



JupyterHub Basics (Exercise and Notebooks)

Michele Thornton &
Rupesh Shrestha

- NotebookBasics.ipynb
- SMCE_Basics.ipynb




Exercise: Jupyter Hub Basics



Jupyter Hub Basics: BioSCape SMCE


- <https://cloud.bioscape.io> YES! Go there
- BioSCape SMCE User Guide
 - <https://bioscape-smce-user-guide.readthedocs.io/en/latest/index.html>

<https://cloud.bioscape.io>



Welcome to BioSCape Cloud!

The BioSCape Cloud provides direct access to data and computational resources in your browser. Request access at bioscape.io/data.




BIOSCAPE
Biodiversity Survey of the Cape

BioScape is a research project that uses remote sensing and field data to understand the distribution, function, and importance of biodiversity on land and in the water in the Greater Cape Floristic Region (GCFR), one of the world's 36 biodiversity hotspots.

Explore bioscape.io to learn more.

Thanks to NASA, NSF-SAEON, UNESCO, and Amazon Web Services.

 [Sign in with Keycloak](#)

You should already have a SMCE login, (as well as an Earthdata login)

NEBARI

Sign in to your account

Username

Password

[Sign In](#)

[Home](#)[Token](#)[User Management](#)[Argo Workflows](#)[Environment Management](#)[Monitoring](#)[mthornton](#)[Logout](#)

Server Options

Small Instance

Stable environment with 2 cpu / 8 GB ram



Medium Instance

Stable environment with 4 cpu / 16 GB ram



Start

It will take a little time for your hub instance to load



Your server is starting up.

You will be redirected automatically when it's ready for you.

Server ready at </user/mthornton/>

► Event log



It will take a little time for your hub instance to load
Your JupyterHub instance is being allocated in AWS

File Edit View Run Kernel Git Tabs Settings Services Help

Enter files by name

Current folder: /

Filter

Create Empty

Notebook Terminal Console Markdown File Text File Python File VS Code [^] desktop [^] RStudio [^]

Launch New Notebook

Kernel	Namespace	Environment	Debugger	Last Used	
default *		default	true	Never	☆
Python	global	BioScape	true	9 minutes ago	☆
Python	users	shift_python_utilities	true	19 days ago	☆

Launch New Console

Simple 0 1 Mem: 346.27 / 16384.00 MB Launcher English (United States) 1

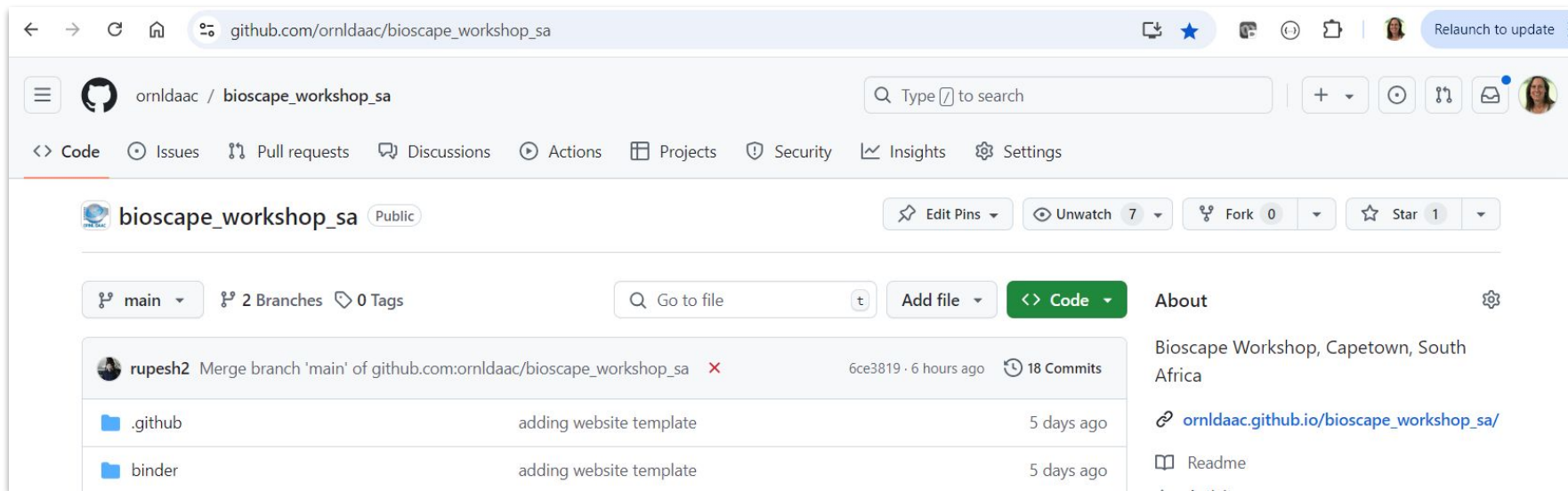
Each user has their own instance of the BioScape Hub



Clone the BioSCape Workshop Repo

We're going to clone the BioSCape Workshop repository into your BioSCape SMCE instance

https://github.com/ornldaac/bioscape_workshop_sa



The screenshot shows the GitHub repository page for `ornldaac / bioscape_workshop_sa`. The repository is public and has 7 watchers, 0 forks, and 1 star. The main branch is selected, and there are 2 branches and 0 tags. The repository contains two files: `.github` and `binder`, both added 5 days ago. The commit history shows a recent merge by `rupesh2` 6 hours ago, with 18 commits.

GitHub repository page for `ornldaac / bioscape_workshop_sa`. The repository is public and has 7 watchers, 0 forks, and 1 star. The main branch is selected, and there are 2 branches and 0 tags. The repository contains two files: `.github` and `binder`, both added 5 days ago. The commit history shows a recent merge by `rupesh2` 6 hours ago, with 18 commits.

bioscape_workshop_sa Public

Edit Pins Unwatch 7 Fork 0 Star 1

main 2 Branches 0 Tags

Go to file Add file Code

About

- rupesh2 Merge branch 'main' of github.com:ornldaac/biosca
- .github adding
- binder ad

Local Codespaces

Clone

HTTPS SSH GitHub CLI

https://github.com/ornldaac/bioscape_workshop_:

Clone using the web URL.

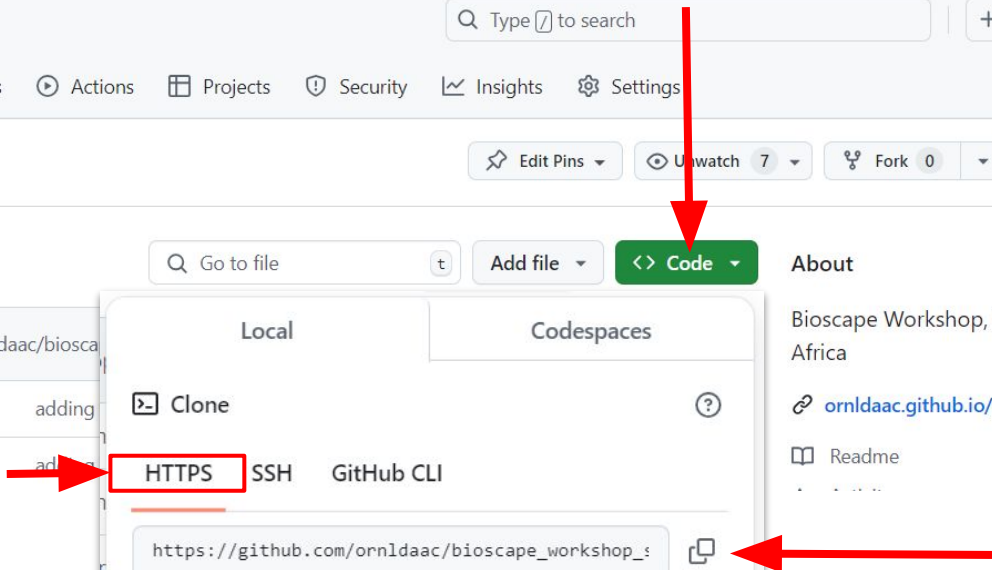
Open with GitHub Desktop

Download ZIP

Bioscape Workshop, Capetown, South Africa

ornldaac.github.io/bioscape_workshop_sa/

Readme



mthornton:~

20:27 \$ cd

mthornton:~

20:27 \$ ls -l

total 44

```
drwxr-xr-x 2 mthornton users 6144 Sep  9 22:07 Desktop
drwxr-xr-x 2 mthornton users 6144 Sep  9 22:07 Documents
drwxr-xr-x 2 mthornton users 6144 Sep  9 22:07 Downloads
drwxr-xr-x 2 mthornton users 6144 Sep  9 22:07 Music
drwxr-xr-x 2 mthornton users 6144 Sep  9 22:07 Pictures
drwxr-xr-x 2 mthornton users 6144 Sep  9 22:07 Public
drwxr-xr-x 3 mthornton users 6144 Sep 19 14:05 R
drwxr-xr-x 2 mthornton users 6144 Sep  9 22:07 Templates
drwxr-xr-x 2 mthornton users 6144 Sep  9 22:07 Videos
lrwxrwxrwx 1 mthornton users   7 Sep 30 12:50 shared -> /shared
drwxr-xr-x 3 mthornton users 6144 Sep 30 11:31 workspace
```

mthornton:~

20:27 \$ git clone https://github.com/ornldaac/bioscape_workshop_sa.git

Filter files by name

/

Name	Modified
Desktop	20 days ago
Documents	20 days ago
Downloads	20 days ago
Music	20 days ago
Pictures	20 days ago
Public	20 days ago
R	11 days ago
shared	7 hours ago
Templates	20 days ago
Videos	20 days ago
bioscape_workshop_sa	9 hours ago

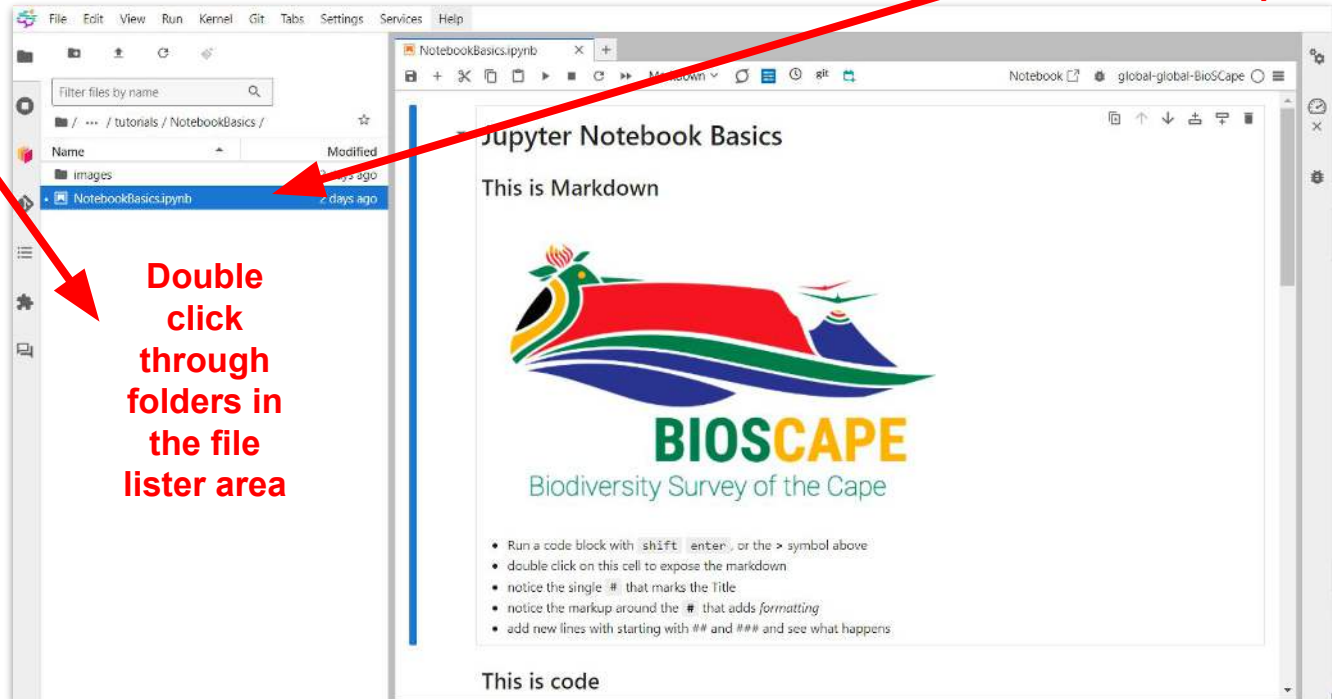
```
Launcher x Terminal 1 x +
mthornton:~
20:27 $ cd
mthornton:~
20:27 $ ls -l
total 44
drwxr-xr-x 2 mthornton users 6144 Sep  9 22:07 Desktop
drwxr-xr-x 2 mthornton users 6144 Sep  9 22:07 Documents
drwxr-xr-x 2 mthornton users 6144 Sep  9 22:07 Downloads
drwxr-xr-x 2 mthornton users 6144 Sep  9 22:07 Pictures
drwxr-xr-x 2 mthornton users 6144 Sep  9 22:07 Public
drwxr-xr-x 3 mthornton users 6144 Sep 19 14:05 R
drwxr-xr-x 2 mthornton users 6144 Sep  9 22:07 Templates
drwxr-xr-x 2 mthornton users 6144 Sep  9 22:07 Videos
lrwxrwxrwx 1 mthornton users   7 Sep 30 12:50 shared -> /shared
drwxr-xr-x 3 mthornton users 6144 Sep 30 11:31 workspace
mthornton:~
20:27 $ git clone https://github.com/ornl/daac/bioscape_workshop_sa.git
```

Jupyter Notebook Basics:

/bioscape_workshop_sa/book/tutorials/NotebookBasics/

- NotebookBasics.ipynb
- SMCE_Basics.ipynb

**Double click
NotebookBasic.ipynb
to open**



The screenshot shows the Jupyter Notebook interface. On the left, the file browser shows the directory structure: /... / tutorials / NotebookBasics / . The file NotebookBasics.ipynb is highlighted in blue. A red arrow points from the text 'Double click through folders in the file lister area' to the 'NotebookBasics' folder. Another red arrow points from the text 'Double click NotebookBasic.ipynb to open' to the NotebookBasics.ipynb file. The main notebook area displays the title 'Jupyter Notebook Basics' and the text 'This is Markdown'. Below the text is the BIOSCAPE logo, which features a stylized bird with a colorful body (red, green, blue, yellow) and a white head with a red crest. The logo is set against a white background with a blue and green wave-like shape below it. The text 'BIOSCAPE' is in large, bold, green and yellow letters, and 'Biodiversity Survey of the Cape' is in smaller, blue letters below it. Below the logo, there is a list of instructions for using the notebook:

- Run a code block with `shift+enter`, or the `>` symbol above
- double click on this cell to expose the markdown
- notice the single `#` that marks the Title
- notice the markup around the `#` that adds *formatting*
- add new lines with starting with `##` and `###` and see what happens

At the bottom of the notebook, the text 'This is code' is visible.

**Double
click
through
folders
in the
file
lister
area**