ON THE SURFACE

New Release - CSDMS Python Modeling Toolkit (PyMT1.0)
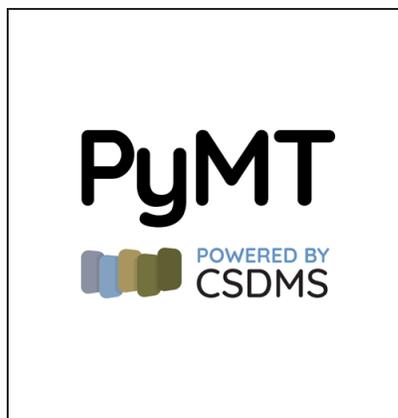
Historically, earth-surface process models have often been complex and difficult to work with. To help improve this situation and to make the discovery process more efficient, the CSDMS Python Modeling Tool (PyMT) **has been developed to provide a unified environment in which community-built numerical models and tools can be run directly and interactively from a Python environment.** PyMT is an Open Source Python package, developed by the CSDMS, that simplifies the process of learning, operating, and coupling models - freeing researchers to focus on exploring ideas, testing hypotheses, and comparing models with data. This new tool is a game changer! PyMT includes:

- Tools for coupling models of disparate time and space scales
- A collection of Earth-surface models
- Extensible plug-in framework for adding new models

You can learn more about PyMT by registering for the upcoming webinar **or** visiting the documentation page**.**

Thank you to the CSDMS community members who have used the beta version of PyMT in their research. This first full release has benefited from their suggestions for improvement. Several of these use cases will be discussed in future CSDMS newsletter.

New Landlab Components for Spatially Variable Lithology

A recent update to Landlab includes **two new components** written by CSDMS Community Member Katy Barnhart, that **makes spatially variable lithology much easier in Landlab**.

One component **permits parallel layers** and the other has **no restrictions on layer geometry.** [See the recent paper in JOSS that describes the component and the Jupyter notebooks highlighting its use.](#)

CSDMS 2019 Annual Meeting

CSDMS 3.0 - Bridging Boundaries
May 21-23, 2019 in Boulder, CO

[Registration is now open!!](#)

Please join us for the **10th CSDMS Annual Meeting** in Boulder, Colorado. The **abstract submission and discounted early registration deadline is April 1, 2019.**

In addition to **lively keynote presentations**, there will be **12 in-depth clinics** offered and **3 optional pre-conference training opportunities** on Monday, May 20th (Software Carpentry Bootcamp, HPC basics and Quantifying Uncertainty in Earth Systems). [Meeting details can be found here](#).

Announcing CSDMS Spring Webinar Series!

Please join us for the Spring 2019 CSDMS Webinar Series. **Registration is required** and links are provided below.

The CSDMS Python Modeling Toolkit (PyMT)
Wednesday, March 20, 2019, 12:00PM ET
Eric Hutton, CSDMS IF, University of Colorado, Boulder

CSDMS's newly released Python Modeling Toolkit (PyMT) provides convenient tools for coupling of models. [**Additional details and pre-registration (required).**](#)

Do I have to make my models FAIR? Current practices in making models and data Findable, Accessible, Interoperable and Reusable.
Wednesday, April 24, 2019, 1:00PM ET
Leslie Hsu, Community for Data Integration, USGS

What are your colleagues doing to make their models FAIR - Findable, Accessible, Interoperable, and Reusable? [**Additional details and pre-registration (required)**](#).

GeoClaw (Depth-averaged fluid dynamics for modeling geophysical flows and wave propagation)
Tuesday, May 7, 2019, 2:00PM ET
Randy LeVeque, Department of Applied Mathematics, University of Washington

Abstract available soon.
Pre-registration required.

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

NHESS Special Issue on Natural Hazards Modeling

Reminder - Call for papers deadline March 2019!
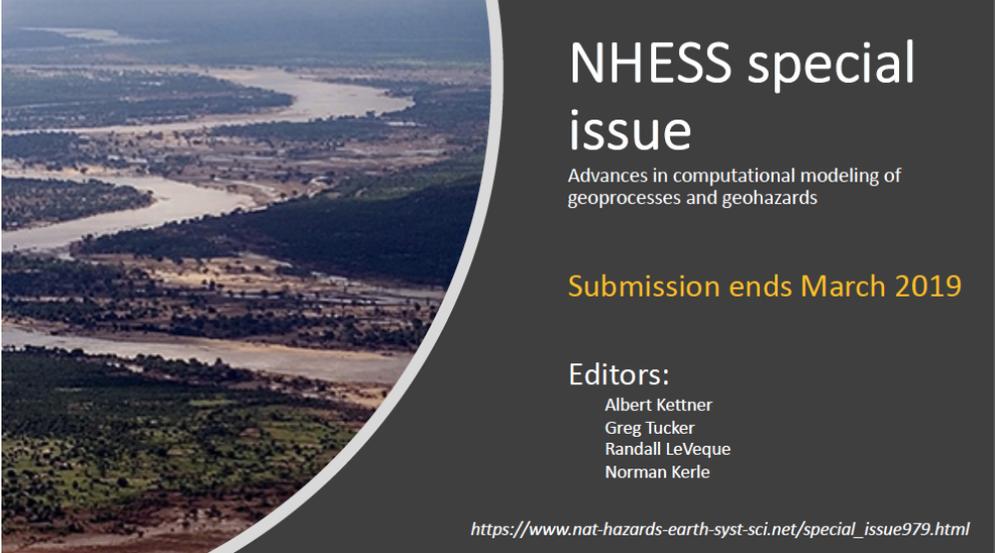
The deadline is drawing near to submit a paper to the journal ***Natural Hazards and Earth System Sciences (NHESS) special issue: 'Advances in computational modeling of geoprocesses and geohazards'***.
This special issue is the result of the NSF funded conference "Geoprocesses, geohazards - CSDMS 2018". The aim of the special issue is to identify:

- the current state of the art in our current natural hazard process understanding, both fundamentally in the earth surface processes as well as in the modeling approaches and technology,
- important gaps and shortcomings,
- improvements in natural hazard modeling for risk assessment, with a special focus on building a next-generation cyberinfrastructure and a community of modern modeling and data analysis practices,
- modeling and conveying uncertainty in numerical risk assessments, and e) case studies in which numerical models have increased resilience by reducing vulnerability to disasters.

Questions can be directed to kettner@colorado.edu
Submission details can be found HERE. **Submission deadline is March 2019.**

Mike Steckler

New Marine WG Co-Chair

CSDMS is delighted to announce that Mike Steckler has been elected as Co-Chair of the CSDMS Marine WG. Mike is currently a Lamont Research Professor affiliated with the Marine Geology and Geophysics section of the Lamont-Doherty Earth Observatory at Columbia University. His research interests include tectonics of sedimentary basins, isostasy, stratigraphic modeling and marine geophysics. Thank you Mike for your service to the CSDMS Community!

Tips and Tricks

Publish your Model or Analysis Code in JOSS!

The Journal of Open Source Software is a developer friendly, academic journal for research software packages. Jed Brown will speak about it at the upcoming CSDMS annual meeting and it has recently been used to publish Landlab components.

Catalyzing Opportunities for Research

in the Earth Sciences (CORES)

The National Academies CORES study will "provide advice that can be used by the National Science Foundation (NSF) to set priorities and strategies for investments in Earth science research, infrastructure, and training over the coming decade".

Please consider providing input to NSF's "CORES" committee, which is crafting the decadal plan for GEO. Their document will have a major influence on NSF investments in geoscience in the next 10 years, so it's important that our communities be heard---after all, there are 7.6 billion of us humans living on the earth's surface. The link is:

https://www.surveygizmo.com/s3/4717567/CORES-Community-Input

Because our community is broad, each CSDMS member has a unique voice and an important perspective to contribute to the CORES effort. As you formulate your responses, here are some thoughts to consider from our CSDMS Executive Director, Greg Tucker.

Publications of Interest

Cohn, N., Hoonhout, B.M., Goldstein, E.B., De Vries, S., Moore, L.j., Vincent, O.D. and Ruggiero, P., 2019. *Exploring Marine and Aeolian Controls on Coastal Foredune Growth Using a Coupled Numerical Model.* J. Marine Sci. Eng., 7(1), 13 https://doi.org/10.3390/jmse7010013

Hoch, J. and Trigg, M.A., 2018. *Advancing Global Flood Hazard Simulations by Improving*

Comparability, Benchmarking and Integration of Global Flood Models. Environmental Research Letters (in press). https://doi.org/10.1088/1748-9326/aaf3d3

Hoonhout, B. and De Vries, S., 2019. *Simulating Spatiotemporal Aeolian Sediment Supply at a Mega Nourishment.* Coastal Engineering, 145 (2019) 21-35. https://doi.org/10.1016/j.coastaleng.2018.12.007

Kettner, A.J., Schumann, G. and Tellman, B., 2019. *The Push Toward Local Flood Risk Assessment at a Global Scale.* EOS, 100, https://doi.org/10.1029/2019EO113857. Published on 14 January 2019.

Little, J.C., Hester, E.T., Elsawah, S., Filz, G.M., Sandu, A., Carey, C.C., Iwanaga, T. and Jakeman, A., 2019. *A tiered, system-of-systems modeling framework for resolving complex socio-environmental policy issues.* Environmental Modelling and Software, 112 (2019) 82-94. https://doi.org/10.1016/j.envsoft.2018.11.011

Wright L.D. and Nichols C.R. (eds), 2019. *Tomorrow's Coasts: Complex and Impermanent.* Coastal Research Library, vol 27. Springer, Cham

Xue, Z., Couch, A. and Tarboton, D., 2019. *Map Based Discovery of Hydrologic Data in the HydroShare Collaboration Environment.* Environmental Modelling and Software, 111 (2019) 24-33. https://doi.org/10.1016/j.envsoft.2018.09.014

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

CSDMS is an NSF

sponsored program