

CESM Land Model and Biogeochemistry Working Group Meetings

24 – 26 February 2014

National Center for Atmospheric Research – Boulder, Colorado

Mesa Lab – Main Seminar Room

Webcast: www.fin.ucar.edu/it/mms/ml-live.htm

MONDAY, 24 February – Biogeochemistry Working Group Meeting

8:30 Coffee
9:00 Co-chairs – Welcome and Introduction

Nutrients

9:10 Bardan Ghimire – Improving nitrogen cycling in CLM
9:30 Xiaojuan Yang – Influence of coupled C-N-P cycles on global climate-BGC feedbacks
9:50 Will Wieder – Nutrient constrains over plant productivity in a carbon rich world
10:10 Danica Lombardozzi – Detecting the human fingerprint on land-atmosphere carbon cycle coupling
10:30 Break

High-latitude systems

11:00 Charlie Koven – Permafrost-carbon feedback in CLM4.5BGC
11:20 Peter Thornton – Thermal-hydrology controls on vegetation distribution and biogeochemical fluxes in Arctic permafrost tundra
11:40 Dave Lawrence – Permafrost carbon-hydrology interactions
12:00 Discussion
12:15 Lunch (on your own)

CLM Updates

1:30 Dave Lawrence – State of CLM
2:00 Discussion of CLM development and CESM timelines
2:30 Rosie Fisher – Update on CLM(ED)
3:00 Break

Future directions

3:30 Gordon Bonan – Multi-layer canopy: A new direction for CLM?
3:50 Bill Riley – Representing spatial heterogeneity in CLM
4:10 Bill Riley – Integrating reactive transport, microbial community structure, mineral stabilization, and nutrient competition into CLM's belowground structure
4:30 Will Wieder – Introducing the MICROBIAL-MINERAL CARBON STABILIZATION (MIMICS) model
4:50 Discussion
5:00 Adjourn / Reception (LMWG and BGCWG)

TUESDAY, 25 February – Joint Land Model and Biogeochemistry Session

8:00 Coffee

Benchmarking

8:30 Mingquan Mu – Development of a land model benchmarking system
8:50 Kyla Dahlin – Stress deciduous phenology in CLM
9:10 Jiafu Mao – Synthesis of long-term remote sensing LAI for applications in land surface and earth system models: Homogenization and intercomparison
9:30 Yilin Fang – Estimation of soil organic carbon using satellite-derived canopy leaf area index and CLM
9:50 Gretchen Keppel-Aleks – Atmospheric benchmarks for land carbon exchange over a range of timescales

10:10 Discussion
10:20 *Break*

Software Development

10:50 Peter Thornton – A functional unit testing approach to land model development and evaluation
11:05 Bill Sacks – Dynamic landunits progress report
11:20 Stefan Muszala – CLM refactoring
11:40 Discussion of software development and benchmarking
12:00 *Lunch (on your own)*

Hydrology

1:15 Sean Swenson – Evaluating a dry surface layer parameterization using GRACE and FLUXNET
1:35 Jinyun Tang – Modeling hydraulic redistribution in CLM4.5: pitfalls and gains
1:55 Enhao Du – Historical evaluation of hydrologic components in CLM4: surface soil moisture and runoff field
2:15 Pieter Hazenberg – An effective hyper-resolution pseudo-3D implementation of small scale hydrological features to improve regional and global climate studies
2:35 Hongyi Li – Stream temperature modeling in MOSART
2:55 Discussion
3:00 *Break*

Land-atmosphere interactions

3:30 Tony Wong – Stable Water Isotopes
3:50 Sanjiv Kumar – Role of land surface on sub-seasonal to seasonal climate predictability
4:10 Ahmed Tawfik – How land-convection interactions produce different diurnal cycles and mean conditions: A coupled problem
4:30 Ian Baker – SP-CESM
4:50 Discussion
5:00 *Adjourn – (Dinner out in Boulder)*

WEDNESDAY, 26 February – Land Model Working Group Meeting

8:00 *Coffee*

Regional studies

8:30 Jennifer Holm – Modeling increased disturbances on a Central Amazonian forest: lessons from a gap model for CLM improvement
8:50 Abby Swann – Remote vegetation feedbacks and the mid-Holocene Green Sahara
9:10 Heidrun Matthes – Using CLM4 in a Regional Climate Model over the Arctic
9:30 Dave Lawrence – Land Use Model Intercomparison Project (LUMIP/CMIP6)
9:40 *Break*

Human systems

10:10 Keith Oleson – Recent developments and research with the Community Land Model Urban (CLMU).
10:30 Sam Levis – Tropical crops in CLM4.5
10:50 Beth Drewniak – Soil organic carbon response to harvested crops: A comparison between biogeochemistry model versions
11:10 Maoyi Huang – Effects of groundwater-fed irrigation on terrestrial hydrology simulated by CLM
11:30 Min-Hui Lo – Responses of regional climates to agricultural irrigation in California
11:50 Wrap up
12:00 *Lunch (on your own)*

Joint Land Model and Societal Dimensions Working Group Meeting

- 1:30 Peter Thornton – The influence of prognostic land use and land cover change representations in CESM simulations over the period 1850-2100
- 1:50 Alan DiVittorio – From land use to land cover: Restoring the afforestation signal in GCAM to CESM land coupling and the implications for CMIP5 RCP simulations
- 2:10 Ruby Leung – Representing human influence in CESM: Global testing of a river routing and water management model coupled to CLM
- 2:30 Mark Rounsevell / Almut Arneth – Towards decision-based global land use models for improved understanding of the Earth system
- 2:50 Almut Arneth – The EU project LUC4C: Land-use change: Assessing the net climate forcing, and options for climate change mitigation and adaptation
- 3:30 Break
- 3:50 CGD Seminar – Jerry Nelson – Critical challenges for integrated modeling of climate change and agriculture: Addressing the lamppost problem
- 4:30 Break
- 4:45 Discussion (SDWG/LMWG research priorities on human dimensions of land surface modeling)
- 5:30 Adjourn