

Workshop on Advancing X-cutting Ideas for Computational Climate Science (AXICCS)

September 12-14, 2016

Hilton Rockville, 1750 Rockville Pike, Rockville, MD 20852

Agenda

Monday, September 12, 2016

<i>Start Time</i>	<i>End Time</i>	<i>Topic</i>
9:00AM	9:30AM	Welcome
9:30AM	10:30AM	Plenary: Bill Collins , Lawrence Berkeley National Laboratory Title: TBD
10:30AM	11:00AM	Coffee Break
11:00AM	12:30PM	Breakout #1

Breakout Topic 1A: Climate Science Problems in Coupling

*Moderators: **Peter Caldwell and Forrest Hoffman***

Speakers: 40 minutes total

Discussion: 50 minutes

L. Li, Y. Shi, C. Duffy. *Building Computational Bridges Across the Water, Ecosystem, and Soil Biogeochemistry Disciplines*

R. Mills and F. Hoffman. *Machine-learning guided, multi-resolution approaches to high-fidelity representation of global hydrology in ESMs*

H. Waisman, J. Bassis, S. Price, R. Tuminaro and I. Tezaur. *A physics based iceberg calving model coupled with a global ice-sheet flow model for accurate assessment of sea level rise*

M. Hoffman, L. Bertagna, M. Gunzburger, M. Perego and Stephen Price. *Realistic Subglacial Hydrology For Improved Ice Sheet-Climate Coupling and Sea Level Prediction*

Breakout Topic 1B: Climate Model Complexity and Scaling

*Moderators: **Ruby Leung and Paul Ullrich***

Speakers: 45 minutes total

Discussion: 45 minutes

M. Allen, M. Branstetter, O. Omitaomu. *Embedded Urban Framework for ACME Regions of Refined Resolution*

P. Bochev, K. Evans, M. Gunzburger and K. Peterson. *Optimization-Based Heterogeneous Numerical Methods: an Abstraction for Mathematically Rigorous Coupling of Earth System Models*

C. Jablonowski, J. Ferguson, H. Johansen and P. Colella. *Transforming Climate Modeling via Scale-Adaptive Computational Techniques*

W. Maslowski, A. Roberts, E. Hunke, F. Giraldo and M. Kopera. *Sea Ice Modeling Across Scales at Exascale and Beyond*

Breakout Topic 1C:

*Moderators: **Charles Jackson and Michael Prather***

Speakers: 40 minutes total

Discussion: 50 minutes

A. Salinger, E. Phipps and J. Fyke. *Embedded Ensembles*

S. Mahajan, K. Evans and M. Norman. *Expanding the Utility of High-Resolution Global Climate Models via Short Ensembles*

S. Price, M. Perego and G. Stadler. *Optimization and Uncertainty Quantification of Ice Sheet Models*

S. Wang, N. Urban, M. Maltrud and Alexandra Jonko. *Automation of parameterization and structure selection of ocean biogeochemical models*

12:30PM	2:00PM	Lunch
2:00PM	2:30PM	Outbriefs from Breakout #1 (all)
2:30PM	3:30PM	Plenary: Christopher S. Bretherton , University of Washington Title: TBD
3:30PM	4:00PM	Coffee Break
4:00PM	5:30PM	Breakout #2: Math and Computer Science Advances

Breakout Topic 2A: Coupling, PDEs, and linear algebra

Moderators: **Ray Tuminaro and Dan Martin**

Speakers: 45 minutes total

Discussion: 45 minutes

M. Perego, S. Price and A. Salinger. *Next generation implicit solvers and analysis algorithms for ice sheet modeling*

J. Brown. *Higher Standards on the Control of Numerical Accuracy*

M. Norman. *New Temporal and Spatial Algorithms for Atmospheric Climate Models*

Breakout Topic 2B: Optimization and Statistics

Moderators: **Stefan Wild and George Ostrouchov**

Speakers: 40 minutes total

Discussion: 50 minutes

O. Ghattas and **G. Stadler**. *From Data through Inference to Optimization under Uncertainty: Towards End-to-End Climate Model-Based Decision-Making*

J. Ray, L. Swiler, G. Pau, G. Bisht, F. Hoffman, M. Huang, Z. Hou and X. Chen. *Improving predictive capability of land surface models through robust statistical calibration techniques*

N. Urban. *Climate Model Uncertainty Quantification*

Breakout Topic 2C: Computational Performance and Data Management

Moderators: **Sam Williams and Kerstin Kleese Van Dam**

Speakers: 40 minutes total

Discussion: 50 minutes

P. Ullrich, G. Jost, B. Leibach and H. Johansen. *Exascale-Ready Programming Models for Climate*

D. Wang, O. Hernandez, G. Lopez and F. Winkler. *Compiler-based software analysis toolkit for climate model development*

5:30PM	7:00PM	Poster Session
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Tuesday, September 13, 2016

<i>Start Time</i>	<i>End Time</i>	<i>Topic</i>
9:00AM	9:30AM	Outbriefs from Breakout #2 (all)
9:30AM	10:30AM	Plenary: Petros Koumoutsakos , ETH Zurich, Switzerland Title: TBD
10:30AM	11:00AM	Coffee Break
11:00AM	12:30PM	Breakout #3: Climate Response to Math and CS Ideas Breakout Topic 3A: Same as 1A Breakout Topic 3B: Same as 1B Breakout Topic 3C: Same as 1C
12:30PM	2:00PM	Lunch
2:00PM	2:30PM	Outbriefs from Breakout #3 (all)
2:30PM	3:30PM	Plenary: George Mozdzynski , European Centre for Medium-Range Weather Forecasts, UK Title: TBD
3:30PM	4:00PM	Coffee Break
4:00PM	4:30PM	Wrap-up

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Wednesday, September 14, 2016

<i>Start Time</i>	<i>End Time</i>	<i>Topic</i>
8:30AM	1:00PM	PC Only Report Writing