Step-by-Step Guide: Running Jupyter Notebooks Online using Openscapes 2I2C

Useful links :

https://openscapes.2i2c.cloud/ https://github.com/ghrcdaac/ghrc-playground https://nasa-openscapes.github.io/earthdata-cloud-cookbook/

Haven't filled the request form yet? Please fill out the form with your GitHub username information <u>JupyterHub request form</u> to access Openscapes 2I2C JupyterHub

Getting Started:

Step 1: Logging into JupyterHub

Go to the Openscapes 2I2C page by using the URL: <u>https://openscapes.2i2c.cloud/</u>

If this is your first time using this link, a login prompt will be shown as the page loads



Click "Log in to continue". You will be prompted to a GitHub authorization page

Authorize Openscapes 2i2c JupyterHub
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Organization access ● NASA-Openscapes ✓
Cancel Authorize 2/2c-org Authorizing will redirect to https://openscapes.2/2c.cloud
Not owned or Created Ess than a day ago GitHub Users
Learn more about OAuth

Click "Authorize 2i2c-org" button to allow OpenScapes 2I2C to authorize your GitHub user information (for login)

Step 2: Selecting instance type and resource allocation

After a successful login, You will be redirected to choosing the server instance and resource allocation

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	Server Options		
	Python Python datascience environment Resource Allocation 1.9 GB RAM, upto 3.75 CPUs		
	R (with RStudio) + Python environment Resource 1.9 GB RAM, upto 3.75 CPUs		
	Matlab Matlab environment Resource Allocation 1.9 GB RAM, upto 3.75 CPUs		
	Start		

For our demo, we'll be using "Python" environment. Most of our notebooks run on default resources, for memory/CPU intensive programs, allocate more resources.

Note: One of our notebooks use "3.7GB RAM, upto 3.75 CPUs" (Option 2 on the list).

Once you made the selection, Click start to proceed to the next step.

C Jupyterhub Home Token Services-		nvd26	(Logout
	Your server is starting up.		
	You will be redirected automatically when it's ready for you.		
	2023-11-01T22:02:55Z [Normal] Started container notebook		
Event log			

You can see the server starting up.

Step 3: Get ready to code!

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The home page will look like the above image. You can create directories, use the Terminal, and start working on the Python code.

Our demo uses GHRC's jupyter notebooks, We will be cloning the project from GitHub. 2I2C hub comes with the Git extension,



Click the third icon on the left sidebar to open Git Extension.

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Step 4: Cloning the GIT project

GHRCs data recipes are hosted in a public GitHub repository https://github.com/ghrcdaac/ghrc-playground

Click on the above link, you will be redirected to the GitHub page.

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Select "Code" button, then click HTTPS, and then copy the URL.

We'll be heading back to 2I2C page and click "Clone a Repository" button

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Enter the copied URL in the dialog box and click "Clone"

The repository will be cloned into your instance, and you should be able to see in on the left side file explorer



Step 5: A closer look at the notebooks

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			[2]: from fcx_playground.fcx_dataprocess.tiles_rad_range import RadRangeTilesPointCloudDataProcess			I.
			[3]: obj = RadRangeTilesPointCloudDataProcess()			
			<pre>[4]: data = obj.ingest('./test_data/olympex_CRS_20151110_172815-20151110_175946_2_v01a.nc')</pre>			
			<pre>[5]: preprocessed_data = obj.preprocess(data)</pre>			
			<pre>[6]: point_clouds_tileset = obj,prep_visualization(preprocessed_data)</pre>			
			Note: the prep_visualization method will return path to the tileset. json file (which should be loaded for further visualization)			
			Display in Cesium			
			[7]: from fcx_playground.fcx_cesium_viz.tiles_viz import TilesViz			
			Note: For the generated tileset, ison file, say in "/temp/2015-11-10/zarr_point_cloud/tileset.json", we need get the download link and pass it to generate_html function described below. To download link:	et the		I
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Double click on the "ghrc-playground" directory

You now have access to 5 notebooks. Open any notebook by double clicking on the filename



Click on the "Play" button to run the code row by row. If you would like to run all the code at once, Click on the "Play All" (Double play/Forward) button.

If you click "Run All" a dialog box will prompt you to Restart the Kernel



Click Restart, it will run all the code fields and waits for you in the field, if a user entry is required.

If the field is still executing the code, you can see the "*" on the left side of the row.



And the * will change back to the row numbers as the code finish processing.

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Success!, you have executed the python code on the JupyterHub Online. Now, its your opportunity to try different code or adjust the parameters of the existing code to explore, learn, and develop new applications.

Notes:

- If you open multiple Iframe/HTML viewer notebooks. Make sure you close the notebooks you are not working on. As the HTML page is loaded, the JupyterHub doesn't know where to load the viewer. You may see unexpected results (if multiple notebooks are open).
- Make sure you copy the path of the generated file and paste it on the field to view the visualization.