

CESM Land Model and Biogeochemistry Working Group Meetings  
5 – 7 February 2018  
National Center for Atmospheric Research – Boulder, Colorado  
Mesa Lab – Main Seminar Room

Webcast: [www.fin.ucar.edu/it/mms/ml-live.htm](http://www.fin.ucar.edu/it/mms/ml-live.htm)

**Monday, 5 February (Joint LMWG and SDWG)**

***Land use and land use change***

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|------|---|-----------------|
| 1:00 | Welcome and Introduction  | Co-chairs       |
| 1:10 | Quantify the biophysical and socioeconomic drivers of changes in forest and agricultural land in South and Southeast Asia             | Atul Jain       |
| 1:30 | DEMETER: A land use land cover disaggregation model   | Kate Calvin     |
| 1:50 | The joint effects of climate and LULCC on terrestrial hydrology over the conterminous United States in the 21st century               | Maoyi Huang     |
| 2:10 | Land use and land cover distribution is a primary determinant of global carbon cycle projections and regional temperature projections | Alan DiVittorio |
| 2:30 | Agent-based modeling of anthropogenic land cover change: A case study from Roman North Africa   | Nick Gautier    |
| 2:50 | Discussion  |                 |
| 3:00 | <i>Break</i>  |                 |
| 3:30 | Modeling the hydro-climatic effects of land use and land cover changes in the Euphrates and Tigris Basin under a changing climate     | Yeliz Yilmaz    |
| 3:50 | Diving deeper into land use in CLM5: Shifting cultivation, fire and wood harvest  | Peter Lawrence  |

***Agriculture***

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|------|--|--------------|
| 4:10 | Towards a better representation of crop growth and management in the Community Earth System Model  | Bin Peng     |
| 4:30 | Assessing beneficial effects of large-scale adoption of intercropping using new schemes for crop-crop competition for soil N and NH <sub>3</sub> volatilization in CLM | Ka Ming Fung |
| 4:50 | CLM-Palm for simulating oil palm plantations: Carbon cycle, canopy hydrology and energy balance  | Yuanchao Fan |
| 5:10 | LUMIP/Discussion   |              |
| 5:30 | <i>Adjourn</i>   |              |

## Tuesday, 6 February (LMWG)

### *CLM5 updates*

- 8:15 *Coffee*
- 8:30 Evaluating and improving the Community Land Model's sensitivity to land cover R. Meier/E. Davin  
(remote)
- 8:50 State of CLM and CESM Dave Lawrence
- 9:20 Exploring the CLM5 structure and parameters Rosie Fisher
- 9:40 Representing plant hydraulics in CLM5 Daniel Kennedy
- 10:00 Beyond benchmarking: Evaluating model assumptions with experimental manipulations Will Wieder
- 10:20 Discussion
- 10:30 *Break*
- 11:00 Detecting global carbon-climate feedbacks: Recent lessons from NASA observations and NCAR models Nick Parazoo
- 12:00 *Lunch (on your own)*
- 1:00 Crop responses to N, CO<sub>2</sub>, and irrigation in CLM5 D. Lombardozzi
- 1:20 Scoring methods in the ILAMB benchmarking package Nate Collier

### *CTSM*

- 1:40 Update on transition to Community Terrestrial Systems Model (CTSM) Martyn Clark
- 2:00 CTSM/CLM git model development work flow Bill Sacks

### *Hydrology and Snow*

- 2:20 Representative hillslopes in CTSM Sean Swenson
- 2:40 Discussion
- 2:50 *Break*
- 3:20 Impact of snow properties on the simulation of present day Arctic climate Heidrun Matthes
- 3:40 Towards high resolution snow cover history matching in permafrost region Kristoffer Aalstad
- 4:00 Patterns and signatures characterizing the partitioning of precipitation into evapotranspiration and runoff in land surface parameterizations H. Zheng/L. Yang

### *Data assimilation*

- 4:20 Initializing carbon cycle predictions from CLM by assimilating biomass and LAI observations Andrew Fox
- 4:40 Introduction to the Terrestrial Systems Modeling Platform integrated with the Parallel Data Assimilation Framework: Technical concepts and application examples Stefan Kollet
- 5:00 Global multisensor and multivariate land data assimilation and applications P. Lin / L. Yang
- 5:20 Discussion
- 5:30 *Reception (Damon Room)*

## Wednesday, 7 February (LMWG and BGCWG)

### *Nitrogen and carbon cycling*

8:15 *Coffee*

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|------|--|------------------|
| 8:30 | Evaluating the short and long-term fate of N deposition in CLM5                        | Susan Cheng      |
| 8:50 | Towards an implementation of soil NO <sub>x</sub> emissions in CLM5                    | Maria Val Martin |
| 9:10 | Nitrogen losses in agriculture: Coupling the FAN ammonia flows with the CLM crop model | Julius Vira      |
| 9:30 | Impact of rock weathered nitrogen on terrestrial productivity                          | Pawlok Dass      |
| 9:50 | Summary and discussion of N-cycle development activities                               | Will Wieder      |

10:10 *Break*

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| 10:40 | Unified formula for land biogeochemical models | Yiqi Luo |
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### *Land-atmosphere interactions*

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| 11:00 | The importance of atmospheric feedbacks on the effect of land surface properties | Marysa Lague |
| 11:20 | Atmospheric response to soil moisture in CESM1                                   | Haiyan Teng  |

### *Forest and Vegetation Processes, FATES*

|       |  |              |
|-------|--|--------------|
| 11:40 | Simulating canopy-level solar induced fluorescence with CLM-SIF 4.5 at a sub-alpine conifer forest in the Colorado Rockies | Brett Raczka |
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12:00 *Lunch (on your own)*

|      |   |                  |
|------|---|------------------|
| 1:00 | Future forest vulnerability to mortality from drought and fire in the western US  | Polly Buotte     |
| 1:20 | Introducing prognostic beetle and prognostic harvest modules to the CLM   | Sam Levis        |
| 1:40 | Building capacity in the CLM to better model forest management  | Joshua Rady      |
| 2:00 | The FETCH2 plant hydrodynamic model and biomass hydraulic capacitance   | Ashley Matheny   |
| 2:20 | Does leaf trait acclimation to elevated carbon dioxide alter projections of tropical ecosystem composition and functioning? | Marlies Kovenock |

2:40 Discussion

2:50 *Break*

|      |   |               |
|------|---|---------------|
| 3:10 | Identifying regimes of tropical forest PFT coexistence in FATES                               | Charlie Koven |
| 3:30 | Interaction of climate, fire and vegetation state for coexistence of tropical trees and grass | Jackie Shuman |
| 3:50 | The FATES selective logging module  | Maoyi Huang   |
| 4:10 | LMWG Andrew Slater Award Presentation   |               |
| 4:20 | Discussion  |               |

4:30 *Adjourn*

6:00 *Optional Working Group Dinner at Boulder area restaurant*

## Thursday, February 8

- ❖ FATES tutorial
- ❖ Individual / group CLM help sessions (please contact Erik Kluzek ([erik@ucar.edu](mailto:erik@ucar.edu)) and let him know what issues you are having or what you would like to learn more about; meetings with software engineers during the week also possible)
- ❖ ILAMB tutorial / help session (please contact Nate Collier ([nate@climatemodeling.org](mailto:nate@climatemodeling.org)) if you would like learn more about running or contributing to ILAMB)