Accessing Jupyter Notebook via Quakeworx Gateway
and
Plotting Tandem outputs

By Jeena Yun

1. Launch Jupyter Notebook Expanse App

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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 |

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
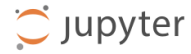
| **Open app session** |
| Terminate Job |

- ✓ Running
- ○ Queued
- ○ Staging job
- ○ Processing inputs

2. Open Jupyter Notebook App Session

Jupyter

| 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:
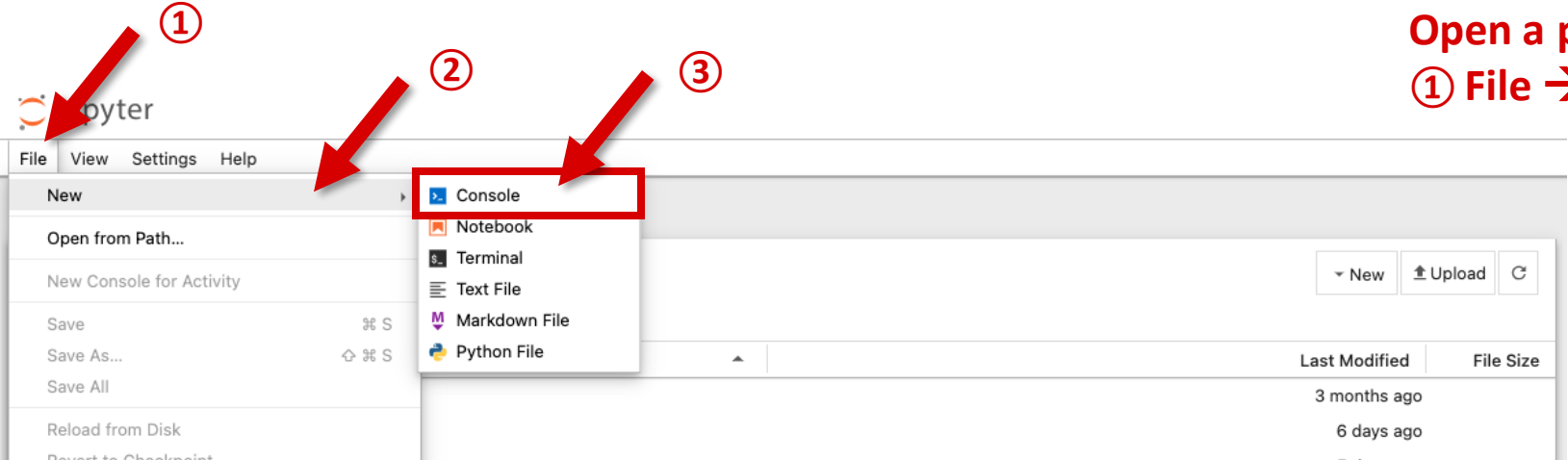
Jupyter

File   View   Settings   Help

| Files | Running |

Rename   Delete   New   Upload   C

/

	Name		Last Modified	File Size
☐	📁 SeisSol		3 months ago	
☐	📁 Tandem_depth_varying_r_2		6 days ago	
☐	📁 Tandem_depth_varying_r_5GPa_2		5 days ago	
☐	📁 Tandem_depthVarying		3 days ago	
☐	📁 Tandem_depthVarying_dense		2 days ago	
☐	📁 Tandem_training_test_highres_2		6 days ago	
☐	📁 Tandem_uniform		3 days ago	
☐	📁 Tandem_uniform_dense		2 days ago	
☐	📁 tpv33_lowres		21 days ago	
☐	📁 training_tpv13		21 days ago	
☐	📁 visualization		52 seconds ago	

All the jobs you ran via gateway

3. Clone the git repository containing plotting scripts

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

File   View   Settings   Help

New
Open from Path...
New Console for Activity
Save   ⌘ S
Save As...   ⇧ ⌘ S
Save All
Reload from Disk
Revert to Checkpoint...
Download
Save and Export Notebook As
Trust Notebook
Close and Shut Down Notebook   ^ ⇧ Q
Log Out
Shut Down

Console
Notebook
Terminal
Text File
Markdown File
Python File

New   ⬆ Upload   C

Last Modified   File Size
3 months ago
6 days ago

☐ 📁 visualization

jupyter

File   View   Settings   Help

📁 Files   ⬤ Running

Rename   Delete

New   ⬆ Upload   C

📁 /

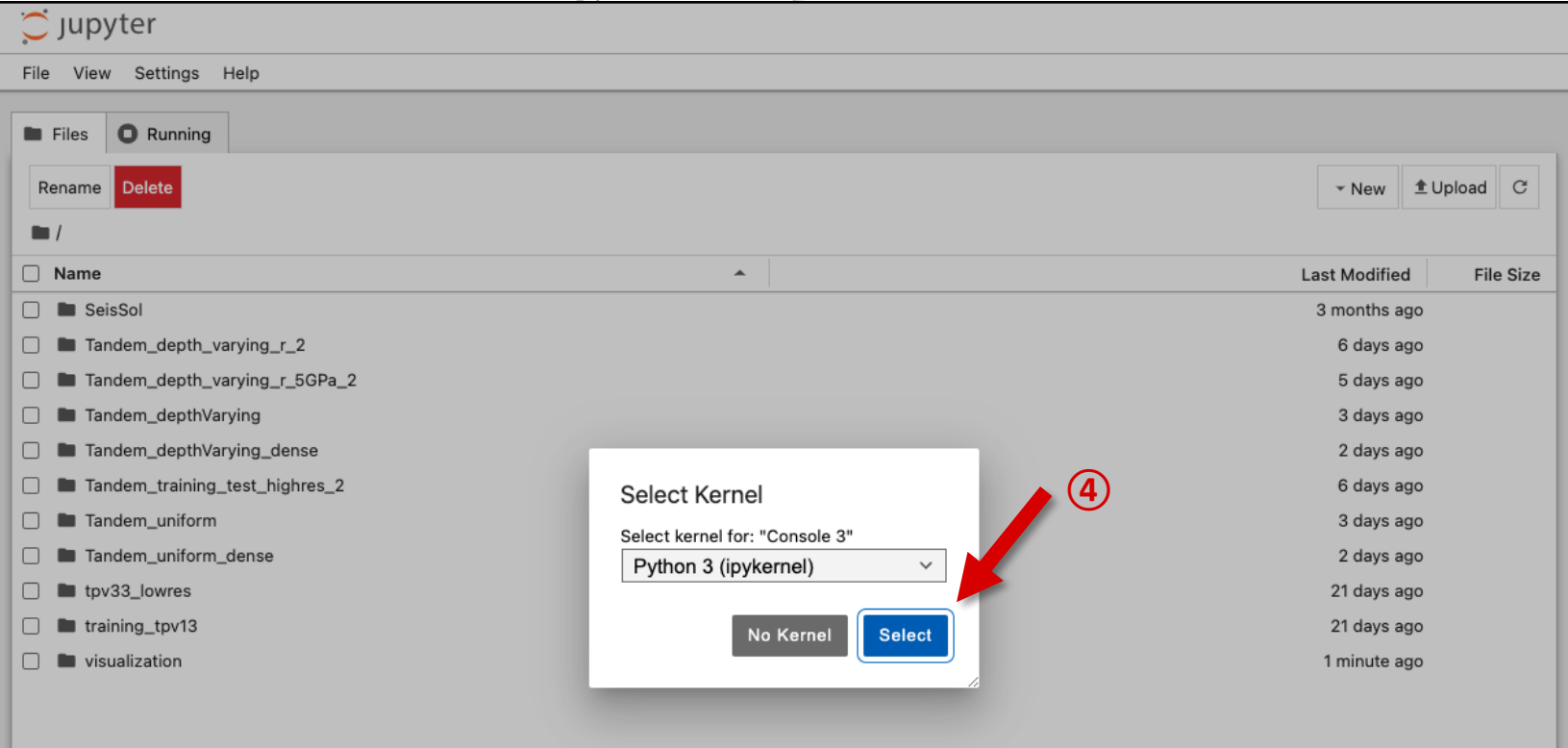☐ Name   Last Modified   File Size
☐ 📁 SeisSol   3 months ago
☐ 📁 Tandem_depth_varying_r_2   6 days ago
☐ 📁 Tandem_depth_varying_r_5GPa_2   5 days ago
☐ 📁 Tandem_depthVarying   3 days ago
☐ 📁 Tandem_depthVarying_dense   2 days ago
☐ 📁 Tandem_training_test_highres_2   6 days ago
☐ 📁 Tandem_uniform   3 days ago
☐ 📁 Tandem_uniform_dense   2 days ago
☐ 📁 tpv33_lowres   21 days ago
☐ 📁 training_tpv13   21 days ago
☐ 📁 visualization   1 minute ago

Select Kernel

Select kernel for: "Console 3"

Python 3 (ipykernel)   ⌄

④

No Kernel   Select

3. Clone the git repository containing plotting scripts

In console, type (with the expression mark):
`!git clone https://github.com/TEAR-ERC/tandem-training.git`

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

(if not, try the refresh button)

Check if the 'tandem -training' directory is created

4. Open the Jupyter Notebook for plotting scripts

**Under the 'tandem-training' get into…
quakeworx-jan-2025/visualization**
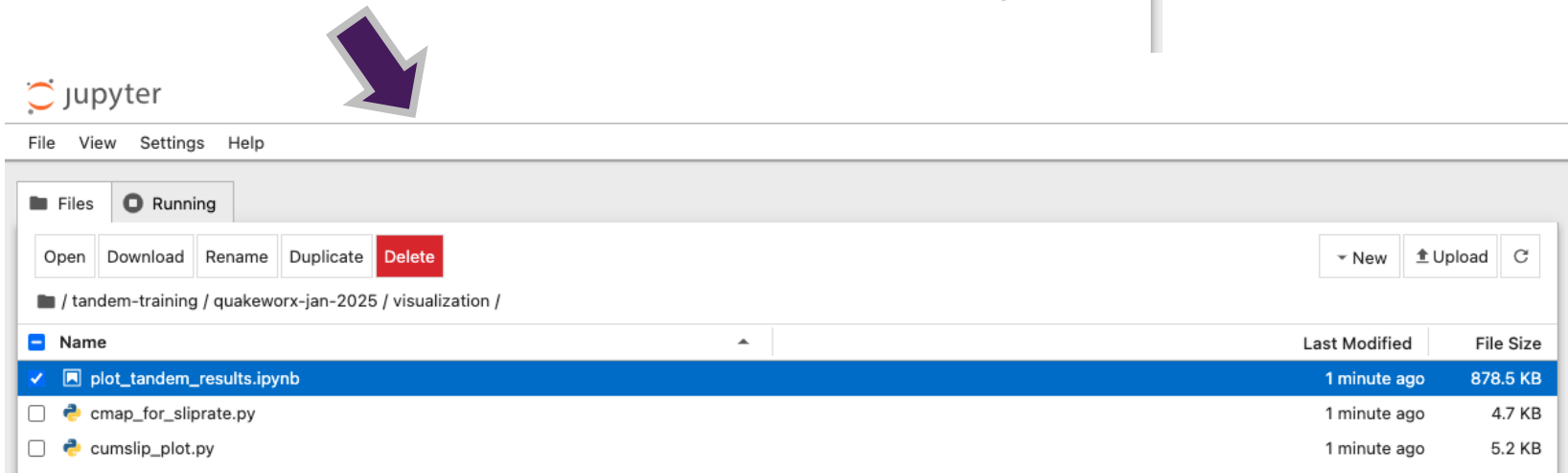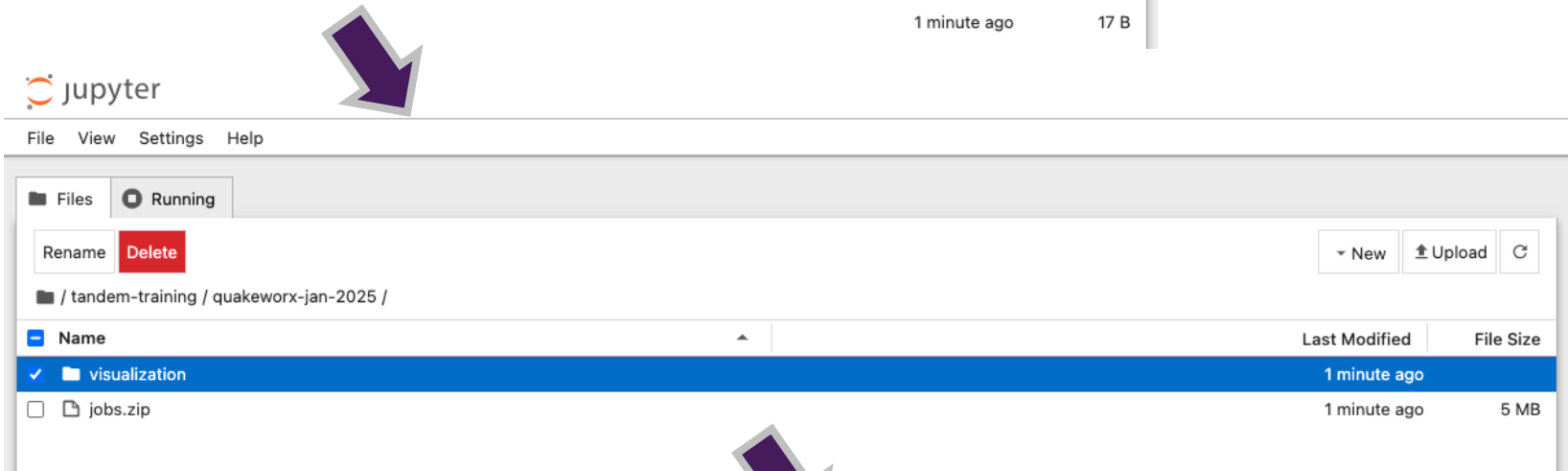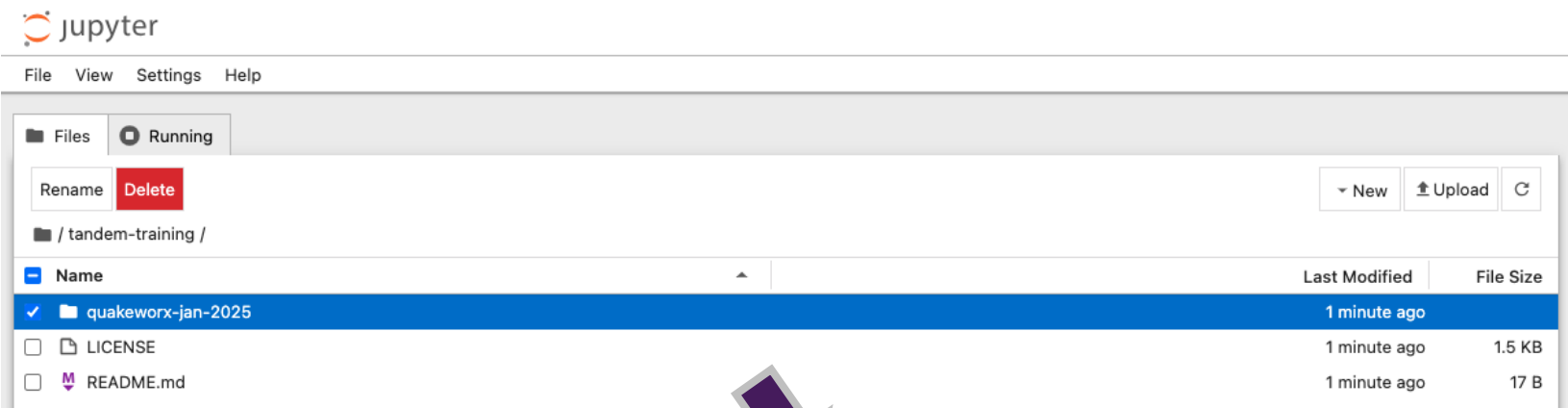
**… and open
plot_tandem_results.ipynb**

Now, let's make some cool plots!

Tandem visualization and post-processing

Author: Jeena Yun (j4yun@ucsd.edu)

Did you successfully run Tandem? Now, we will learn about how to process Tandem outputs such that we can produce useful plots showing different aspects of rupture history.

Learning objectives

- Learn about output formats of Tandem
- Learn about how to visualize outputs at different time and depth
- Learn about the effects of changing material properties on the rupture characteristics

Contents

- Understand fault probe outputs
- Prepare for plotting: load packages and define path to the outputs
- Plot time series of a variable on an individual fault probe
- Plot spatiotemporal evolution of slip rate
- Compare two models
    - Compare shear moduli (μ)
    - Compare spatiotemporal evolution of slip rates
    - Compare peak slip rates

- (Bonus) Plot spatiotemporal evolution of cumulative slip