

# Code Ocean for Jupyter & JupyterLab

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# Code Ocean

- Code Ocean is, more or less:
  - ▶ JupyterLab IDE + modifications
  - ▶ A robust dependency management system
  - ▶ A publishing platform (DOIs & stable URLs)
  - ▶ A sharing platform (embed your 'compute capsules' on webpages)

The screenshot displays the Code Ocean web interface. At the top, the title bar reads 'Fractal Generation with L-Systems: Jupyter and JupyterLab'. Below the title bar, there's a menu bar with 'Capsule', 'File', 'Edit', 'View', 'Tabs', 'Settings', and 'Help'. The left sidebar contains three sections: 'Files' (showing 'notebook.ipynb', 'readme.md', and 'run.sh'), 'Commands' (showing 'data Manage Datasets'), and 'Cell Tools'. The main workspace shows a JupyterLab notebook with the following code:

```
1 #!/bin/bash
2 set -ex
3
4 # Render the notebook to HTML
5 jupyter nbconvert \
6   --ExecutePreprocessor.allow_errors=True \
7   --ExecutePreprocessor.timeout=1 \
8   --output-dir=./results \
9   --execute notebook.ipynb
10
```

The bottom panel shows the output of a 'Run' command (Run 2081022). The output includes the execution of 'jupyter nbconvert' and the generation of 'notebook.html'.

```
5 + jupyter nbconvert --ExecutePreprocessor.allow_errors=True
6   --ExecutePreprocessor.timeout=1 --output-dir=./results --execute
7   notebook.ipynb
8
9 [NbConvertApp] Converting notebook notebook.ipynb to html
10
11 [NbConvertApp] Executing notebook with kernel: python3
12
13 [NbConvertApp] Writing 515388 bytes to ../results/notebook.html
```

On the right side, there's a 'Run (run.sh)' button and a 'Publish capsule & results' button. Below these, there's a list of runs with their status, time, and output files.

Run	Time	Status	Output Files
Run 2081022	00:00:08	less than a minute ago	output, notebook.html
Run 2080863	00:00:14	3 minutes ago	output, notebook.html
Run 2080702	00:01:04	5 minutes ago	output, buildLog, notebook.html

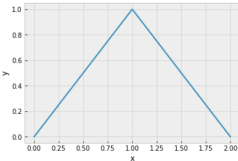
# Publishing reproducible Jupyter Notebooks

Notebook + environment + nbconvert = a rendered HTML

notebook.htm x

View Raw

```
In [2]: plt.plot(
        [0, 1, 2], # X-values
        [0, 1, 0] # Y-values
    )
    # The next two lines add labels to the axes.
    plt.xlabel('x')
    plt.ylabel('y');
```



I find it easier to think about lists of coordinate pairs than it is to think about two lists of coordinates. Below is a function below that takes a list of coordinates, converts them to the lists that matplotlib expects, and plots them.

```
In [3]: def plot_coords(coords, bare_plot=False):
        if bare_plot:
            # Turns off the axis markers.
            plt.axis('off')
```

Run (run.sh)

or, launch interactive session

Environment & Dependencies

Code Ocean's published results  
November 12, 2018 | Verified

Published Result

9 minutes ago

319 B

output

notebook.html

503.32 KB

Run 2080863

Code Ocean | 11 minutes ago


0:00:14

Run 2080702

Code Ocean | 14 minutes ago

0:01:04

Reproducibility



# Interactive sessions

<https://codeocean.com/2018/11/13/fractal-generation-with-l-systems-colon-jupyter-and-jupyterlab/code>

- Jupyter
- JupyterLab
- Time for a live demonstration

# Questions?

- How is this different than Binder?
- What is the uploading process like?
- How are dependencies managed?
- Is this exportable?

# Reference Slide 1: Publishing on Code Ocean:

- <https://codeocean.com/2018/10/16/the-contact-hypothesis-re-evaluated-colon-code-and-data/code>
- Will have a DOI and link to your article's metadata

The screenshot shows a web browser displaying the Code Ocean project page. The address bar shows the URL: <https://codeocean.com/2018/10/16/the-contact-hypothesis-re-evaluated-colon-code-and-data/metadata>. The page title is "The contact hypothesis re-evaluated: code and data (Elisaveth Levy Paluck et al.)". There are buttons for "Switch to Old Editor" and "Back to Capsule". The page is divided into sections: "Basic Info", "License Info", and "Associated Publication".

**Basic Info**

Language: Stata  
Compute Capsule DOI: <https://doi.org/10.24433/CO.F152260c-bebb-4157-a640-44579452b4e4.v5>

**License Info**

Software License: MIT license  
Data License: No Rights Reserved (CC0)

**Associated Publication**

DOI: <https://doi.org/10.1017/bpp.2018.25>  
Title: The contact hypothesis re-evaluated  
Publication Date: July 2018  
Journal/Conference: Behavioural Public Policy  
Funded by: National Science Foundation  
Grant Number: 1322356  
Citation: PALUCK, ELIZABETH LEVY, SETH A. GREEN, DONALD P. GREEN. "The contact hypothesis re-evaluated." Behavioural Public Policy (2018): 1-30

# Reference Slide 2: Embedding on webpages & within articles

- You can also embed your published capsule in your article's HTML page or on your personal webpage, a la <https://ieeexplore.ieee.org/document/8410389/algorithms#algorithms>:

[//ieeexplore.ieee.org/document/8410389/algorithms#algorithms](https://ieeexplore.ieee.org/document/8410389/algorithms#algorithms):

explore.ieee.org/document/8410389 67% ... ☆ 🔍 See

Keywords

Metrics

Code & Datasets

Code

Dataset

This article contains code hosted on IEEE's partner, Code Ocean, a cloud-based computational reproducibility platform that enables users to run, modify, and download code from IEEE Xplore articles. A Code Ocean user account is required to run and modify code within the widget below.

**Code:** On Writing Reproducible and Interactive Papers Python

The screenshot shows the Code Ocean interface. At the top, it says 'v1 > On Writing Reproducible and Interactive... (Mandar Chitre)'. Below this is a menu bar with 'Capsule', 'File', 'Edit', 'View', 'Tabs', 'Settings', and 'Help'. The main area is divided into three sections: 'Files', 'Commands', and 'Tabs'. The 'Files' section shows 'README.md' and 'run.sh'. The 'Commands' section shows 'Editorial'. The 'Tabs' section shows 'On Writing Reproducible and Interactive Papers' and 'Mandar Chitre IEEE Journal of Oceanic Engineering'. On the right side, there is a 'Run (run.sh)' button and a 'Reproducibility' section showing 'Run 5395314' by Seth Green, 3 months ago, with files 'output' (27.61 KB), 'editorial.pdf' (123.91 KB), and 'editorial.tex' (27.05 KB). At the bottom right, there is a 'Mandar Chitre's publishe...' section with the date 'June 13, 2018' and a 'Verified' badge.