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ON THE SURFACE

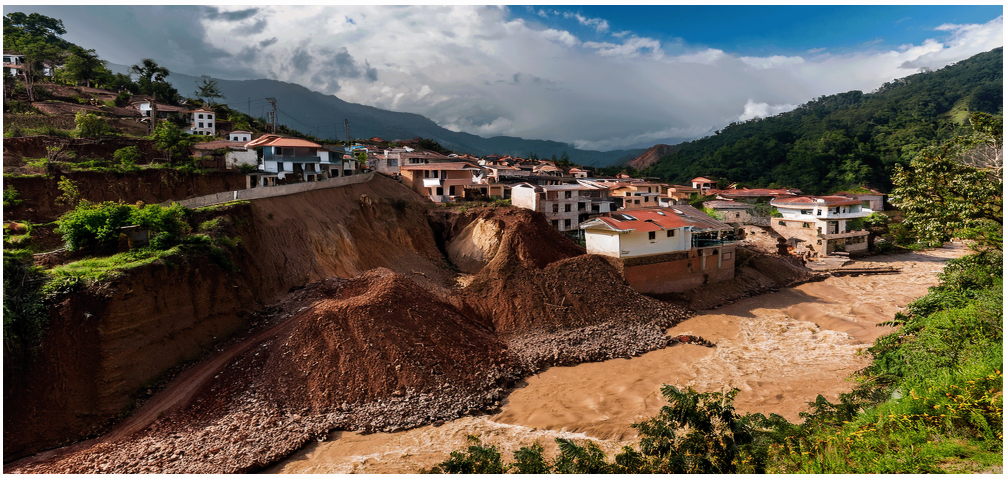
CSDMS Newsletter
September 2025

Join CSDMS

Running CSDMS Models Through GRPC4BMI

grpc4bmi is a software product created by the Netherlands eScience Center that allows a developer to wrap a model that exposes a Basic Model Interface (BMI) in a containerized server and communicate with it through a Python client. CSDMS research software engineer Mark Piper has been working on a project to containerize several models from the CSDMS Model Repository, with a goal of demonstrating how to wrap BMI-enabled models and providing sufficient documentation so that others in the community can wrap their own models. Why is this useful? Docker works across Linux, macOS, and Windows, from laptops to HPC systems, and it evolves with these operating systems, so a containerized model will likely be more portable and sustainable.

So far, the C, C++, and Python BMI example models have been wrapped, as well as the CEM and CHILD models. Each model has an image indexed on Docker Hub, and includes install instructions and examples in the form of a Python script and a Jupyter notebook. Yet to come are the Fortran BMI example model and Fortran models such as ECSimpleSnow and GIPL. A stretch goal is to demonstrate model coupling with models written in different languages through containerized models using the grpc4bmi Python client. This work is part of a collaborative project between CoMSES Net, CUAHSI, and CSDMS, led by Prof. Michael Barton at Arizona State University.



Call for Clinics! CSDMS Annual Meeting

CSDMS 2026: Modeling Landscapes in Motion

Join us at the University of Minnesota, in Minneapolis as we explore and celebrate the many facets of landscapes and seascapes in motion, from landslides to landforms and beaches to basins. CSDMS invites you to submit a request to provide a clinic presentation at the CSDMS 2026 Annual Meeting, May 19th - 21st, 2026 at the University of Minnesota, Minneapolis. Additional details and the submission form can be found here. Deadline to submit is October 31st, 2025. Clinic submitters will be notified of acceptance decisions by November 21st, 2025. Travel and lodging support is available for selected presenters!

Please note: poster presentation submissions and registration will open in mid-January, 2026.

CSDMS Fall Webinar Series

Please join us for the CSDMS 2025 Fall Webinar Series!
Registration is required and link/details are provided below.

Solving PDEs with DUNE-FEM
Tuesday, September 23rd, 2025 @ 9:00AM MDT
Robert Klöfkorn, Lund University and Andreas Dedner, Warwick University

For about two decades the Distributed and Unified Numerics Environment (DUNE) has been an active part in the scientific development of computational software and technology and it's C++ routines are the basis for several other well established open source projects, for example, DuMux. Although the C++ interfaces of DUNE are highly flexible and customizable, a solid knowledge of C++ is necessary to make use of this powerful tool. In this talk we give an overview on recent development towards a Python interface for DUNE and in particular DUNE-FEM, a module which provides highly efficient implementations of hp-adaptive Discontinuous Galerkin (DG) methods for solving a wide range of nonlinear partial differential equations. Providing easier user interfaces based on Python and the Unified Form Language (UFL) opens DUNE-FEM to a broader audience, for example, Bachelor and Master students. This talk will also briefly discuss how Python and DUNE are embedded in teaching of Scientific Computing courses at Lund University and Warwick University.

REGISTER

From issue to pull request: how to contribute to CSDMS' open-source community code repositories

Thursday, October 9th, 2025 @ 10:00AM MDT

Greg Tucker, CSDMS IF, University of Colorado

In this webinar, we will demonstrate how to make a contribution to a community open-source repository. Using a live demo, we will walk through the process, starting from making edits to your local copy of the source code, through to submitting them as a "pull request" and going through the review process. We will illustrate how to walk through the various steps: posting an issue, making a local code branch (and/or fork), running unit tests, pushing changes to the remote repository, creating a pull request, understanding results of Continuous Integration tests, and managing a code review.

REGISTER

Landlab Developers/Users Community Software Meeting

Thursday, December 4th, 2025 @ 10:00AM MST

Greg Tucker and Eric Hutton, CSDMS IF

This meeting is open to all active and soon-to-be active Landlab developers/users. More information will be available soon!

REGISTER

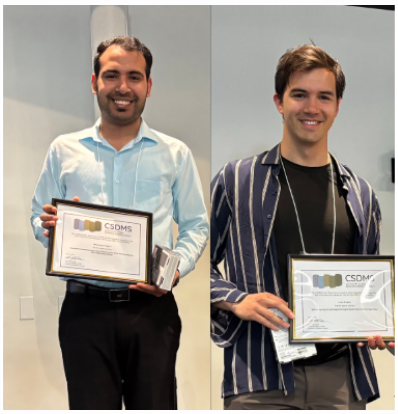
Human Dimensions Focus Research Group: HD Cafe

Date/Time and Topic will be announced soon!

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

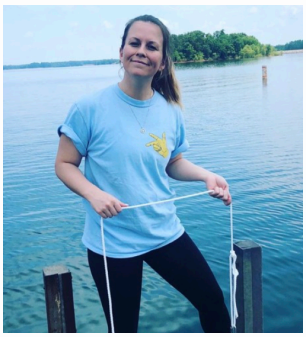
CSDMS Community News

The recipients of the 2025 CSDMS Annual Meeting Poster Award (tied for first



place) are **Louis Quigley, and Mohammad Haghiri,** both from University of Illinois, Chicago**.** Louis was awarded for his presentation, ***"NDVI as a proxy for Hydrological Drought Monitoring in the Okavango Delta"*** , and Mohammad was awarded for his presentation, ***"Simulation of seasonal water table dynamics Across North America using the Water Table Model (WTM)"*** .
Congratulations Louis and Mohammad!

The 2025 Open Earthscape Summer Visiting Scholar was **Caitlin Turner,** PhD student at Louisiana State University (Advisor Matt Hiatt). Katie was very busy this summer producing a Lake Pontchartrain Toy Model (HydroShare), example Jupyter notebooks demonstrating Delft3D-FM workflows for unsteady flow



fields (unstructured_grid_Delft3dFM.ipynb; GitHub) and spatial exposure time with dorado (spatial_exposure_time_example_Delft3DFM.ipynb; GitHub), and a spatial analysis component for dorado (dorado.spatial.py; GitHub). She also co-developed the GaugePredict software package (GaugePredict; GitHub) with Jo Martin, University of Colorado, a colleague she met during her fellowship. Katie has several papers in process and will be at the AGU Fall meeting presenting her work.

CSDMS Community Teaching and Research Resources

CSDMS Workbench - https://csdms.colorado.edu/wiki/Workbench
CSDMS Model Repo - https://csdms.colorado.edu/wiki/Model_download_portal
Open Earthscape Jupyter Hub - https://csdms.colorado.edu/wiki/JupyterHub
CSDMS EKT Labs - https://csdms.colorado.edu/wiki/Labs_portal
Office Hours (via Zoom) with a CSDMS Research Software Engineer - 9AM on Wednesdays. To register - https://csdms.colorado.edu/wiki/OfficeHours
CSDMS Jobs Board - https://csdms.colorado.edu/wiki/Jobs
CSDMS Help Desk - https://csdms.github.io/help-desk/
CSDMS Forum - https://forum.csdms.io
CSDMS YouTube Channel - https://www.youtube.com/@CSDMSmovie/videos

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Please follow us and be the first to know about all the new CSDMS events and resources!!

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Community Surface Dynamics Modeling System on LinkedIn.

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