Just dropping! CSDMS has newly developed series of data components.

ON THE SURFACE

CSDMS Quarterly Newsletter
April 2021

Join CSDMS

CSDMS Introduces Newly Developed Data Components

The CSDMS team has developed a series of data components—**software tools that allow** BMI**-mediated access to data sources**. Data components can be used standalone (they have an API and CLI), or they can be imported into pymt, just like a model. Because they expose a BMI, data components can be coupled with models, providing, for example, data for initialization or validation of modeling studies.

There are currently five data components:

nwm: Downloads National Water Model (NWM) datasets (e.g., stream flow, stream velocity) for data analysis and visualization.

- documentation: https://nwm.readthedocs.io
- EKT lab: https://csdms.colorado.edu/wiki/Lab-0018
- source repository: https://github.com/gantian127/nwm
- pymt: https://github.com/gantian127/pymt_nwm

soilgrids: Fetches global gridded soil information from SoilGrids, a system for mapping the spatial distribution of soil properties across the globe (e.g., bulk density, clay/silt/sand content).

- documentation: https://soilgrids.readthedocs.io
- EKT lab: https://csdms.colorado.edu/wiki/Lab-0019
- source repository: https://github.com/gantian127/soilgrids
- pymt: https://github.com/gantian127/pymt_soilgrids

---

nwis: Downloads observational time series datasets (e.g., discharge, gage height) from the National Water Information System (NWIS).

- documentation: https://nwis.readthedocs.io
- source repository: https://github.com/gantian127/nwis
- pymt: https://github.com/gantian127/pymt_nwis

---
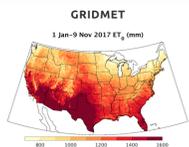
gridmet: Fetches and caches daily gridMET meteorological data (min/max temperature, precipitation) over the CONUS.

- documentation: https://pymt-gridmet.readthedocs.io
- source repository: https://github.com/nhm-usgs/gridmet_bmi
- pymt: https://github.com/pymt-lab/pymt_gridmet

---

topography: Fetches and caches NASA Shuttle Radar Topography Mission (SRTM) land elevation data using the OpenTopography REST API.

- documentation: https://bmi-topography.readthedocs.io
- source repository: https://github.com/csdms/bmi-topography
- pymt: https://github.com/pymt-lab/pymt_topography

Each **data component can be installed through conda and/or pip into a Python environment**; see the source repository and documentation links above for more information and examples.

New data components will be posted to the Data Components **page on the CSDMS wiki.**

Interested in contributing a data component? We can work with you! Please contact us through the CSDMS Help Desk.

CSDMS 2021 Annual Meeting

Registration and Abstract Submission Deadline April 30th!

Please join us for the CSDMS 2021 Annual Meeting, May 17th - 21st, 2021. This year's meeting entitled **"Changing Landscapes and Seascapes: Modeling for Discovery, Decision-making and Communication,"** will be conducted in a virtual format again this year.

There will be several format modifications as well as new offerings, including an **opening Town Hall on Monday, May 17th** followed by the annual awards ceremony and a social hour, and a **Science Jam on Friday, May 21st.** Choose from among a great lineup of Clinics (which you can sign up for when you register). In addition to Keynote Talks, the Group Breakout Sessions will provide a chance to (virtually) meet with old and new friends, learn about new tools and resources, and enjoy live poster walkthroughs to gear up for the online poster sessions.

REGISTER HERE

CSDMS Spring Webinar Series

You are cordially invited to join us for the CSDMS 2021 Spring Webinar Series. **Registration is required and links/details are provided below.** The upcoming webinars are:

The Open Modeling Foundation Initiative: an International Partnership for Next Generation Modeling of Human & Earth Systems
April 27th, 2021 @ 10:00AM MDT
Michael Barton
Network for Computational Modeling in Social and Ecological Sciences (CoMSES.Net) and Arizona State University, United States

Proposed in 2018, the Open Modeling Foundation (OMF) initiative aims to establish an international open science community to enable the next generation modeling of human and natural systems. The OMF is envisioned as an alliance of modeling organizations that develops and administers a community-wide open modeling standards and best practices for the social, ecological, environmental, and geophysical sciences. It will support these efforts though informational, data, and technological resources for the scientific communities it serves. This webinar reviews the history of the OMF, its current status, future plans, and how scientists can participate in this initiative. **REGISTER**

FAIR & Research Software
May 6th, 2021 @ 9:00AM MDT
Anna-Lena Lamprecht
Utrecht University, Netherlands

The FAIR Principles mandate that all digital research objects should be findable, accessible, interoperable and reusable. Initially mainly perceived and applied for data, they are becoming increasingly important also for research software. We will discuss why and how FAIR principles for software differ from those for data, how software FAIRness can be assessed and measured, and what everybody can do to make their software FAIR(er). Finally, we survey community initiatives working towards the development and standardization of FAIR principles for research software, and ways to get involved. **REGISTER**

We hope you are able to join us!

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

Community Member News

We are pleased to announce the 2021
**CSDMS Lifetime Achievement Award
winner** is Efi Foufoula-Georgiou! Efi is
a Distinguished Professor of Civil &

Environmental Engineering, University of California, Irvine and is honored for outstanding intellectual leadership in the quantitative analysis of Earth-surface processes. Full citation **HERE.**

Arye Janoff, currently a NOAA Sea Grant, Knauss Marine Policy Fellow, is the **2021 Syvitski Student Modeler Award winner.** Congrats Arye! His submission *"From Coastal Retreat to Seaward Growth: Emergent Behaviors from Paired Community Beach Nourishment Choices"* received top scores in the largest pool of applicants to date. Full citation **HERE.**

You can view all of the current and past CSDMS award winners (2010 to 2021) here.

Recent Community Publications using CSDMS Products

- Shen, Hong; Lynch, Brigid; Poulsen, Christopher J.; Yanites, Brian J.; 2021. *A modeling framework (WRF-Landlab) for simulating orogen-scale climate-erosion coupling.* Computers & Geosciences, 146, 104625. 10.1016/j.cageo.2020.104625

- den Haan, R.J., van der Voort, M.C., Baart, F., Berends, K.D., van den Berg, M.C., Straatsma, M.W., Geenen, A.J.P., and Hulscher, S.J.M.H., 2020. *The Virtual River Game: Gaming using models to collaboratively explore river management complexity.* Journal of Environmental Modelling and Software. doi:10.1016/j.envsoft.2020.104855

- Iwanaga, T., Partington, D., Ticehurst, J., Croke, B.F.W., and Jakeman, A.J., 2020. *A socio-environmental model for exploring sustainable water management futures: Participatory and collaborative modelling in the Lower Campaspe catchment.* Journal of Hydrology: Regional Studies. doi:10.1016/j.ejrh.2020.100669

- Wang, K., Jafarov, E., and Overeem, I., 2020. *Sensitivity evaluation of the Kudryavtsev permafrost model.* Journal of Science of the Total Environment. doi:10.1016/j.scitotenv.2020.137538

- Ratliff, K.M., Hutton, E.H.W., and Murray, A.B., 2021. *Modeling long-term delta dynamics reveals persistent geometric river avulsion locations.* Earth and Planetary Science Letters, 559, doi:10.1016/j.epsl.2021.116786.

- Litwin, D.G., Tucker, G.E., Barnhart, K.R., and Harman, C.J. (2020) *GroundwaterDupuitPercolator: A Landlab component for groundwater flow.* Journal of Open Source Software, 5(46), 1935, https://doi.org/10.21105/joss.01935.
- Lyons, N.J., Albert, J.S., and Gasparini, N.M. (2020). *SpeciesEvolver: A Landlab component to evolve life in simulated landscapes.* Journal of Open Source Software, 5(46), 2066, https://doi.org/10.21105/joss.02066.
- Pfeiffer, A.M., Barnhart, K.R., Czuba, J.A., and Hutton, E.W.H. (2020). *NetworkSedimentTransporter: A Landlab component for bed material transport through river networks.* Journal of Open Source Software, 5(53), 2341, https://doi.org/10.21105/joss.02341.
- Barnhart, K.R., Tucker, G.E., Doty, S.G., Glade, R. C., Shobe, C.M., Rossi, M., and Hill, M.C. (2020) *Projections of landscape evolution on a 10,000 year timescale with assessment and partitioning of uncertainty sources.* Journal of Geophysical Research: Earth Surface, 125, 7, https://doi.org/10.1029/2020JF005795.
- Carriere, Alexandra; Le Bouteiller, Caroline; Tucker, Gregory E.; Klotz, Sebastien; Naaim, Mohamed; 2020. *Impact of vegetation on erosion: Insights from the calibration and test of a landscape evolution model in alpine badland catchments.* Earth Surface Processes and Landforms. 45, 1085–1099. 10.1002/esp.4741

An extended list of community and CSDMS IF publications using the CSDMS workbench can be found Here.

Join us on Twitter!

Be the first to know!! For job postings, events, breaking science, training opportunities (like the ESPIn Summer Institute, AGU Workshops and Clinics) and more, please follow us **@CSDMS** on Twitter.

CSDMS is an NSF sponsored program