ON THE SURFACE

CSDMS Quarterly Newsletter
January 2020

CSDMS 2020 Annual Meeting

Registration Now Open!

Please join us for the 11th CSDMS Annual Meeting in Boulder, Colorado, May 19th - 21st, 2019. This year's meeting entitled ***"CSDMS 2020 - Linking Ecosphere and***

Geosphere", is co-organized by the International Society for Ecological Modeling, the International Soil Modeling Consortium, the CSDMS Ecosystem Dynamics and the Critical Zone Focus Research Groups. Up to 15 student scholarships will be granted through a competitive process. Please scroll down to the scholarship details on the main meeting web page.

Please register soon to take advantage of early registration rates and limited hotel support!

Earth Surface Process Institute (ESPIn)

August 13 - 21, 2020!

CSDMS will host a 10-day, immersive training experience for 25 graduate students, postdoctoral fellows and early career faculty at the CSDMS Integration Facility at the University of Colorado, Boulder. ESPIn will offer hands-on training in best programming practices, open source software development, advanced use of version control systems, writing unit tests, HPC-based sensitivity testing and model uncertainty quantification techniques. Several days will be dedicated to working collaboratively on authentic research and coding projects. Participants will also work on developing their own codes.

A mix of experienced scientists, visiting faculty, software engineers and research computing experts will provide training and instruction. **Additional details (including cost/travel support) can be found here!**

February 7: Application opens
April 1: Application deadline
May 8: Notification Date
August 13-21: Summer Institute

Level Up! Your Scientific Coding

In Spring 2020, **CSDMS Research Software Engineers Mark Piper and Benjamin Campforts** will present a series of three webinars on selected topics in scientific software development. Registration is required and links are provided below. The titles and dates are:

Level 1: Version Control with Git and GitHub
Tuesday, February 18, 2020, 12:00PM ET

Level 2: Unit Testing
Tuesday, March 17, 2020, 12:00PM ET

Level 3: Object-oriented Programming
Tuesday, April 14, 2020, 12:00PM ET

Each webinar will run about 30 minutes, and will focus on the why, where, and how of each topic.

- Why is this important? We'll consider the perspective of a grad student starting a research project, a postdoc scrambling to publish papers, a researcher starting a collaboration, and a professor leading a group of students and postdocs. (15 min)
- Where can you find good, reliable information? The internet is filled with content from others who have devoted their careers to the topic. We'll show where we think are the best places to get more information. (5 min)
- How does it work? We'll give a concrete demonstration of the topic. Again, others have done this better, but seeing it in action may help you get a jump on using it yourself. (10 min)

Attend these three webinars to gain +3 to hit on any research problem that involves coding!

Previous CSDMS-sponsored webinars are archived here and available for viewing anytime.
If you have suggestions for future Webinars, please contact csdms@colorado.edu.

New CSDMS Initiative - Exploring Interoperability of Open Modeling Platforms

The goal of the Exploring Interoperability of Open Modeling Platforms Initiative is to make models interoperable between modeling platforms. Open modeling platforms (e.g. CSDMS, OpenGMS, HydroShare) are increasingly emerging to encourage scientists to apply numerical models for their research. Through these platforms it becomes easier to run models in a stand-alone or coupled configuration. To do so, models are configured or wrapped according to specific platform standards. However, each open modeling platform has its own set of standards. This new initiative is proposed to explore interoperability for open modeling platforms to enable resource exchange. Technical issues include designing model standards and specifications that can be used across different platforms, developing a generic wrapper on top of the existing wrapper under one generic platform, etc. Two relevant publications are here and here. If you are interested in joining this initiative, please click the join button on the initiative's main page. The initiative is co-chaired by Min Chen, Nanjing Normal University and Albert Kettner, University of Colorado, Boulder.

Community Member Spotlight

We're delighted to announce that **Julia Moriarty** has joined CSDMS in a dual-capacity - as an Assistant Professor in the Department of Atmospheric and Oceanic Sciences at University of Colorado, Boulder, and as Co-Chair of the Marine Working Group (chair position starting in May)! Her research focuses on transport of sediment and nutrients in the coastal ocean and coupled numerical modeling. Julia comes to CU from the USGS where she was a Mendenhall Post-doctoral Research Oceanographer.

Derek Robinson, Assistant Professor at the University of Waterloo's Department of Geography and Environmental Management, has been elected as Co-chair of the CSDMS Human Dimensions Focus Research Group. Derek's research interests include land use, land management and the carbon cycle.

Please join us in welcoming Christina Bandaragoda, Senior Research Scientist at the University of Washington's Department of Civil and Environmental Engineering, as Co-Chair of the CSDMS Hydrology Focus Research Group. Her research interests include participatory and collaborative watershed model development with expertise in spatially distributed model development and calibration.

CSDMS is excited to have **Benjamin Campforts** join the integration facility team as a Post-doctoral Scholar and Research Software Engineer. Benjamin joins us from GFZ Helmholtz Centre Potsdam where his research involved numerical modeling of landscape evolution and sediment flux.

HPC Resources and Help Desk Reminder

CSDMS offers many services to our community members including a free HPC resource Blanca! Gaining access is easy and it's a great resource for students.

Have a question or need assistance? The **CSDMS Help Desk** is available! Every question asked helps build a stronger community resource - so ask away!

Publications of Interest

Elsawah, S., Filitova, T., Jakeman, A., Kettner, A., Zellner, M., Athanasiadis, I., Hamilton, S., Axtell, R., Brown, D., Gilligan, J., Janssen, M., Robinson, D., Rozenburg, J., Ullah, I. and Lade, S. *Eight Grand Challenges in Socio-Environmental Systems Modeling.* 2020. Socio-Environmental Systems Modeling. https://doi.org/10.18174/sesmo.2020a16226

Fringer, O., Dawson, C., He, R., Ralston, D. and Zhang, J. 2019. *The Future of Coastal and Estuarine Modeling: Findings from a Workshop.* Ocean Modelling. https://doi.org/10.1016/j.ocemod.2019.101458

Dauxois, T., Peacock, T., Bauer, P., Caulfield, C., Cenedese, C., Gorle, C., Haller, G., Ivey, G., Linden, P., Meiburg, E., Pinardii, N., Sepp Neves, A., Vriend, N. and Woods, A. 2019. *Confronting Grand Challenges in Environmental Fluid Dynamics.* arXiv:1911.09541v1 [physics.ao-ph] 21 Nov 2019

Moodie, A., Nittrouer, J., Ma, H., Carlson, B., Chadwick, A., Lamb, M. and Parker, G. 2019. *Modeling Deltaic Lobe-Building Cycles and Channel Avulsions for the Yellow River Delta, China*. JGR Earth Surface. https://doi.org/10.1029/2019JF005220

Rajib, A., Liu, Z., Merwade, V., Tavakoly, A. and Follum, M. 2020. *Towards a Large-scale Locally Relevant Flood Inundation Modeling Framework using SWAT and LISFLOOD-FP.* Journal of Hydrology. https://doi.org/10.1016/j.jhydrol.2019.124406

Strauch, R., Istanbulluoglu, E. and Riedel, J. 2019. *A New Approach to Mapping Landslide Hazards: a Probabilistic Integration of Empirical and Physically Based Models in the North Cascades of Washington, USA.* Natural Hazards and Earth System Sciences. https://doi.org/10.5194/nhess-19-2477-2019

Schwalm, C., Schaefer, K., Fisher, J., Huntzinger, D., Eishorbany, Y., Fang, Y., Hayes, D., Jafarov, E., Michalak, A. and Piper, M. 2019. *Divergence in Land Surface Modeling: Linking Spread to Structure.* Environmental Research Communications. https://doi.org/10.1088/2515-7620/ab4a8a

Cohen, S., Raney, A., Munasinghe, D., Loftis, D., Molthan, A., Bell, J., Rogers. L., Galantowicz, J., Brakenridge, R., Kettner, A., Huang, Y. and Tsang, Y. *The Floodwater Depth Estimation Tool (FwDET v2.0) for Improved Remote Sensing Analysis of Coastal Flooding*. Natural Hazards and Earth System Sciences. https://doi.org/10.5194/nhess-19-2053-2019

Barnhart, B., Hutton, E. and Tucker, G. 2019. *umami: A Python Package for Earth Surface Dynamics Objective Function Construction.* JOSS. https://doi.org/10.21105/joss.01776

Hoch, J., Eilander, D., Ikeuchi, H., Baart, F. and Winsemius, H. 2019. *Integrating Large-scale Hydrology and Hydrodynamics for Nested Flood Hazard Modelling from the Mountains to the Coast.* Natural Hazards Earth System Sciences. https://doi.org/10.5194/nhess-2019-75

Salter, G., Voller, V. and Paola, C. 2019. *How Does the Downstream Boundary Affect Avulsion Dynamics in a Laboratory Bifurcation?* Earth Surface Dynamics. https://doi.org/10.5194/esurf-7-911-2019

CSDMS would like to thank community members who submitted their publications.

Reach your community! To submit publications or resources of interest for a future CSDMS *"On the Surface",* please contact csdms@colorado.edu

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