

The CSDMS Model Repository

Mark Piper¹, Gregory Tucker², Irina Overeem³, Albert Kettner³, Eric Hutton⁴, and Lynn McCready³

¹University of Colorado at Boulder

²Univ Colorado

³University of Colorado

⁴Community Surface Dynamics Modeling System

November 23, 2022

Abstract

The Community Surface Dynamics Modeling System (CSDMS), an international organization of over 1700 members, has a mission to enable model use and development for research in earth surface processes. CSDMS strives to expand the use of quantitative modeling techniques, promotes best practices in coding, and advocates for the use of open-source software. As a service for its members, the CSDMS Integration Facility (IF) maintains a code repository for numerical models. The CSDMS Model Repository, initialized in 2009, currently holds over 300 open source models and tools. To submit code to the Repository, a community member completes an online form, providing metadata for their code and selecting an open source license. In return for the code contribution, CSDMS provides a home for the model on its publicly accessible site. The model page is initially populated with the metadata provided by the author, but it can be edited and expanded to include documentation, examples, references, and graphics. If the code is available on a public repository, such as GitHub, a link to it is provided from the Repository; otherwise, the code is added to the Repository's GitHub repository. The version of the code submitted to the Repository is assigned a DOI, making it citable. A QR code, suitable for display on a conference poster, is also created. Finally, the CSDMS IF has devised a model h-index, which gives a measure of a model's visibility through journal citations. By submitting code to the CSDMS Model Repository, a model developer gets visibility, findability, accessibility, storage, and preservation for their model code. CSDMS gets a library of open source models that can be used for research. This can help accelerate science, since it's often easier to use or modify an existing model than it is to start from scratch. The Repository also helps prevent model codes from going "dark" and being forgotten. Above all, the Repository serves the ethos of community modeling promoted by CSDMS.

The CSDMS Model Repository

Mark Piper*, Greg Tucker, Irina Overeem, Albert Kettner, Eric Hutton and Lynn McCreedy

Community Surface Dynamics Modeling System
University of Colorado Boulder

What is CSDMS?

The Community Surface Dynamics Modeling System (CSDMS), an international organization of over 1700 members, has a mission to enable model use and development for research in earth surface processes. CSDMS strives to expand the use of quantitative modeling techniques, promotes best practices in coding, and advocates for the use of open-source software.

The CSDMS Integration Facility operates under continuing grant EAR-1831623 from the U.S. National Science Foundation.



What does the Model Repository provide?

CSDMS provides a home for the model on its website. The model's wiki page is initially populated with the metadata provided by the author, but it can be edited and expanded to include documentation, examples, references, and graphics. If the code is available on a public repository, such as GitHub, a link to it is provided; otherwise, the code is added to the Repository's GitHub repository. The version of the code submitted to the Repository is assigned a DOI, making it citable. A QR code, suitable for display on a conference poster, is also created. Finally, the CSDMS IF has devised a model h-index, which gives a measure of a model's visibility through citations in journals.

Why should you use the Model Repository?

By submitting code to the CSDMS Model Repository, a modeler gets

- visibility,
- findability,
- accessibility,
- storage, and
- preservation

of their model code.

In return, CSDMS gets a library of open source models that can be used for research. This can help accelerate science, since it's often easier to use or modify an existing model than it is to start from scratch. The Repository also helps prevent model codes from going "dark" and being forgotten. Above all, the Repository serves the ethos of community modeling promoted by CSDMS.

Sedflux

Metadata

Summary	Contact	Technical specs	In/Output	Process	Testing	Other	Component info
Also known as							
Model type	Modular						
Model part of larger framework							
Incorporated models or components:							
Spatial dimensions	2D, 3D						
Spatial extent							
Model domain	Coastal, Marine						
One-line model description	Basin filling stratigraphic model						
Extended model description	Sedflux-2.0 is the newest version of the Sedflux basin-filling model. Sedflux-2.0 provides a framework within which individual process-response models of disparate time and space resolutions communicate with one another to deliver multi grain sized sediment load across a continental margin.						
Keywords	sediment transport, geodynamics, stratigraphy,						

[Edit Model information](#)

Model info

Authors [\[Collapse\]](#)
Eric Hutton

Source code [\[Collapse\]](#)
[Go to external source code site](#)

DOI [\[Collapse\]](#)
[Download Sedflux version: 2.1](#)
Doi: 10.1594/EDA100161

Model citations [\[Collapse\]](#)
[Citation indicesSedflux](#)
Citations: 523
h-index: 13
QR-code [\[Collapse\]](#)

[Link to this page](#)

Other models by this author [\[Expand\]](#)

sedflux-2.0

[Open Hub](#) [sedflux](#)

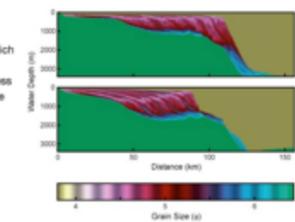
Sedflux-2.0 is the newest version of the Sedflux basin-filling model. Sedflux-2.0 provides a framework within which individual process-response models of disparate time and space resolutions communicate with one another to deliver multi grain sized sediment load across a continental margin. Version 2.0 introduces a series of new process models, and the ability to operate in one of two modes to track the evolution of stratigraphy in either two or three dimensions. Additions to the 2D-mode include the addition of models that simulate

1. erosion and deposition of sediment along a riverbed,
2. cross-shore transport due to ocean waves, and
3. turbidity currents and hyperpycnal flows.

New processes in the 3D-mode include

1. river channel avulsion,
2. two-dimensional diffusion due to ocean storms, and
3. two-dimensional flexure due to sediment loading.

The spatial resolution of the architecture is typically 1-25 cm in the vertical, and 10-100 m in the horizontal when operating in 2D-mode. In 3D-mode, the ...



References

[Automatically enter Reference by DOI](#)

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Figure 1. A sample model page from the CSDMS Model Repository.

Model name

Metadata
(mine it!)

Author

Link to source

DOI

Model h-index

QR code
(use it!)

Documentation
(read it!)

Help

References

* Let's connect! mark.piper@colorado.edu
[@mdpiper](#)