Hennings Lobby

- 1050 Simulations of the CFMIP/GCSS intercomparison with the Met Office LES (Adrian Lock, UK Met Office)
- 1105 Cloud response to climate change in a single column framework (Brian Medeiros, UCLA/CMMAP)
- 1125 Discussion of next steps for the CFMIP-GCSS case study (next iteration, etc)

1230 LUNCH

Wednesday 10th June PM Room IBLC261

CFMIP and CFMIP-GCSS collaboration: Plenary discussion

- 1400 Where next for the GCSS-CFMIP collaboration? (Discussion chaired by Mark Webb and Chris Bretherton)
- 1500 How can our communities exploit CMIP5/CFMIP-2 experiments over the next 5 years? What other issues/topics should we consider for the future? (Discussion chaired by Sandrine Bony and Pier Siebesma)

1600 COFFEE IBLC 261 Lobby

How better to integrate knowledge from field experiments into models/parametrizations

- 1630 Discussion led by Rob Wood (requested by US CLIVAR)

1830-2130 Conference dinner at Cecil Green Park

http://www.cecilgreenpark.ubc.ca/

Thursday 11th June AM Room Henn202

Note earlier start, to be out by 1150

GCSS-BL WG

GCSS BLClouds shallow cumulus (RICO) intercomparison (Chair Adrian Lock)

- 0840 Progress with the RICO LES intercomparison (Louise Nuijens, UCLA)
- 0910 Progress with the RICO SCM intercomparison (Pier Siebesma, KNMI)
- Discussion of where to go with this case, eg can LES/SCM reproduce precip variability?

1010 COFFEE Hennings Lobby

Shallow cumulus: lifecycles and variability (Chair Wojtek Grabowski)

- 1040 The spatial variability of aerosol properties in the vicinity of trade wind cumuli over the Tropical Western Atlantic observed from RICO aircrafts and CALIPSO (Larry Di Girolamo, University of Illinois)
- 1100 Relationships between wind speed, humidity and precipitating shallow convection (Louise Nuijens, UCLA)
- 1120 Observed Updraft and Mass Flux in Shallow Cumulus at ARM Southern Great Plain site (Yunyan Zhang, PCMDI)

Note we need to be out by 1150

1200 LUNCH

Shallow cumulus: lifecycles and variability (continued, but now in Room IBLC260) (Chair Wojtek Grabowski)

- 1330 A statistical approach to the life-cycle analysis of cumulus clouds selected in a Virtual Reality Environment (Thijs Heus, MPI-M, Hamburg)
- 1350 Lifecycle analysis of simulated trade cumulus clouds using automated cloud tracking (Jordan Dawe, UBC)

Shallow cumulus: small scales and microphysics (Chair Rob Wood)

- 1410 The effect of turbulence on cloud microstructure, precipitation formation and the organisation of stratocumulus and shallow cumulus convection. (Charmaine Franklin, CSIRO)
- 1430 Shallow cumulus microphysics and its impact on long-term simulations of RICO clouds. (Joanna Slawinska, Wojciech W. Grabowski, Hugh Morrison, Hanna Pawlowska, (U. Warsaw)
- 1450 A comparison between bin and bulk models in the case of boundary layer clouds observed during RICO (Kozo Nakamura, JAMSTEC)

1510 COFFEE IBLC 261 Lobby

Shallow cumulus: small scales and microphysics (continued, but now in Room IBLC261) (Chair Stephan de Roode)

- 1540 Modeling of subgrid-scale mixing in large-eddy simulation of shallow convection (Dorota Jarecka, Univ of Warsaw)
- 1600 Simulation of cloud droplets in parameterized shallow cumulus during RICO and ICARTT (Knut von-Salzen, CCCMA)
- 1620 Parametric representations of the cloud droplet and the rain drop spectra for warm bulk microphysical schemes (Olivier Geoffroy, KNMI)
- 1640 A hybrid bulk-bin approach to model warm-rain microphysics (Wojtek Grabowski, NCAR)
- 1700 Entrainment....But what about Detrainment? (Pier Siebesma, KNMI)
- 1720 Potential further discussion of where to go with shallow cumulus and microphysical interactions

Friday 11th June - IBLC182

Individual research presentations (Chair Phil Austin)

- 0900 Smoke-cloud case revisited: High-resolution study. Marat Khairoutdinov
- 0920 Simulations of ASTEX, DYCOMS, and ATEX using a Cloud Resolving Model with an Adaptive Vertical Grid (Roger Marchand, Univ of Washington)
- 0940 A New Parameterization for Momentum Transport in the Convective Boundary Layer (Pedro M. M. Soares, Universidade de Lisboa)
- 1000 Resolved versus parametrized boundary-layer plumes (Catherine Rio and Fleur Couvreux, Meteo France)
- 1020 Length scale analysis of the transition from shallow to deep convection (João Paulo Martins, Univ of Lisbon)

1040 COFFEE IBLC Main Lobby - outside IBLC 182

Individual research presentations (Continued) (Chair Adrian Lock)

- 1110 Long-term statistics of continuous single column model evaluation at Cabauw (Roel Neggers)
- 1130 The 10th of July 2006 over Niamey: A golden case of daytime moist convection in a semi-arid environment (Catherine Rio, LMD)

- 1150 Probability Density Functions of Liquid Water Path and Total Water Content Associated with Marine Boundary Layer Clouds. (Hideaki Kawai (JMA), Joao Teixeira (JPL))
- 1210 Synoptically-induced variability in microphysical properties of the southeast Pacific stratocumulus deck (Paquita Zuidema, RSMAS)

1230 LUNCH

Stratocumulus to cumulus transitions - a new GCSS BLClouds case? (Chair Adrian Lock)

- 1400 Factors controlling the transition from unbroken marine boundary layer stratocumulus to the shallow cumulus regime. (Irina Sandu, MPI-M)
- 1420 LES of an ASTEX transition. Stephan de Roode (Delft Univ)

Discussion of potential BLClouds WG future cases

- 1440 Discussion: possible options so far:
  - further work on cloud-feedbacks (CFMIP collaboration)
  - Lagrangian transitional case, stratocumulus to cumulus
  - Follow on to RICO: eg can LES/SCM reproduce precip variability
  - Drop number sensitivity of drizzling stratocu (possible case arising from VOCALS)
  - Cold air outbreak

1600 Meeting Close

Confirmed attendees

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This topic: Main > TWikiUsers > MarkWebb > CfmipGCSSVancouverAgenda
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