

Domain Science Code From Development to Release

K. Allison Smith

eScience Institute

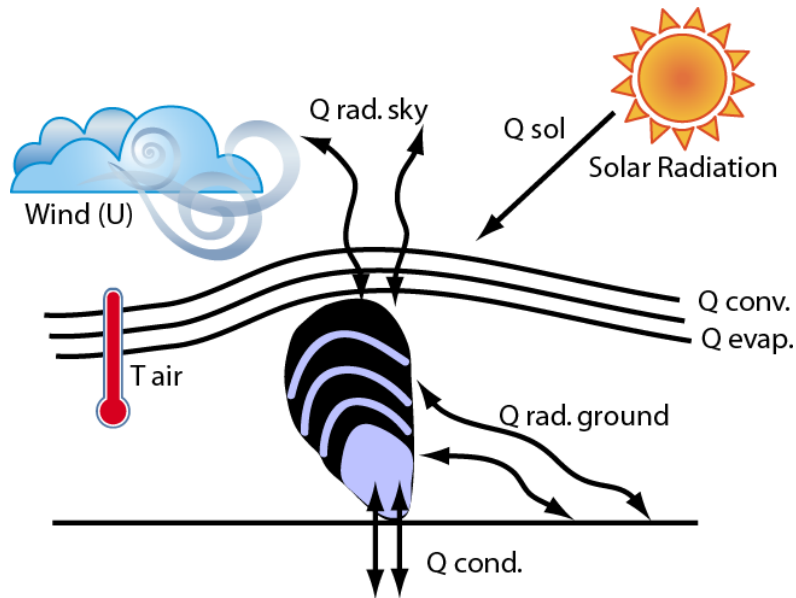
School of Oceanography

University of Washington

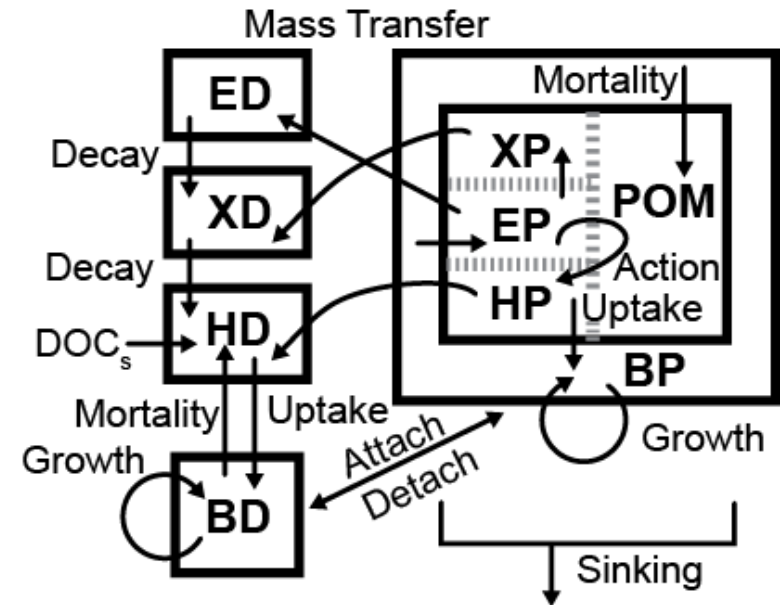
A little about me...

- postdoc in the eScience Institute
- interdisciplinary scientific research
 - ecophysiology
 - ocean biogeochemistry
 - biogeography
- introductory computer science courses but little formal training

Code development

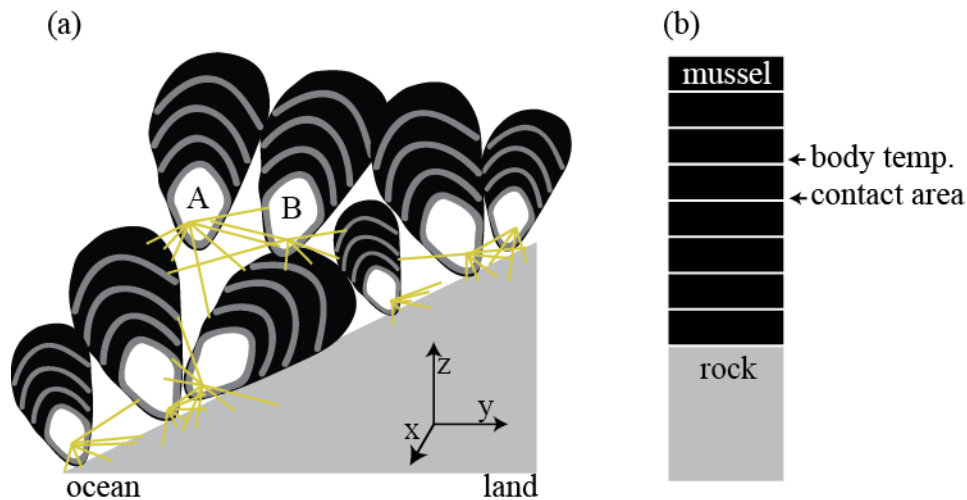


NOAH Mussel LSM v1.0

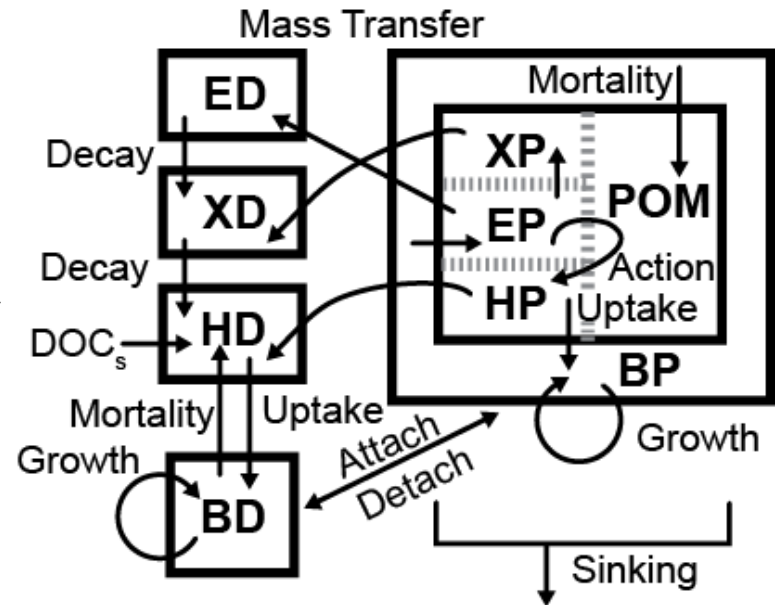


Microbial Remineralization Model v1.0

Code development



NOAH Mussel LSM v2.0



Microbial Remineralization
Model v1.0

General characteristics of models

1. Environmental input data
 - downloaded from NOAA, NASA, BATS
 - formatted into input files using R
2. Code that simulates physical and biological processes
 - fortran
3. Processing output into graphs
 - analyzed and plotted using R and Python

Novel component

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Related component

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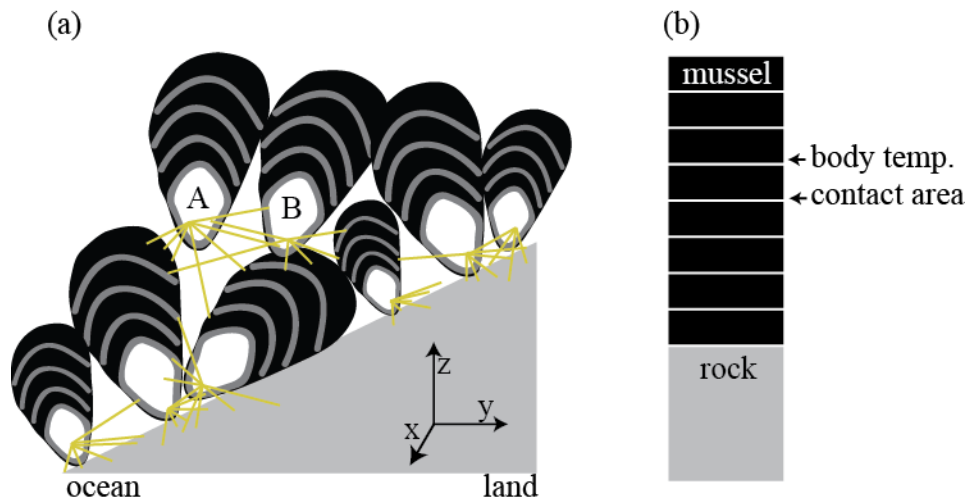
Desire to release code, but...

- developed by 2 scientists working closely together
- poorly annotated
- filepaths for my computer
- software dependencies
- not sure of how to release it
 - intimidated by sourceforge, etc.
 - personal website seems limited

eScience Institute

- learned about github
- digital object identifiers (DOI) have become important for journal publications
- github has instructions for getting a DOI through zenodo
- if open source, there is no cost
- data scientists to answer questions

Accepted for publication in November



NOAH Mussel LSM v2.0

- Journal encouraged data release
- 1 week to send final paper version
- Should I do a code release?
 - YES!
- Most beneficial to have a DOI in the journal publication

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Software for code release

- Github
- Atom to edit README.md file
- Zenodo

Browser tabs: kallisons (K. A. S. Mislan) · ...

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K. A. S. Mislan
kallisons

eScience Institute, School of O...
Seattle, WA, USA
Joined on Sep 19, 2014

0 Followers 0 Starred 0 Following

Popular repositories

- NOAH_LSM_Mussel_v2.0**
A mathematical model that predicts mussel be... 1 ★
- MicrobeReminModel_v1.0**
The Microbial Remineralization Model v1.0 si... 0 ★

Repositories contributed to

- che625/olson-ms-nb** 0 ★

Public contributions

Summary of Pull Requests, issues opened, and commits. [Learn more.](#)

Contributions in the last year: 33 total (Jan 20, 2014 – Jan 20, 2015)

Longest streak: 2 days (December 4 – December 5)

Current streak: 0 days (Last contributed 15 days ago)

Contribution activity

Period: 1 week

kallisons has no activity during this period.

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kallisons / NOAH_LSM_Mussel_v2.0

★ Star 1🔗 Fork 2

A mathematical model that predicts mussel bed temperatures from atmospheric and oceanic data. Mussel survival is predicted using mussel bed temperatures from the model.

40 commits

1 branch

1 release

3 contributors

branch: master

NOAH_LSM_Mussel_v2.0 / +

Add Zenodo DOI to README

kallisons

 authored 24 days ago

latest commit da896b5476

ExampleInputData	Initial Upload of Files	2 months ago
ExampleModelOutput	Delete USCASC_p1.00_cntct0.90_2002.out	2 months ago
ExampleProcessedOutput	Edited Step3_CalculateMusselTemp.R	a month ago
Model	Delete LSMM2	a month ago
RCode_ProcessOutput	Added Test Files For Output Comparison	a month ago
TestFiles	Added Test Files For Output Comparison	a month ago
LICENSE.md	Create LICENSE.md	2 months ago
README.md	Add Zenodo DOI to README	24 days ago

README.md

Code

Issues 0

Pull Requests 0

Pulse

Graphs

HTTPS clone URL

https://github.com

You can clone with HTTPS or Subversion.

Clone in Desktop

Download ZIP

https://github.com/kallisons/NOAH_LSM_Mussel_v2.0/branches

do.13380

MicrobeReminModel_v1.0

.git

Graphs

Input

Model

Output

RCode

TestFiles

.DS_Store

.gitignore

LICENSE.md

README.md

README.md

```
1 [[DOI](https://zenodo.org/badge/8411/kallisons/NOAH_
2 LSM_Mussel_v2.0.svg)](http://dx.doi.org/10.5281/zenod
3 o.13380)]
4 NOAH_LSM_Mussel_v2.0
5 =====
6 NOAH LSM Mussel v2.0 is a mathematical model that
7 predicts mussel bed temperatures from atmospheric and
8 oceanic data by mimicking the thermal properties of a
9 mussel bed exposed to tidal inundation and wave
10 run-up. The model is derived from the National
11 Weather Service NOAA Land Surface Model. In v2.0, it
12 is possible to change the within mussel bed contact
13 which determines conductive heat transfer. Mussel
14 survival is predicted using mussel bed temperatures
15 from the model.
16
17 Please cite the following papers if you use this
18 code:
19
20 **NOAH_LSM_Mussel_v2.0**
21
22 Mislan, KAS and DS Wetthey. 2015. A biophysical basis
23 for patchy mortality during heat waves. Ecology.
24
25 **NOAH_LSM_Mussel_v1.0**
26
27 Wetthey DS, LD Brin, B Helmuth, and KAS Mislan. 2011.
28 Predicting intertidal organism temperatures with
29 modified land surface models. Ecological Modelling
30 222:3568-3576.
31 [http://dx.doi.org/10.1016/j.ecolmodel.2011.08.019](h
32 ttp://dx.doi.org/10.1016/j.ecolmodel.2011.08.019)
33
34 **NOAH_LSM**
35
```

README.md Preview

DOI 10.5281/zenodo.13380

NOAH_LSM_Mussel_v2.0

NOAH LSM Mussel v2.0 is a mathematical model that predicts mussel bed temperatures from atmospheric and oceanic data by mimicking the thermal properties of a mussel bed exposed to tidal inundation and wave run-up. The model is derived from the National Weather Service NOAA Land Surface Model. In v2.0, it is possible to change the within mussel bed contact which determines conductive heat transfer. Mussel survival is predicted using mussel bed temperatures from the model.

Please cite the following papers if you use this code:

NOAH_LSM_Mussel_v2.0

Mislan, KAS and DS Wetthey. 2015. A biophysical basis for patchy mortality during heat waves. Ecology.

NOAH_LSM_Mussel_v1.0

Wetthey DS, LD Brin, B Helmuth, and KAS Mislan. 2011. Predicting intertidal organism temperatures with modified land surface models. Ecological Modelling 222:3568-3576. <http://dx.doi.org/10.1016/j.ecolmodel.2011.08.019>

NOAH_LSM

Chen F, and J Dudhia. 2001. Coupling an advanced land surface-hydrology model with the Penn State-NCAR MM5 modeling system. Part I: Model implementation and sensitivity. Monthly Weather Review, 129:569-585.

Ek MB, Mitchell KE, Lin Y, Rogers E, Grunmann P, Koren V, and JD Tarpley. 2003. Implementation of Noah land surface model advances in the National Centers for Environmental Prediction operational mesoscale Eta model. Journal of Geophysical Research: Atmospheres (1984–2012), 108(D22). <http://dx.doi.org/10.1029/2002JD003296>

/Users/kasmith/Code/PublishedProjects/NOAH_LSM_Mussel_v2.0/README.md 1,1

UTF-8 GitHub Markdown

Sections in README

- Summary with papers to cite
- NOAH LSM User Guide
- Software dependencies
- Folders description
- Opening a shell (Mac and Windows)
- Compiling the model
- Running the model
- Verify example model output
- Processing the model output with R
- Verify example R output
- Model input data
- Acknowledgements

zenodo

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27 December 2014

Software Open access

NOAH LSM Mussel v2.0

K.A.S. Mislan ; David S. Wethey

(show affiliations)

NOAH LSM Mussel v2.0 is a mathematical model that predicts mussel bed temperatures from atmospheric and oceanic data by mimicking the thermal properties of a mussel bed exposed to tidal inundation and wave run-up. The model is derived from the National Weather Service NOAH Land Surface Model. In v2.0, it is possible to change the within mussel bed contact which determines conductive heat transfer. Mussel survival is predicted using mussel bed temperatures from the model.

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NOAH LSM Mussel v2.0

Mislan, KAS and DS Wethey. 2015. A biophysical basis for patchy mortality during heat waves. Ecology.

NOAH_LSM_Mussel_v1.0

Wethey DS, LD Brin, B Helmuth, and KAS Mislan. 2011. Predicting intertidal organism temperatures with modified land surface models. Ecological Modelling 222:3568-3576. <http://dx.doi.org/10.1016/j.ecolmodel.2011.08.019>

NOAH_LSM

Available in

GitHub

Publication date:

27 December 2014

DOI

DOI 10.5281/zenodo.13380

Keyword(s):

model intertidal climate change mussel
temperature marine code software

Published in:

Ecology: in press (2014)

Related publications and datasets:

Supplement to:

<https://github.com/kallisons>

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+

www.ecography.org/authors/aims-scope

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Discussion