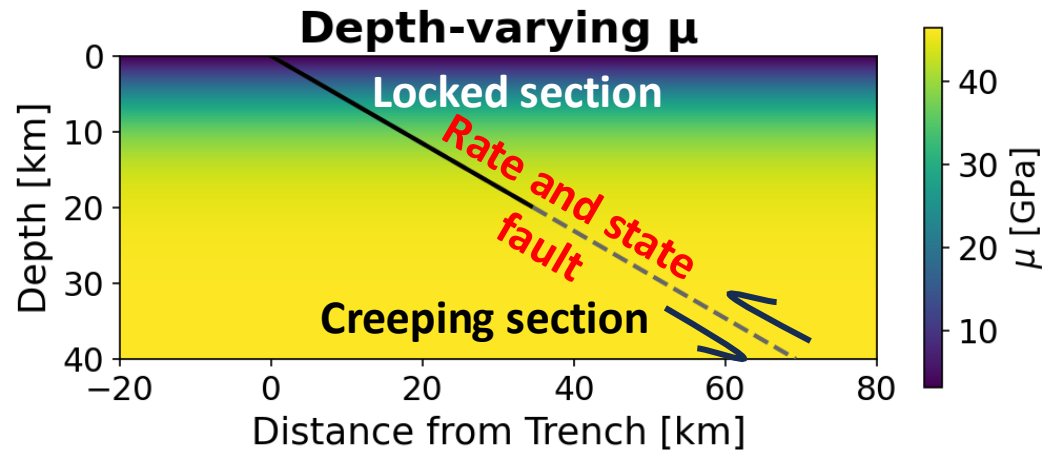
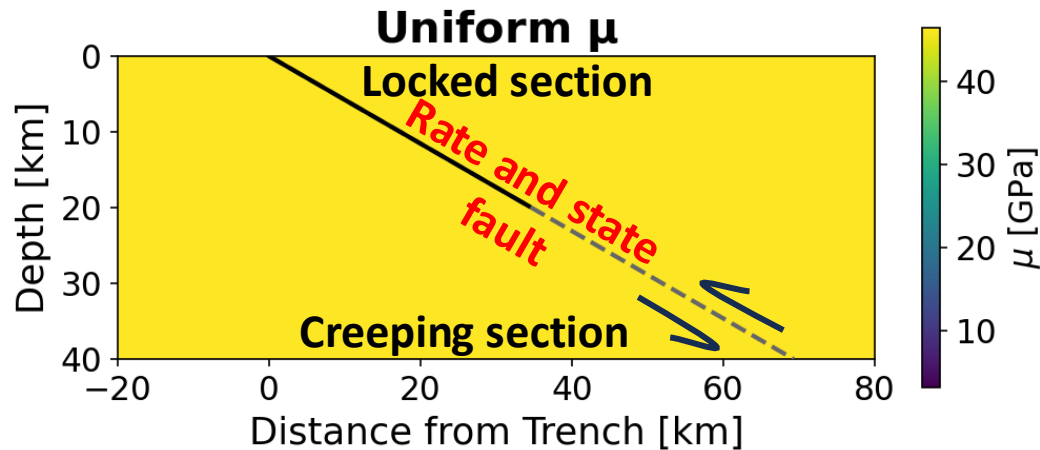


Quakeworx Kick-off workshop Tandem demonstration

Bar Oryan, Jeena Yun, Piyush Karki & Alice Gabriel

Day 3 (Jan 23) 2025

Plan for the tandem training session



Learn how to utilize **Quakeworx** for running Tandem simulations of Sequences of Earthquake and Aseismic Slip (SEAS)

Run two simulations for **550 years** along a **30-degree thrust fault**

Simulations setup:

- 1. First simulation:** Domain characterized by **uniform rigidity**
- 2. Second simulation:** Domain characterized by **depth-varying rigidity**

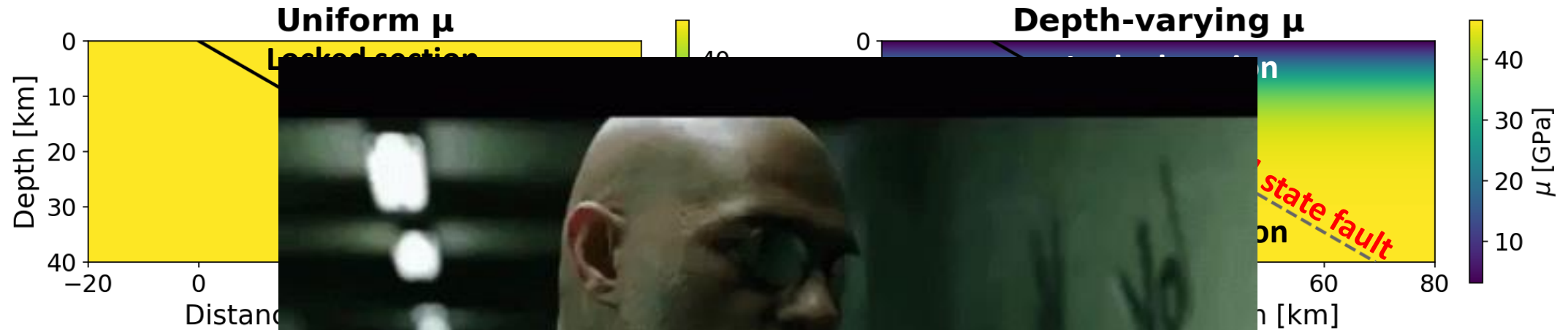
Post-simulation:

- Learn how to **plot the results** using **Jupyter Notebook** on **Quakeworx**

If time permits:

- “Auto Tandem” app

Plan for the tandem training session



Learn how to utilize Quakeworx

Quake and Aseismic Slip (SEAS)

Run two simulations for
Simulations setup:

1. **First simulation:** Domain characterized by uniform rigidity
2. **Second simulation:** Domain characterized by depth-varying rigidity

Post-simulation:

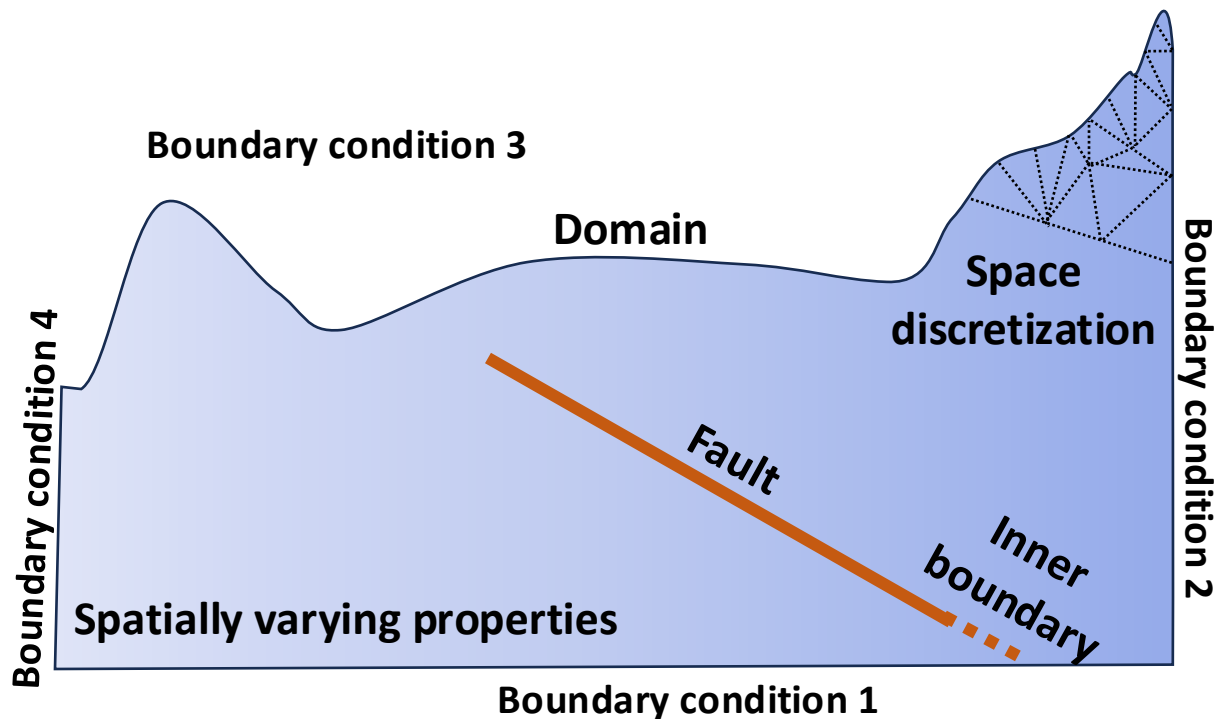
- Learn how to **plot the results** using Jupyter Notebook on Quakeworx

I can only show you the door.

Benefits of using Tandem

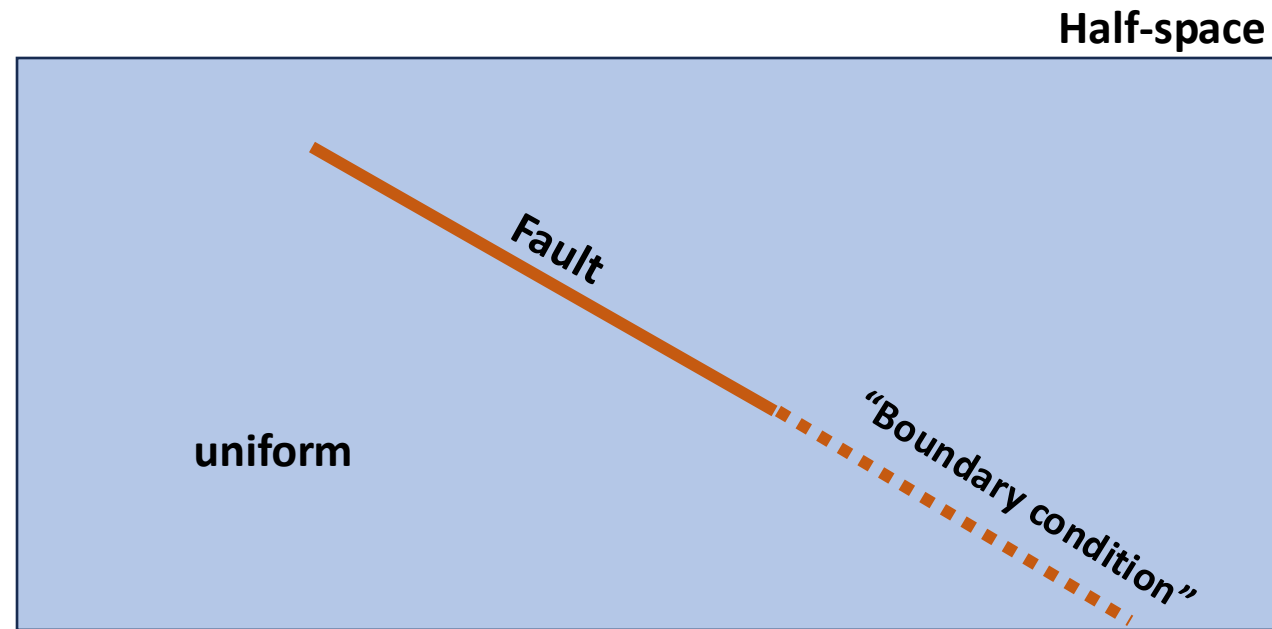
Tandem (Discontinuous Galerkin)

model domain with spatially varying properties and boundary conditions



Boundary element codes

model half space with limited control over domain properties and boundary conditions



Tandem “ecosystem”

GMSH

Mesh file

Discretization of
domain and
faults

Boundary
condition
allocation

Lua file

Spatial and physical
characterization of
the domain and
fault

Definition of
boundary
condition values

Formulation
of the PDEs
and ODEs

Toml file

Definition of
outputs

Model type

Definition of file
positions

PETSc config
file

PETSc

[Balay et al., 2024]

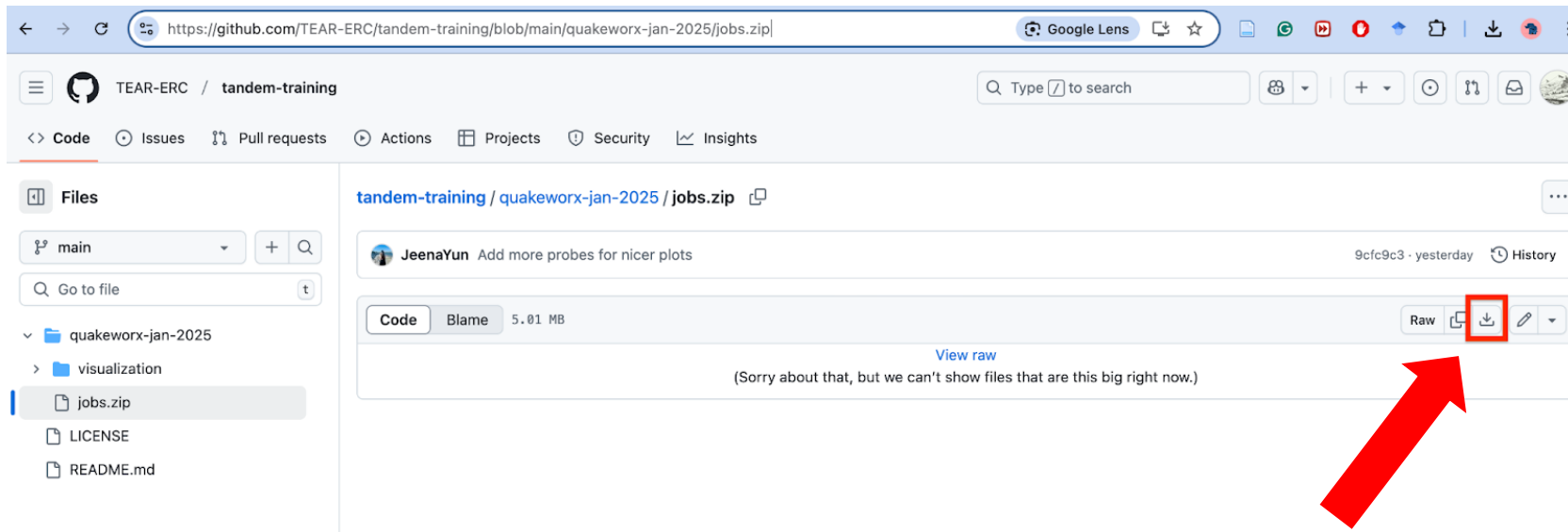
Equations solver

<https://petsc.org/>

Download the input files for Tandem to your local machine

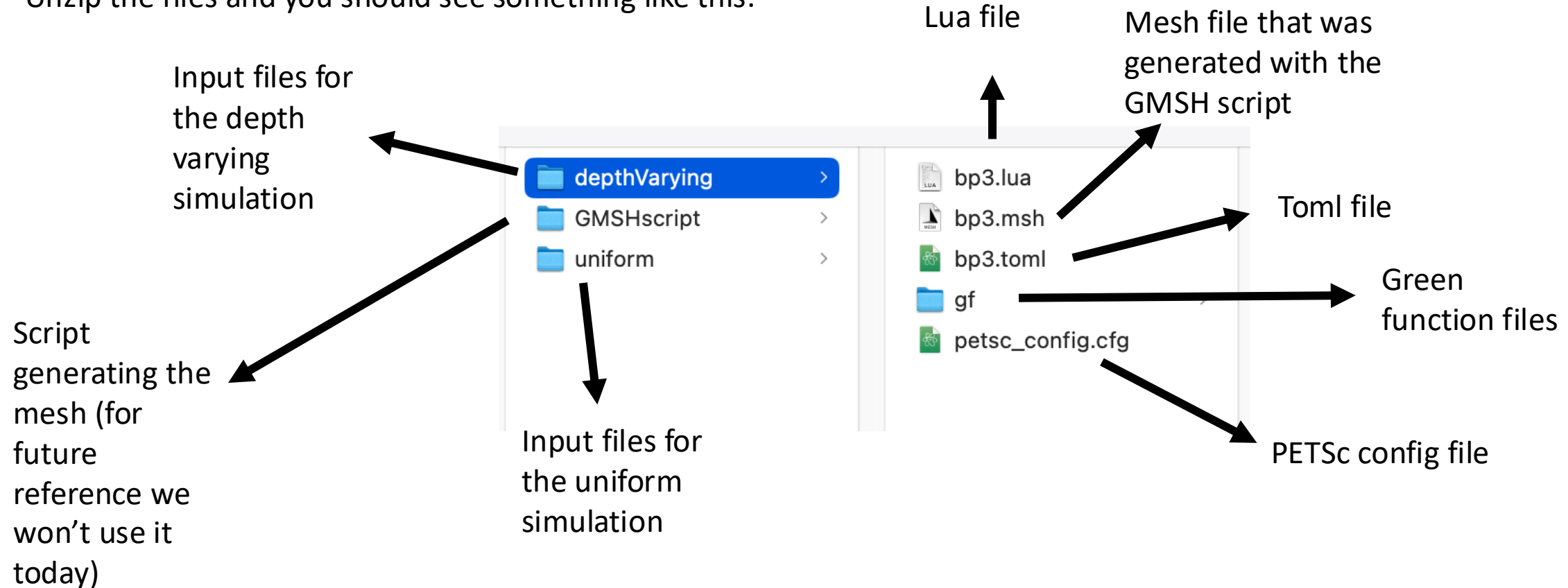
If you haven't done so, please download the input files to your local machine from the following link:

<https://github.com/TEAR-ERC/tandem-training/blob/main/quakeworx-jan-2025/jobs.zip>

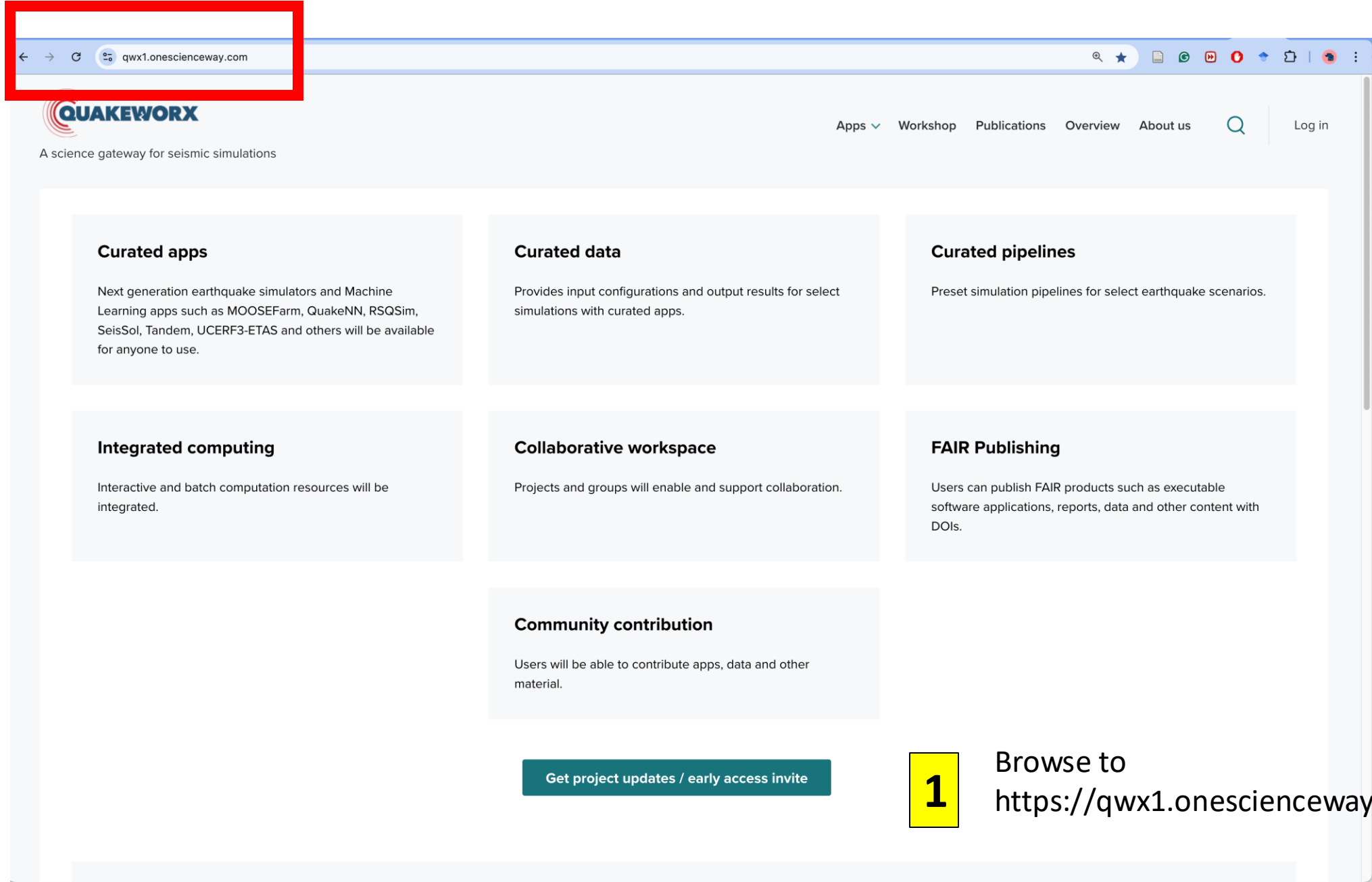


Download the input files for Tandem to your local machine

Unzip the files and you should see something like this:



Accessing Quakeworx



The screenshot shows a web browser window with the address bar highlighted by a red rectangle. The address bar contains the URL `qwx1.onescienceway.com`. The website header features the Quakeworx logo and the tagline "A science gateway for seismic simulations". The navigation menu includes links for Apps, Workshop, Publications, Overview, and About us, along with a search icon and a Log in button. The main content area is divided into six sections: Curated apps, Curated data, Curated pipelines, Integrated computing, Collaborative workspace, and FAIR Publishing. A teal button at the bottom center reads "Get project updates / early access invite".

Curated apps
Next generation earthquake simulators and Machine Learning apps such as MOOSEFarm, QuakeNN, RSQSim, SeisSol, Tandem, UCERF3-ETAS and others will be available for anyone to use.

Curated data
Provides input configurations and output results for select simulations with curated apps.

Curated pipelines
Preset simulation pipelines for select earthquake scenarios.

Integrated computing
Interactive and batch computation resources will be integrated.

Collaborative workspace
Projects and groups will enable and support collaboration.

FAIR Publishing
Users can publish FAIR products such as executable software applications, reports, data and other content with DOIs.

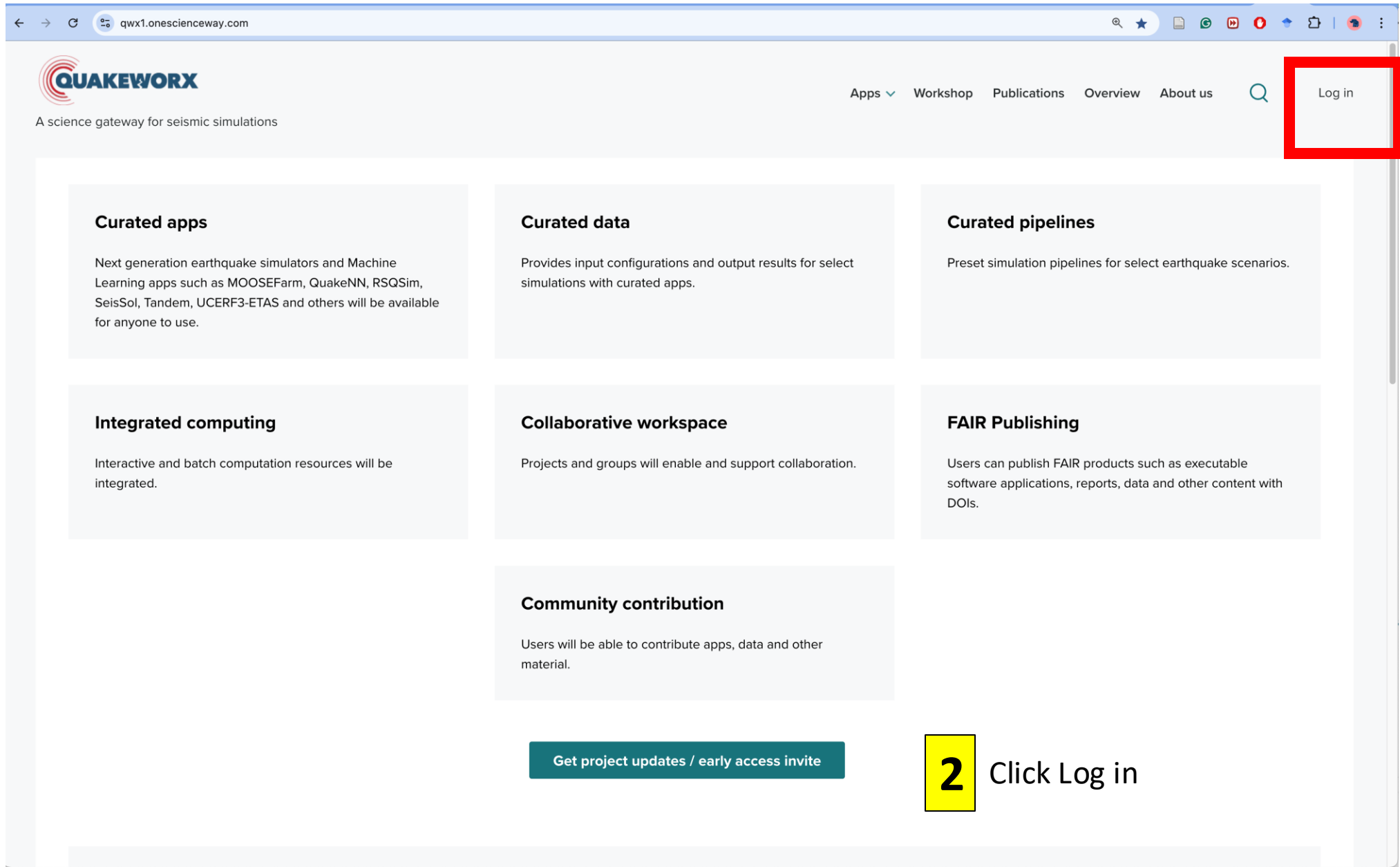
Community contribution
Users will be able to contribute apps, data and other material.

Get project updates / early access invite

1

Browse to
<https://qwx1.onescienceway.com/>

Accessing Quakeworx



The screenshot shows the Quakeworx website homepage. The browser address bar displays 'qwx1.onescienceway.com'. The Quakeworx logo is in the top left, with the tagline 'A science gateway for seismic simulations'. The top navigation bar includes links for 'Apps', 'Workshop', 'Publications', 'Overview', and 'About us', along with a search icon. A red rectangular box highlights the 'Log in' button in the top right corner. The main content area features six cards: 'Curated apps', 'Curated data', 'Curated pipelines', 'Integrated computing', 'Collaborative workspace', and 'FAIR Publishing'. A teal button at the bottom center reads 'Get project updates / early access invite'. A yellow box with the number '2' is positioned next to the text 'Click Log in'.

qwx1.onescienceway.com

QUAKEWORX
A science gateway for seismic simulations

Apps Workshop Publications Overview About us

Log in

Curated apps
Next generation earthquake simulators and Machine Learning apps such as MOOSEFarm, QuakeNN, RSQSim, SeisSol, Tandem, UCERF3-ETAS and others will be available for anyone to use.

Curated data
Provides input configurations and output results for select simulations with curated apps.

Curated pipelines
Preset simulation pipelines for select earthquake scenarios.

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Interactive and batch computation resources will be integrated.

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Projects and groups will enable and support collaboration.

FAIR Publishing
Users can publish FAIR products such as executable software applications, reports, data and other content with DOIs.


Community contribution
Users will be able to contribute apps, data and other material.

Get project updates / early access invite

2 Click Log in

Add your credentials

Accessing Quakeworx



A science gateway for seismic simulations

Apps ▾WorkshopPublicationsOverviewAbout us

Log in

Log inReset your password

Home / Log In

Log in

Quakeworx Gateway is under rapid development and its access is restricted. We invite you to [sign up](#) for early access.

Username *

Enter your Quakeworx Dev username.

Password *

Enter the password that accompanies your username.

Log in

Partners

- Statewide California Earthquake Center
- University of Illinois, Urbana-Champaign
- University of Southern California
- Scripps Institution of Oceanography at UC San Diego
- San Diego Supercomputer Center at UC San Diego

4 Press Log in

Accessing Quakeworx



A science gateway for seismic simulations

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Your last login was Tuesday, January 14, 2025 - 09:13.



View

Edit

System credentials



My jobs



Apps ▾

All apps



Project notes ▾



Publications ▾

Home / boryan

boryan

Member for

10 months 3 weeks

Partners

- Statewide California Earthquake Center
- University of Illinois, Urbana-Champaign
- University of Southern California
- Scripps Institution of Oceanography at UC San Diego
- San Diego Supercomputer Center at UC San Diego



5

Navigate to all apps

This material is based upon work supported by the National Science Foundation under Grant No. 2311206, 2311207, 2311208. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Running my first Tandem job (uniform)

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Home / All Apps

All apps

List of apps available on this site.
About Apps and Jobs: Apps are software applications that are configured to be executed on a predefined compute system. Launching an App creates a Job that stores its configuration and state.

App type: - Any - ▾ Search: Apply

Jupyter Notebook
WEB APP / DOCKER
ver. 0.1.0
system. AWS System (EC2)
Jupyter Notebook running on AWS (EC2) instance.

Jupyter Notebook Expanse
WEB APP / SINGULARITY
ver. 0.1.0
system. Expanse service
Jupyter Notebook running on

Moose-FARMS
BATCH APP / EXECUTABLE
ver. 0.0.3
system. Expanse service
Moose simulator

pyCSEP Tutorial on Expanse
WEB APP / SINGULARITY
ver. 1.0.0
system. Expanse service
pyCSEP Tutorial

QuakeNN
BATCH APP / EXECUTABLE
ver. 0.0.1
system. Expanse service
QuakeNN simulation

SeisSol
BATCH APP / EXECUTABLE
ver. 0.0.2
system. Expanse service
0.0.2

Tandem
BATCH APP / EXECUTABLE
ver. main_17c42dc9ae0ec519d
cctb5732681b2e4054666f1
system. Expanse service
Tandem app

UCERF3 ETAS
BATCH APP / EXECUTABLE
ver. 069e27e
system. Expanse service
UCERF3 ETAS Application


UCVM Notebook
WEB APP / DOCKER
ver. 1.0.0
system. AWS System (EC2)
Test UCVM Notebook

UCERF3 ETAS Tutorial
BATCH APP / EXECUTABLE
ver. 069e27e-t
system. Expanse service
UCERF3 ETAS Application

6

Scroll down and choose Tandem

Running my first Tandem job (uniform)



A science gateway for seismic simulations

Apps ▾WorkshopPublicationsOverviewAbout us

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Publications ▾

Home / Tandem

Tandem

APP LOGO



BATCH - NON INTERACTIVE COMMAND LINE APPLICATION

Summary: Tandem app

App ID: qwx1.expanse.choonhan.tandem.all | Version main_17c42dc9ae0ec519d cc1b5732681b2e4054666f1

Status: Enabled

Owner: [choonhan](#)

Description

Tandem 2D

Overview

Features

Contributing

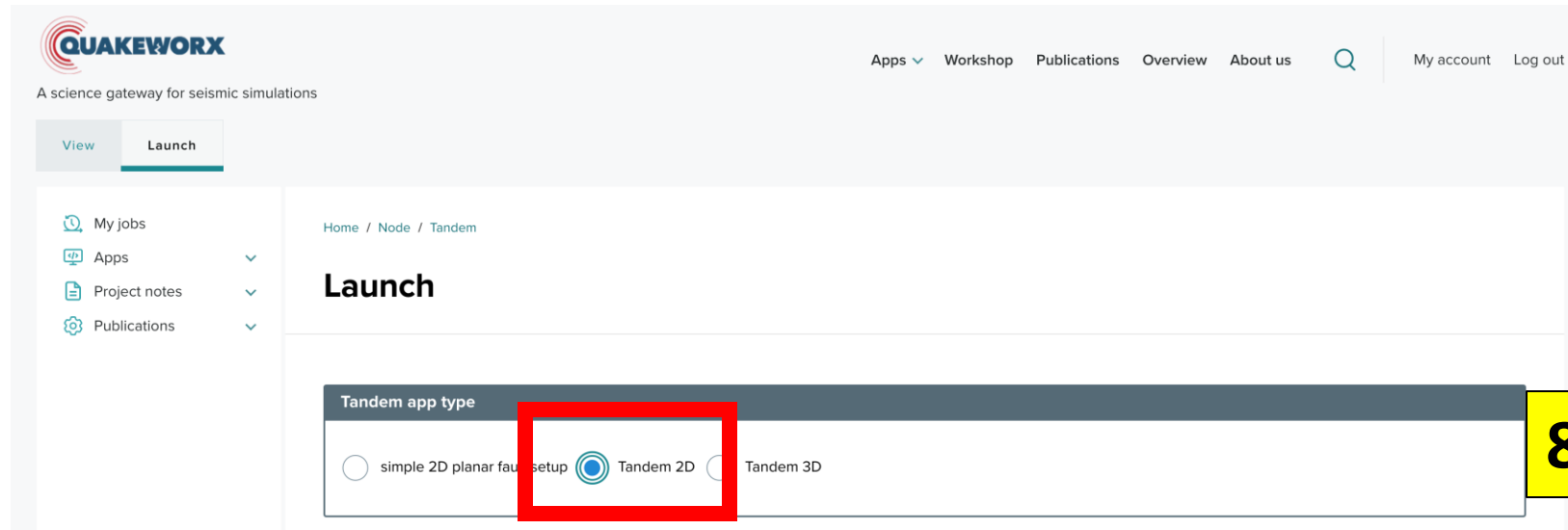
Publications

Citing

Launch app

7 Press launch app

Running my first Tandem job (uniform)



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My jobs Apps Project notes Publications

Home / Node / Tandem

Launch

Tandem app type

☐ simple 2D planar fault setup ☒ Tandem 2D ☐ Tandem 3D

8 Choose Tandem 2D

Polynomial degree *

5



Galerkin solver polynomial degree.

9

Choose polynomial degree 5

Job name *

Tandem_uniform_dense

Specify a name for this job

10

Change job name to Tandem_uniform_dense

Running my first Tandem job (uniform)

Configuration file (.toml)

The results must be directed to a directory named *outputs* in the configuration file. e.g. prefix = "outputs/fltst_"

Choose File No file chosen

One file only.
512 MB limit.
Allowed types: toml.

No file chosen

Green's function

☐ Create files

☒ Upload files

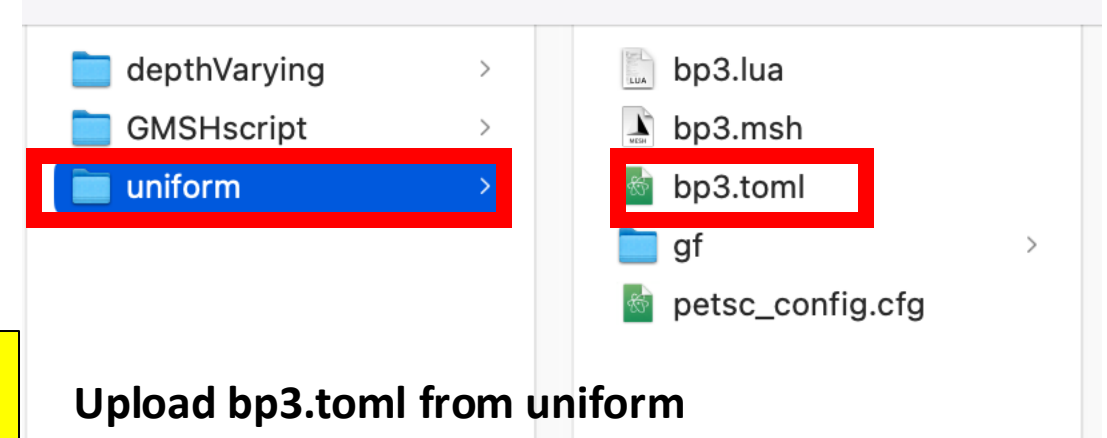
Green's function files

Choose Files No file chosen

Maximum 10 files.
512 MB limit.
Allowed types: bin, gz, info.

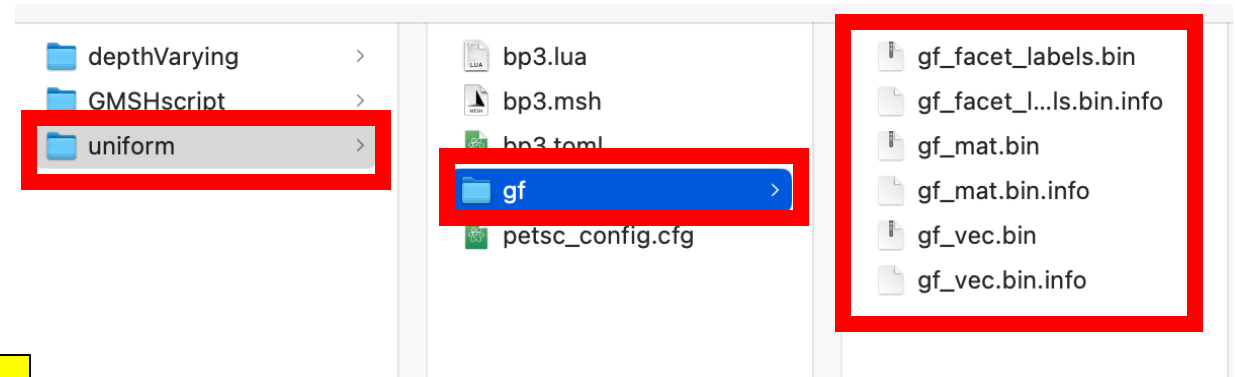
11

Upload bp3.toml from uniform



12

Upload all files from uniform/gf



Running my first Tandem job (uniform)

Mesh file (.msh)

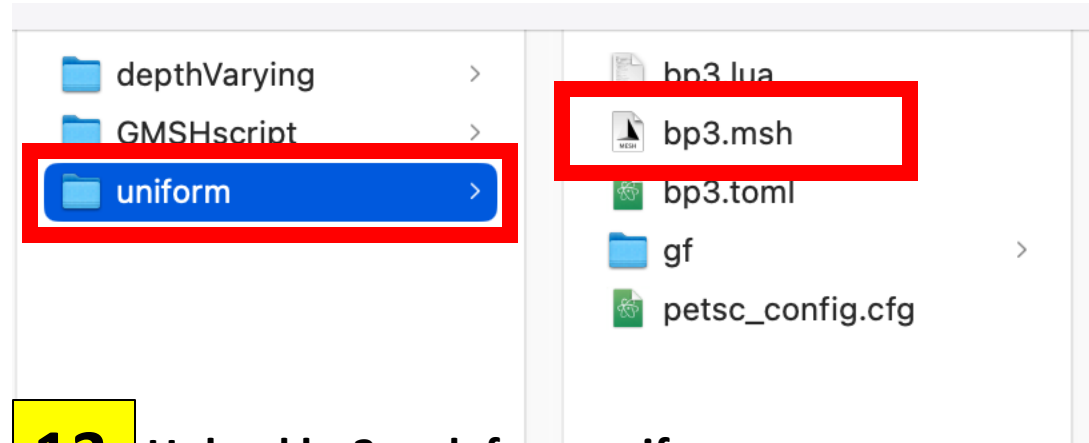
Choose File No file chosen

One file only.
512 MB limit.
Allowed types: msh.

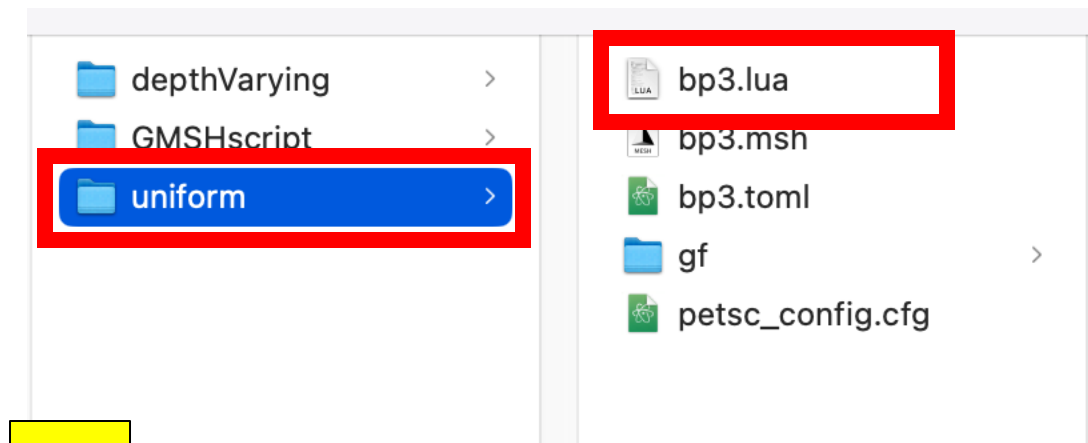
Lua file (.lua)

Choose File No file chosen

One file only.
512 MB limit.
Allowed types: lua.



13 Upload bp3.msh from uniform



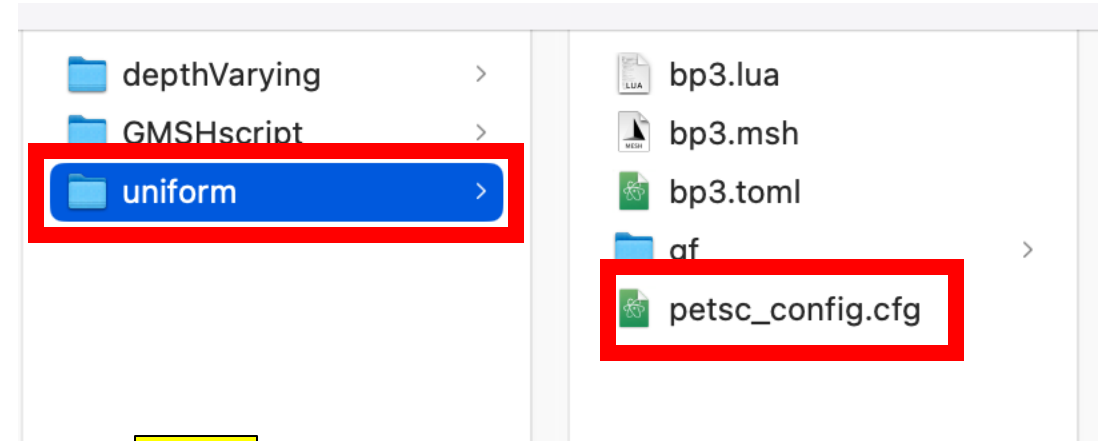
14 Upload bp3.lua from uniform

Running my first Tandem job (uniform)

Options file 1 (.cfg)

Choose File No file chosen

One file only.
512 MB limit.
Allowed types: cfg.



15

Upload petsc_config.cfg from uniform

Local computer

Simulation time [seconds] *

17356680000

The default simulation time is set to
550 years so no need to change

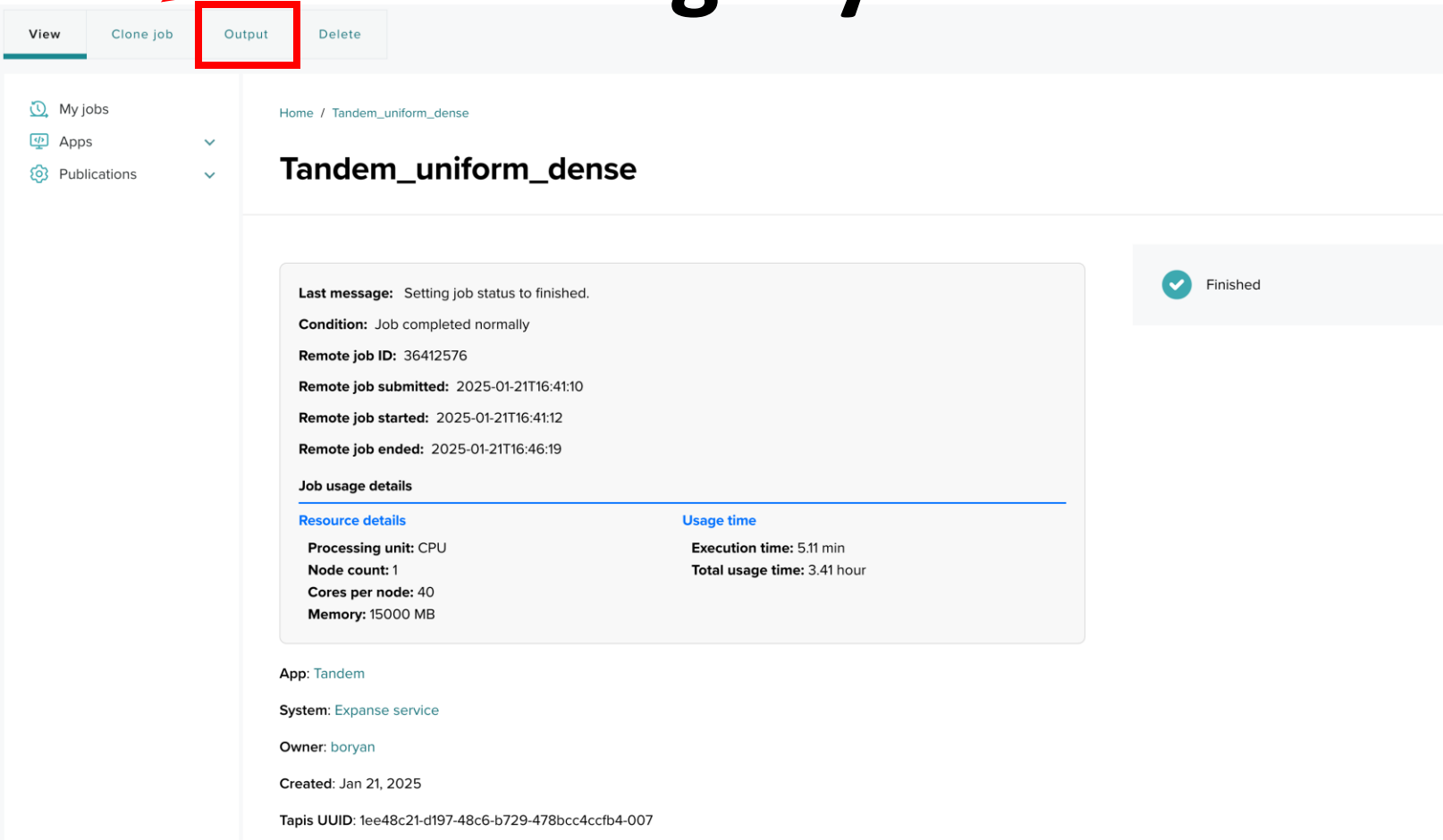
Save Draft

Submit

16

Click submit

Running my first Tandem job (uniform)



The screenshot shows the Tandem job interface. At the top, there are four tabs: 'View', 'Clone job', 'Output', and 'Delete'. The 'Output' tab is highlighted with a red box and a red arrow pointing to it. Below the tabs, the left sidebar shows 'My jobs', 'Apps', and 'Publications'. The main content area displays the job details for 'Tandem_uniform_dense'. The job status is 'Finished' with a green checkmark icon. The 'Last message' is 'Setting job status to finished.' The 'Condition' is 'Job completed normally'. The 'Remote job ID' is '36412576'. The 'Remote job submitted' time is '2025-01-21T16:41:10'. The 'Remote job started' time is '2025-01-21T16:41:12'. The 'Remote job ended' time is '2025-01-21T16:46:19'. The 'Job usage details' section is expanded, showing 'Resource details' and 'Usage time'. The 'Resource details' table has two columns: 'Processing unit: CPU', 'Node count: 1', 'Cores per node: 40', and 'Memory: 15000 MB'. The 'Usage time' table has two columns: 'Execution time: 5.11 min' and 'Total usage time: 3.41 hour'. Below the job details, the 'App' is 'Tandem', the 'System' is 'Expanse service', the 'Owner' is 'boryan', the 'Created' date is 'Jan 21, 2025', and the 'Tapis UUID' is '1ee48c21-d197-48c6-b729-478bcc4ccfb4-007'.

View Clone job **Output** Delete

Home / Tandem_uniform_dense

Tandem_uniform_dense

Last message: Setting job status to finished.

Condition: Job completed normally

Remote job ID: 36412576

Remote job submitted: 2025-01-21T16:41:10

Remote job started: 2025-01-21T16:41:12

Remote job ended: 2025-01-21T16:46:19

Job usage details

Resource details	Usage time
Processing unit: CPU	Execution time: 5.11 min
Node count: 1	Total usage time: 3.41 hour
Cores per node: 40	
Memory: 15000 MB	

App: Tandem

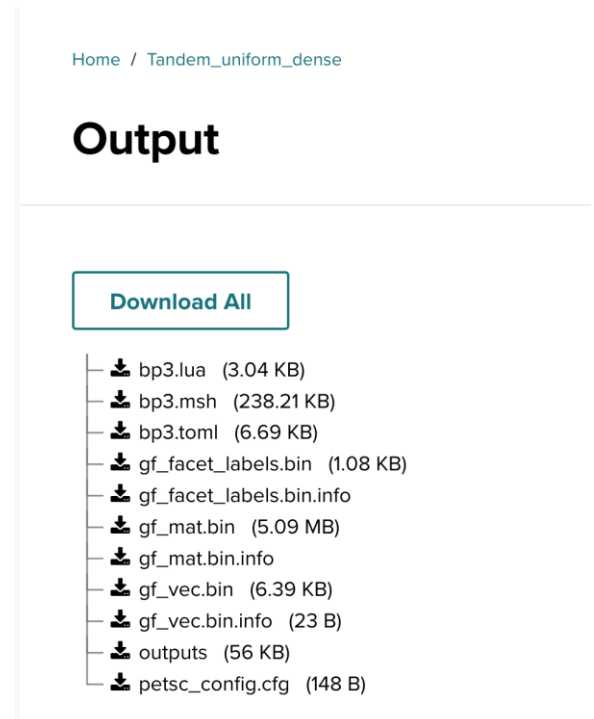
System: Expanse service

Owner: boryan

Created: Jan 21, 2025

Tapis UUID: 1ee48c21-d197-48c6-b729-478bcc4ccfb4-007

If everything went smoothly
it should look like this



The screenshot shows the Tandem job interface with the 'Output' tab selected. The main content area displays the job details for 'Tandem_uniform_dense'. The job status is 'Finished' with a green checkmark icon. The 'Last message' is 'Setting job status to finished.' The 'Condition' is 'Job completed normally'. The 'Remote job ID' is '36412576'. The 'Remote job submitted' time is '2025-01-21T16:41:10'. The 'Remote job started' time is '2025-01-21T16:41:12'. The 'Remote job ended' time is '2025-01-21T16:46:19'. The 'Job usage details' section is expanded, showing 'Resource details' and 'Usage time'. The 'Resource details' table has two columns: 'Processing unit: CPU', 'Node count: 1', 'Cores per node: 40', and 'Memory: 15000 MB'. The 'Usage time' table has two columns: 'Execution time: 5.11 min' and 'Total usage time: 3.41 hour'. Below the job details, the 'App' is 'Tandem', the 'System' is 'Expanse service', the 'Owner' is 'boryan', the 'Created' date is 'Jan 21, 2025', and the 'Tapis UUID' is '1ee48c21-d197-48c6-b729-478bcc4ccfb4-007'.

Home / Tandem_uniform_dense

Output

[Download All](#)

- bp3.lua (3.04 KB)
- bp3.msh (238.21 KB)
- bp3.toml (6.69 KB)
- gf_facet_labels.bin (1.08 KB)
- gf_facet_labels.bin.info
- gf_mat.bin (5.09 MB)
- gf_mat.bin.info
- gf_vec.bin (6.39 KB)
- gf_vec.bin.info (23 B)
- outputs (56 KB)
- petsc_config.cfg (148 B)

17

If you click output you can see
the Tandem output files

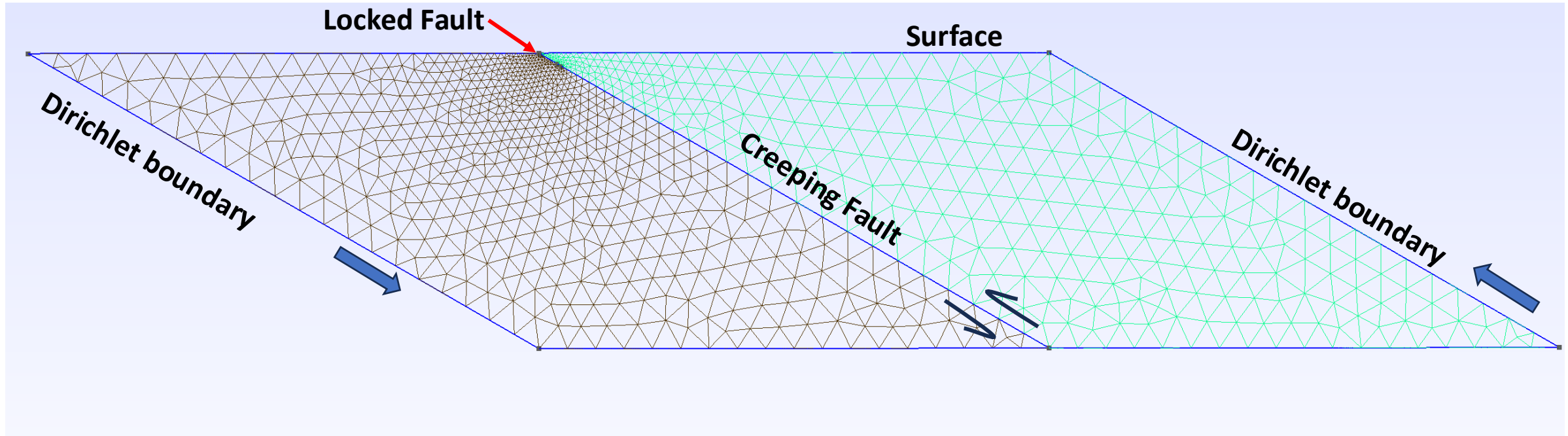
TOML FILE

```
final_time = 17356680000      # Final simulation time in seconds. (550 yrs)
mesh_file = "bp3.msh"        # Mesh file.
lib = "bp3.lua"              # Lua file containing material&frictional paramters.
scenario = "bp3_d30_reverse"  # Specific scenario defined in the lua library.
mode = "QDGreen"             # Mode of SEAS simulation: [QuasiDynamic/QD | QuasiDy
type = "elasticity"          # Type of problem: [poisson | elastic/elasticity].
ref_normal = [1, 0]          # Reference normal vector.
boundary_linear = true        # Assert that boundary is a linear function of time

gf_checkpoint_prefix = "gf/"  # Path to pre-computed Green's function

# On-fault probe outputs
[fault_probe_output]
prefix = "outputs/fltst_"
t_max = 9460800
probes = [
    { name = "dp000", x = [0.0, -0.0] },
    { name = "dp001", x = [0.40527648287912316, -0.23398648648648648] },
    { name = "dp002", x = [0.8105529657582463, -0.46797297297297297] },
    { name = "dp003", x = [1.2158294486373697, -0.7019594594594595] },
    { name = "dp004", x = [1.6211059315164926, -0.9359459459459459] },
    { name = "dp005", x = [2.026382414395616, -1.1699324324324323] },
```

MESH FILE



Open with GMSH

Defining domain parameters using the Lua file

Tandem looks for Lua
object defined in the
toml file

Function generating
the object



```
function BP3.new(params)
    ...
    return self
end

function BP3:boundary(x, y, t)
    .....
    return Vx,Vy
end

function BP3.mu(x,y)
    .....
    return mu
End
```

the object definition



```
bp3_d30_reverse = BP3.new{.....}
```

Defining domain parameters using the Lua file

Each object is
associated with
functions

Boundary sets the
boundary conditions
for x,y,t



```
function BP3.new(params)
    ....
    return self
end

function BP3:boundary(x, y, t)
    .....
    return Vx,Vy
end

function BP3:mu(x,y)
    .....
    return mu
End

bp3_d30_reverse= BP3.new{.....}
```

Defining domain parameters using the Lua file

Each object is
associated with
functions

mu sets the rigidity for
the domain



```
function BP3.new(params)
    ....
    return self
end

function BP3:boundary(x, y, t)
    .....
    return Vx,Vy
end

function BP3:mu(x,y)
    .....
    return mu
End

bp3_d30_reverse = BP3.new{.....}
```


Defining domain parameters using the Lua file

Each object is
associated with
functions

There are many more
functions in the lua file
setting the normal
stress, Dc, initial
velocity and others


```
function BP3.new(params)
    ....
    return self
end

function BP3.boundary(x, y, t)
    .....
    return Vx,Vy
end

function BP3.mu(x,y)
    .....
    return mu
End

bp3_d30_reverse = BP3.new{.....}
```

Running my second Tandem job (depth varying)



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✓ Your last login was Tuesday, January 14, 2025 - 09:13. ✕

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10 months 3 weeks

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- University of Illinois, Urbana-Champaign
- University of Southern California
- Scripps Institution of Oceanography at UC San Diego
- San Diego Supercomputer Center at UC San Diego

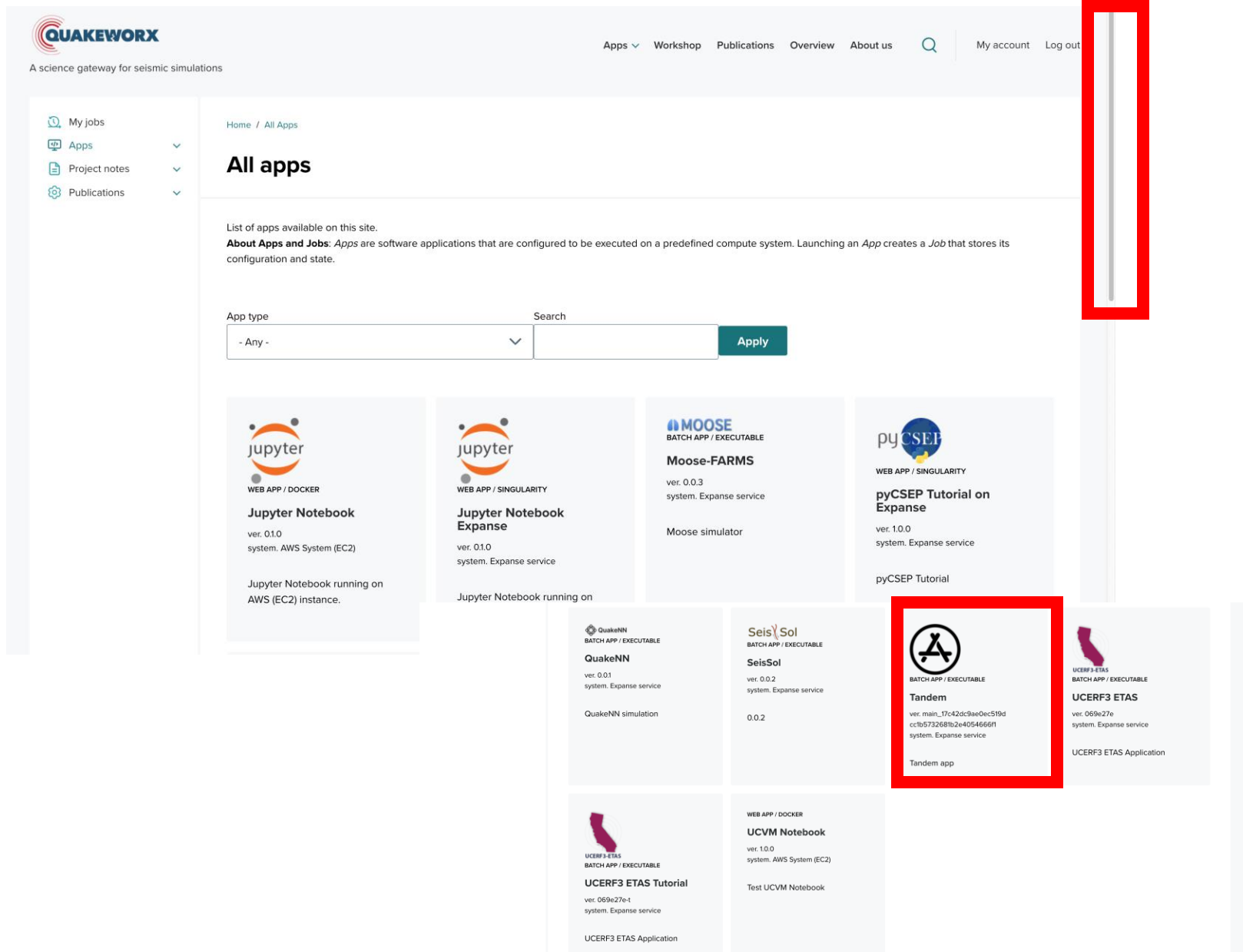


18

Navigate to all apps

This material is based upon work supported by the National Science Foundation under Grant No. 2311206, 2311207, 2311208. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Running my second Tandem job (depth varying)



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All apps

List of apps available on this site.
About Apps and Jobs: Apps are software applications that are configured to be executed on a predefined compute system. Launching an App creates a Job that stores its configuration and state.


App type: Search:




Jupyter Notebook
WEB APP / DOCKER
ver. 0.1.0
system. AWS System (EC2)
Jupyter Notebook running on AWS (EC2) instance.




Jupyter Notebook Expanse
WEB APP / SINGULARITY
ver. 0.1.0
system. Expanse service
Jupyter Notebook running on




Moose-FARMS
BATCH APP / EXECUTABLE
ver. 0.0.3
system. Expanse service
Moose simulator




pyCSEP Tutorial on Expanse
WEB APP / SINGULARITY
ver. 1.0.0
system. Expanse service
pyCSEP Tutorial




QuakeNN
BATCH APP / EXECUTABLE
ver. 0.0.1
system. Expanse service
QuakeNN simulation




SeisSol
BATCH APP / EXECUTABLE
ver. 0.0.2
system. Expanse service
0.0.2




Tandem
BATCH APP / EXECUTABLE
ver. main_17c42dc9ae0ec519d
cctb5732681b2e4054666f1
system. Expanse service
Tandem app



UCERF3 ETAS
BATCH APP / EXECUTABLE
ver. 069e27e
system. Expanse service
UCERF3 ETAS Application




UCERF3 ETAS Tutorial
BATCH APP / EXECUTABLE
ver. 069e27e-t
system. Expanse service
UCERF3 ETAS Application



UCVM Notebook
WEB APP / DOCKER
ver. 1.0.0
system. AWS System (EC2)
Test UCVM Notebook

19 Scroll down and choose Tandem

Running my second Tandem job (depth varying)



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Apps ▾WorkshopPublicationsOverviewAbout us

My accountLog out

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My jobs

Apps ▾


Project notes ▾

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Home / Tandem

Tandem

APP LOGO



BATCH - NON INTERACTIVE COMMAND LINE APPLICATION

Summary: Tandem app

App ID: qwx1.expanse.choonhan.tandem.all | Version main_17c42dc9ae0ec519d cc1b5732681b2e4054666f1

Status: Enabled

Owner: [choonhan](#)

Description

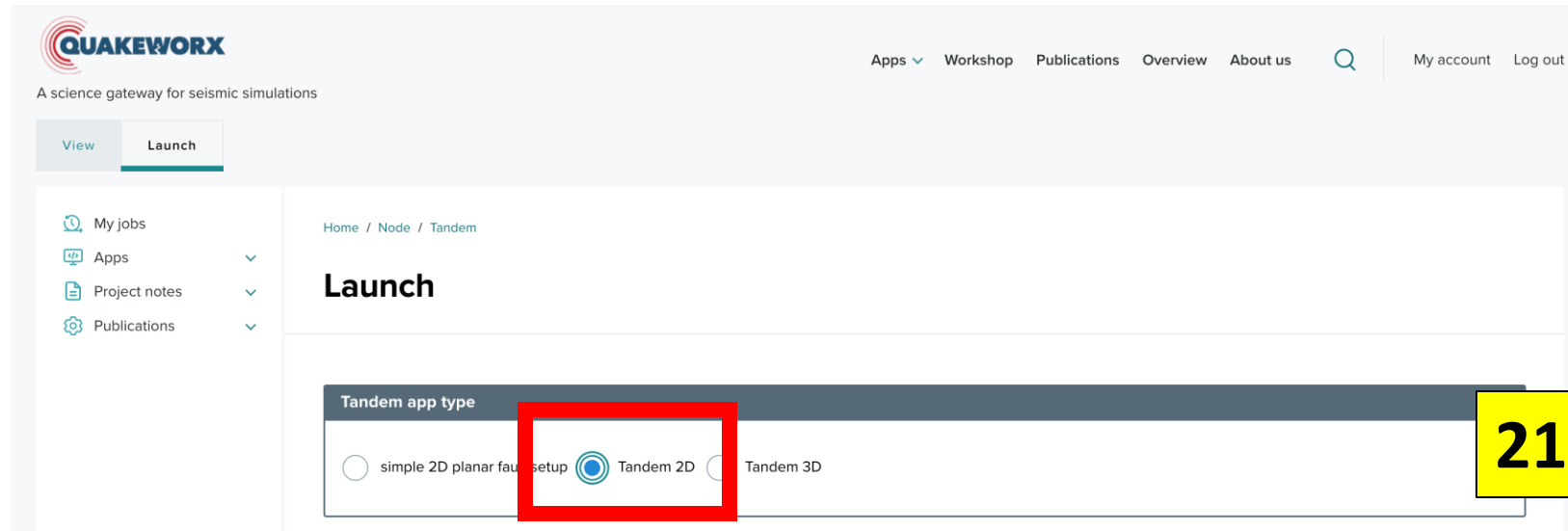
Tandem 2D

[Overview](#)
[Features](#)
[Contributing](#)
[Publications](#)
[Citing](#)

Launch app

20 Press launch app

Running my second Tandem job (depth varying)



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Home / Node / Tandem

Launch

Tandem app type

☐ simple 2D planar fault setup ☒ Tandem 2D ☐ Tandem 3D

21

Choose Tandem 2D

Polynomial degree *

5



Galerkin solver polynomial degree.

22

Choose polynomial degree 5

Job name *

Tandem_depthVarying_dense

Specify a name for this job

23

Change job name to
Tandem_depthVarying_dense

Running my second Tandem job (depth varying)

Configuration file (.toml)

The results must be directed to a directory named *outputs* in the configuration file. e.g. prefix = "outputs/fltst_"

No file chosen

One file only.
512 MB limit.
Allowed types: toml.

No file chosen

Green's function

☐ Create files

☒ Upload files

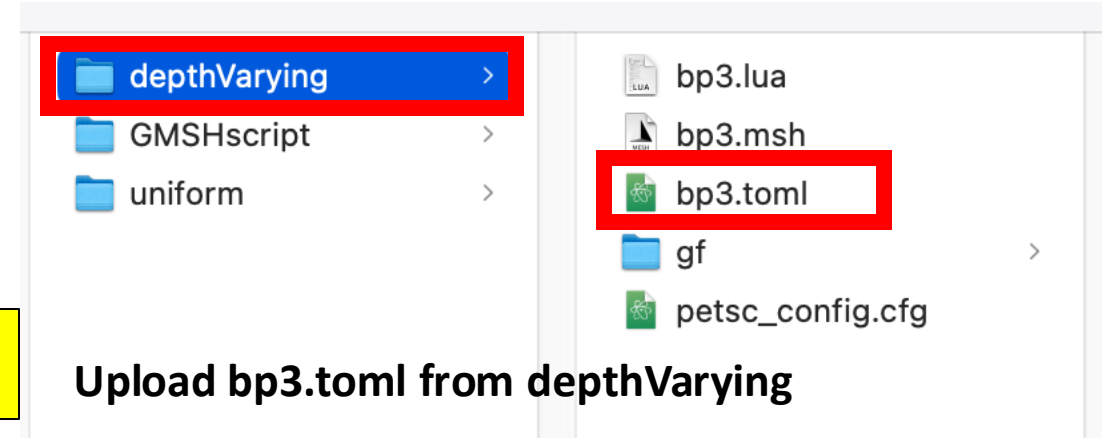
Green's function files

No file chosen

Maximum 10 files.
512 MB limit.
Allowed types: bin, gz, info.

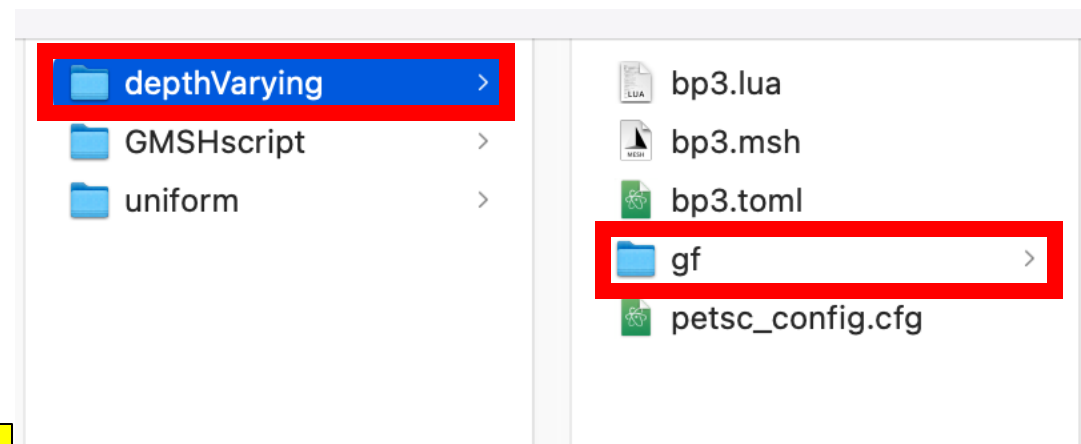
24

Upload bp3.toml from depthVarying



25

Upload all files from depthVarying/gf



Running my second Tandem job (depth varying)

Mesh file (.msh)

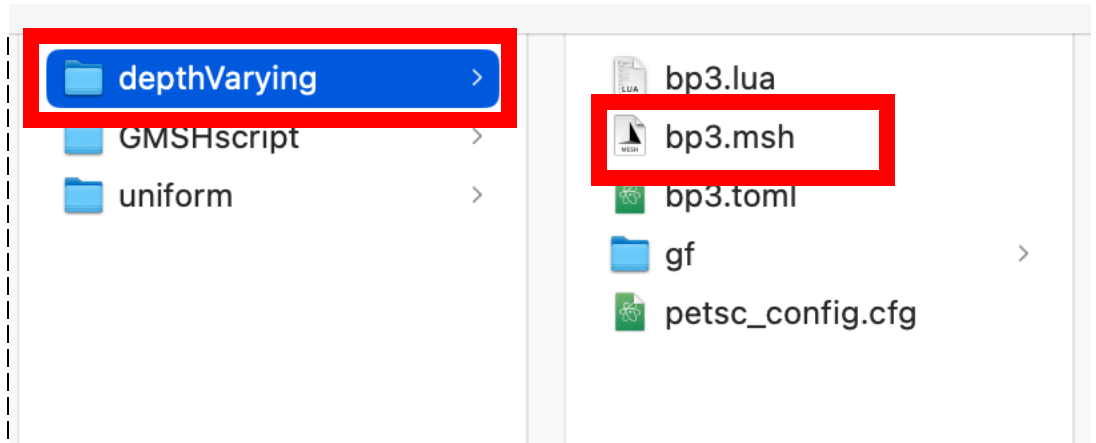
Choose File No file chosen

One file only.
512 MB limit.
Allowed types: msh.

Lua file (.lua)

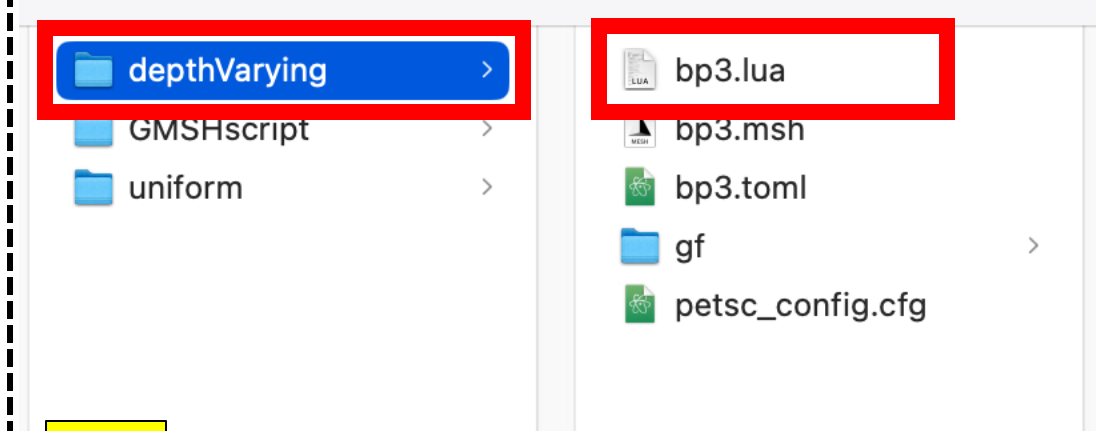
Choose File No file chosen

One file only.
512 MB limit.
Allowed types: lua.



26

Upload bp3.msh from depthVarying



27

Upload bp3.lua from depthVarying

Running my second Tandem job (depth varying)

Options file 1 (.cfg)

Choose File No file chosen

One file only.
512 MB limit.
Allowed types: cfg.

Web browser

Simulation time [seconds] *

17356680000

Save Draft

Submit

Click submit

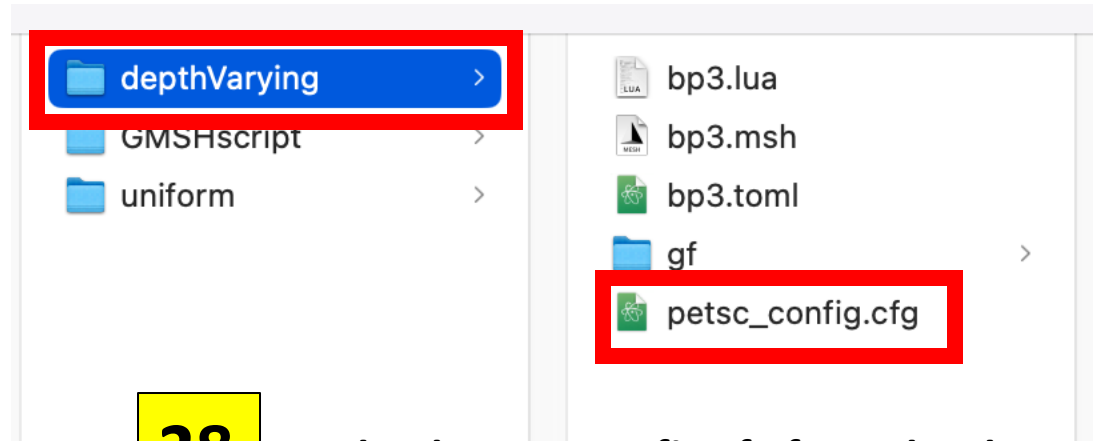
28

Upload petsc_config.cfg from depthVarying

Local computer

The default simulation time is set to
550 years so no need to change

29



Running my second Tandem job (depth varying)



[View](#) [Clone job](#) [Output](#) [Delete](#)

My jobs

Apps

Publications

Home / Tandem_uniform_dense

Tandem_uniform_dense

Last message: Setting job status to finished.

Condition: Job completed normally

Remote job ID: 36412576

Remote job submitted: 2025-01-21T16:41:10

Remote job started: 2025-01-21T16:41:12

Remote job ended: 2025-01-21T16:46:19

Job usage details

Resource details

Usage time

Processing unit: CPU

Node count: 1

Cores per node: 40

Memory: 15000 MB

Execution time: 5.11 min

Total usage time: 3.41 hour

App: Tandem

System: Expanse service

Owner: boryan

Created: Jan 21, 2025

Tapis UUID: 1ee48c21-d197-48c6-b729-478bcc4ccfb4-007

Finished

If everything went smoothly
it should look like this

Home / Tandem_uniform_dense

Output

Download All

bp3.lua (3.04 KB)

bp3.msh (238.21 KB)

bp3.toml (6.69 KB)

gf_facet_labels.bin (1.08 KB)

gf_facet_labels.bin.info

gf_mat.bin (5.09 MB)

gf_mat.bin.info

gf_vec.bin (6.39 KB)

gf_vec.bin.info (23 B)

outputs (56 KB)

petsc_config.cfg (148 B)

30

If you click output you can see
the Tandem output files

Next we will learn how to open a Jupyter Notebook and use it to plot the simulations !

1. Launch Jupyter Notebook Expance App

Home / All Apps

All apps

List of apps available on this site.

About Apps and Jobs: Apps are software applications that are configured to be executed on a predefined compute system. Launching an

App type

Search

- Any -

Apply



BATCH APP / EXECUTABLE

Calculator AWS

ver. 0.1.0
system. AWS System (EC2)

Simple calculator with few operands



BATCH APP / EXECUTABLE

Calculator Expance

ver. 0.1.0
system. Expance service

Simple calculator with few operands

BATCH APP / EXECUTABLE

Calculator Ln

ver. 1.0.0
system. AWS System (EC2)

Simple calculator app



WEB APP / DOCKER

Jupyter Notebook AWS

ver. 0.1.0
system. AWS System (EC2)

Jupyter Notebook running on AWS
(EC2) instance.



WEB APP / SINGULARITY

Jupyter Notebook Expance

ver. 0.1.0
system. Expance service

Jupyter Notebook running on
Expance

BATCH APP / EXECUTABLE

Kn cal

ver. 1.0.0
system. AWS System (EC2)

example

Home / Jupyter Notebook Expance

Jupyter Notebook Expance



WEB - INTERACTIVE WEB APPLICATION E.G. JUPYTER NOTEBOOK

Summary: Jupyter Notebook running on Expance

App ID: qwx1.apps.jupyter_notebook.expance | Version 0.1.0

Status: Enabled

Owner: choonhan

Description

This environment is built on Anaconda 3 and integrates several specialized packages:

- **vtk:** For advanced visualization.
- **pyvista:** For 3D plotting and robust mesh handling, accommodating both structured and unstructured meshes.
- **GMSH:** For efficient mesh creation and modification.
- **Lupa:** For integration between Python and Lua.
- **cmcrameri:** For refined color mapping.

Linux Desktop AWS

ver. 0.1.0
system. AWS System (EC2)

A VNC app for accessing a Linux
Desktop.

Launch app

1. Launch Jupyter Notebook Expanse App

Launch

Job name *

visualization

Specify a name for this job

Password *

Whatever password you want (remember it!)

▼ Job resources

Specify the job resources for this app

Max runtime (minutes) *

30

The maximum amount of time to run this app.

System *

Expanse service ▼

The system to run this app on.

Batch Logical Queue *

shared ▼

The batch logical queue on which to run this application.

Save Draft

Submit

Change for the
reminder of
the session.
Do not forget
to kill your
session in case
you are done

Wait until the job status becomes 'Running' and the 'Open app session' button activates

Home / visualization

visualization

Last message: Setting job status to running.

Remote job ID: 36370362

Remote job submitted: 2025-01-19T22:19:42

Remote job started: 2025-01-19T22:19:44

Job usage details

Resource details

Processing unit: CPU

Node count: 1

Cores per node: 1

Memory: 4000 MB

App: Jupyter Notebook Expanse

System: Expanse service

Owner: jeena

Created: Jan 19, 2025

Tapis UUID: 247066da-ed7e-4bcf-8b3c-def5ffa90dd6-007

Open app session

Terminate Job



Running



Queued



Staging job



Processing inputs

2. Open Jupyter Notebook App Session



Password or token: **The password you set**

Log in

Token authentication is enabled

If no password has been configured, you need to open the server with its login token in the URL, or paste it above. This requirement will be lifted if you [enable a password](#).

The command:

```
jupyter server list
```

will show you the URLs of running servers with their tokens, which you can copy and paste into your browser. For example:

```
Currently running servers:  
http://localhost:8888/?token=c8de56fa... :: /Users/you/notebooks
```

or you can paste just the token value into the password field on this page.

See [the documentation on how to enable a password](#) in place of token authentication, if you would like to avoid dealing with random tokens.

Cookies are required for authenticated access to the Jupyter server.

Setup a Password

You can also setup a password by entering your token and a new password on the fields below:



File View Settings Help

Files Running

Rename Delete

/

☐ Name **All the jobs you ran via gateway**

- ☐ SeisSol
- ☐ Tandem_depth_varying_r_2
- ☐ Tandem_depth_varying_r_5GPa_2
- ☐ Tandem_depthVarying
- ☐ Tandem_depthVarying_dense
- ☐ Tandem_training_test_highres_2
- ☐ Tandem_uniform
- ☐ Tandem_uniform_dense
- ☐ tpv33_lowres
- ☐ training_tpv13
- ☐ visualization

Now, get into the job folder, e.g., 'visualization'

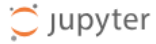
3. Clone the git repository containing plotting scripts

Open a python console by:
① File → ② New → ③ Console → ④ Select

The screenshot shows the JupyterLab interface. The 'File' menu is open, and the 'New' dropdown is selected, showing options like Console, Notebook, Terminal, Text File, Markdown File, and Python File. The 'Console' option is highlighted. Below the menu, a table shows the file list with columns for Name, Last Modified, and File Size. A 'Select Kernel' dialog is open, showing the selected kernel as 'Python 3 (ipykernel)' and a 'Select' button.

Name	Last Modified	File Size
outputs	2 minutes ago	
filebrowser.db	2 minutes ago	0 B
ospjob_proxy_info.txt	2 minutes ago	192 B
revssh-client.pid	2 minutes ago	6 B
tapisjob.env	2 minutes ago	1.4 KB
tapisjob.sh	2 minutes ago	2.4 KB
visualization_revssh_client.txt	2 minutes ago	337 B

3. Clone the git repository containing plotting scripts



File View Settings Help

```
Python 3.12.2 | packaged by conda-forge | (main, Feb 16 2024, 20:50:58) [GCC 12.3.0]
Type 'copyright', 'credits' or 'license' for more information
IPython 8.27.0 -- An enhanced Interactive Python. Type '?' for help.
```

```
[1]: !ls

filebrowser.db      revssh-client.pid  visualization_revssh_client.txt
ospjob_proxy_info.txt tapisjob.env
outputs            tapisjob.sh
```

```
[2]: !git clone https://github.com/TEAR-ERC/tandem-training.git

Cloning into 'tandem-training'...
remote: Enumerating objects: 61, done.
remote: Counting objects: 100% (61/61), done.
remote: Compressing objects: 100% (47/47), done.
remote: Total 61 (delta 26), reused 42 (delta 10), pack-reused 0 (from 0)
Receiving objects: 100% (61/61), 7.29 MiB | 23.33 MiB/s, done.
Resolving deltas: 100% (26/26), done.
```

```
[3]: !ls

filebrowser.db      revssh-client.pid  tapisjob.sh
ospjob_proxy_info.txt tandem-training    visualization_revssh_client.txt
outputs            tapisjob.env
```

```
[ 1]: |
```

In the console, type (with the exclamation mark):

!git clone https://github.com/TEAR-ERC/tandem-training.git

**** To run a command, use shift + enter**



File View Settings Help

Files Running

Rename Delete

/ visualization /

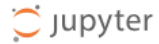
<input type="checkbox"/>	Name	Last Modified	File Size
<input type="checkbox"/>	outputs	5 minutes ago	
<input type="checkbox"/>	tandem-training	1 minute ago	
<input type="checkbox"/>	filebrowser.db	5 minutes ago	0 B
<input type="checkbox"/>	ospjob_proxy_info.txt	5 minutes ago	192 B
<input type="checkbox"/>	revssh-client.pid	5 minutes ago	6 B
<input type="checkbox"/>	tapisjob.env	5 minutes ago	1.4 KB
<input type="checkbox"/>	tapisjob.sh	5 minutes ago	2.4 KB
<input type="checkbox"/>	visualization_revssh_client.txt	5 minutes ago	337 B

Name: tandem-training
Path: visualization
Created: 1/22/25, 11:22 AM
Modified: 1/22/25, 11:22 AM
Writable: true

(if not, try the refresh button)

Check if the 'tandem -training' directory is created

4. Open the Jupyter Notebook for plotting scripts



File View Settings Help

Files Running

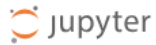
Rename Delete

New Upload Refresh

/ visualization / tandem-training /

Name		Last Modified	File Size
<input checked="" type="checkbox"/>	quakeworx-jan-2025	1 minute ago	
<input type="checkbox"/>	LICENSE	1 minute ago	1.5 KB
<input type="checkbox"/>	README.md	1 minute ago	17 B

Under the 'tandem-training' get into...
quakeworx-jan-2025/visualization



File View Settings Help

Files Running

Rename Delete

New Upload Refresh

/ visualization / tandem-training / quakeworx-jan-2025 /

Name		Last Modified	File Size
<input checked="" type="checkbox"/>	visualization	1 minute ago	
<input type="checkbox"/>	jobs.zip	1 minute ago	5 MB
<input type="checkbox"/>	tandem_visualization.pdf	1 minute ago	1 MB



File View Settings Help

Files Running

Open Download Rename Duplicate Delete

New Upload Refresh

/ visualization / tandem-training / quakeworx-jan-2025 / visualization /

Name		Last Modified	File Size
<input checked="" type="checkbox"/>	plot_tandem_results.ipynb	1 minute ago	878.5 KB
<input type="checkbox"/>	cmap_for_sliprate.py	1 minute ago	4.7 KB
<input type="checkbox"/>	cumslip_plot.py	1 minute ago	5.2 KB

... and open
plot_tandem_results.ipynb