



ESIPHub

Services and infrastructure to support
computational geosciences
education, research and collaboration
with JupyterHub

Winter 2019 Incubator Project Update

Keith E. Maull, PhD

ESIPHub | Project Goals

BROAD PROJECT GOALS

- 1 **provide** ESIP **community** with **shared resources** based on current tools, platforms and workflows to support computational geoscience inquiry for experimentation, collaboration, education and research
- 2 develop skill and capacity for **workshop support** and expansion of platform at 2018 ESIP summer meeting and beyond
- 3 **sustain** stable **long-term platform** for continued use in varied ESIP projects and communities

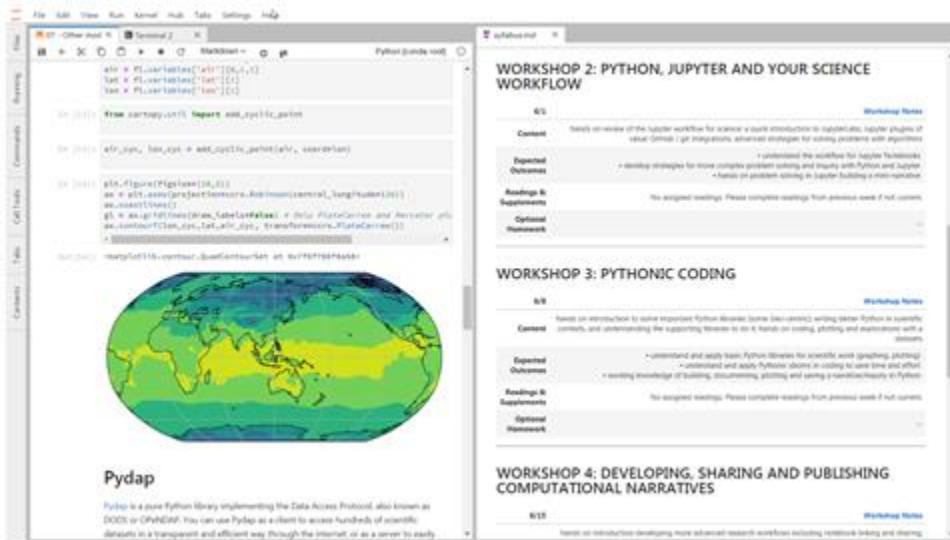


ESIPHub | Project initialization

Summer 2018

ESIPHUB PILOT WITH UCAR SOARS

- ESIPHub piloted at UCAR summer research programs
- Computational thinking and data science workshops

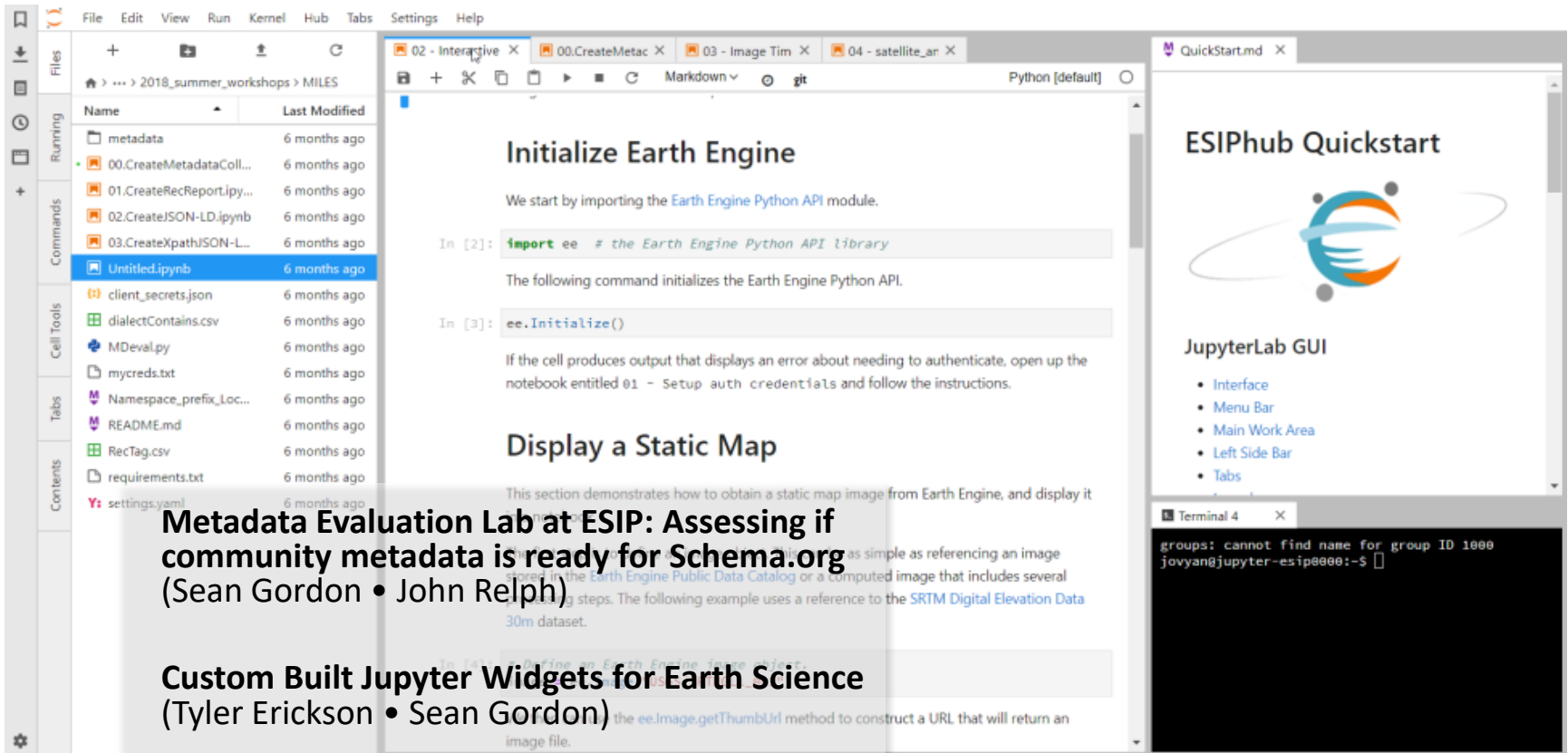


OUTCOMES

- Refined operating environment
- Developed experience with infrastructure scaling

ESIPHub | Project initialization

Summer 2018



The screenshot displays a JupyterLab environment with several open notebooks and a sidebar. The main notebook, '02 - Interactive', contains the following content:

Initialize Earth Engine

We start by importing the [Earth Engine Python API](#) module.

```
In [2]: import ee # the Earth Engine Python API library
```

The following command initializes the Earth Engine Python API.

```
In [3]: ee.Initialize()
```

If the cell produces output that displays an error about needing to authenticate, open up the notebook entitled 01 - Setup auth credentials and follow the instructions.

Display a Static Map

This section demonstrates how to obtain a static map image from Earth Engine, and display it

The sidebar on the left shows a file explorer with a directory structure for '2018_summer_workshops > MILES'. The files listed are:

Name	Last Modified
metadata	6 months ago
00.CreateMetadataColl...	6 months ago
01.CreateRecReport.Ipy...	6 months ago
02.CreateJSON-LD.Ipynb	6 months ago
03.CreateXpathJSON-L...	6 months ago
Untitled.Ipynb	6 months ago
client_secrets.json	6 months ago
dialectContains.csv	6 months ago
MDeval.py	6 months ago
mycreds.txt	6 months ago
Namespace_prefix_Loc...	6 months ago
README.md	6 months ago
RecTag.csv	6 months ago
requirements.txt	6 months ago
settings.yaml	6 months ago

On the right, a 'QuickStart.md' file is open, showing the ESIPhub logo and a list of JupyterLab GUI components:

ESIPhub Quickstart

JupyterLab GUI

- Interface
- Menu Bar
- Main Work Area
- Left Side Bar
- Tabs

Below this, a terminal window shows an error message:

```
groups: cannot find name for group ID 1000
joyv@jupyter-esip0000:~$
```

Metadata Evaluation Lab at ESIP: Assessing if community metadata is ready for Schema.org
(Sean Gordon • John Relph)

Custom Built Jupyter Widgets for Earth Science
(Tyler Erickson • Sean Gordon)

Interactive Data Analysis on Cloud Environment (Frank Greguska • Thomas Huang • Joe Jacob • Rich Signell)

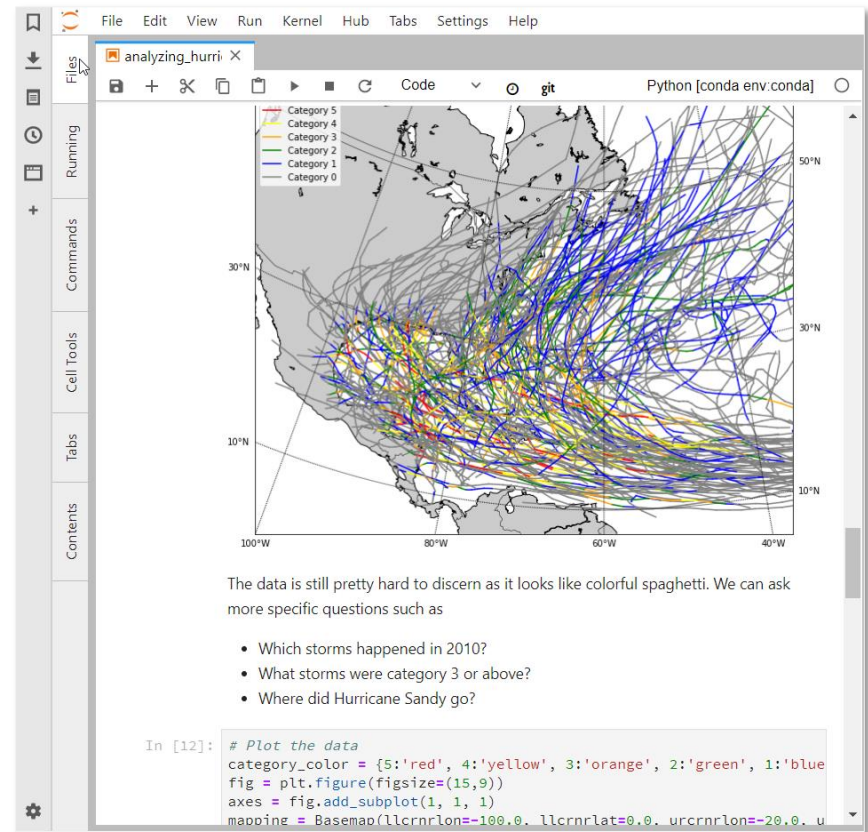
ESIPHub | Lessons learned

- **Scalability** should be a principal concern
- Platform more compelling in **directed contexts** (workshops)
- Sharing and **collaboration model** still **needs refinement** (e.g. /shared, etc.)
- **Ongoing support necessary** to guarantee service quality
- Hub visibility requires more **marketing and promotion**
- More work needs to go into understanding **supportable use cases**

ESIPHub | Refinement Iteration

Winter 2019

- ESIP Education committee taking interest in using the **Hub** in middle and high school geoscience
- **Committee working session** (yesterday 1/15) provided feedback for summer 2019 meeting goals for Hub



ESIP Hub | Next Steps

- Hub **sustainability** is a priority:
 - What is the operating model?
 - How will it be paid for?
 - How can ongoing operational budget develop to support a broad array of needs?
- Hub **service model** needs development:
 - Who can you the Hub within the community (and for what)?
 - Will education/training be the primary role of the Hub?
 - When will access requests be rejected or suspended?

Thanks!

The National
DATA SERVICE



ESIPHub Team

Ben Galewsky (UIUC)

Sean Gordon (HDF Group)

Keith Maull (NCAR)

Matt Mayernik (NCAR)

Craig Willis (UIUC)