



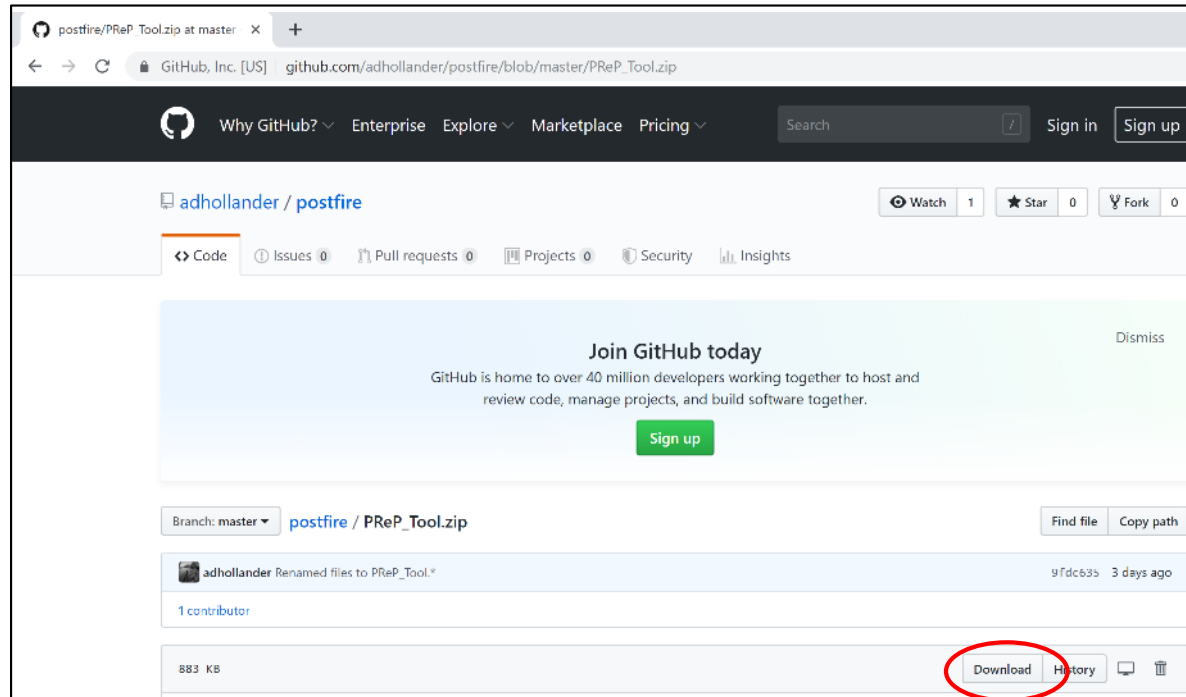
Post-fire Restoration Prioritization Tool for Chaparral Shrublands

Instructions for setting up and running the tool
in Jupyter Notebooks

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University of California, Davis

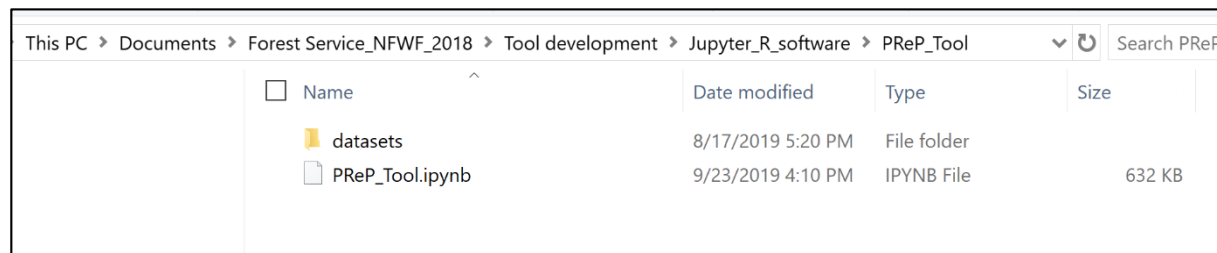
Step 1. To run the Post-fire Restoration Prioritization (PReP) Tool download the zipped file from GitHub that includes the Jupyter notebook file (.ipynb). This zipped file includes example datasets for the Copper fire:

https://github.com/adhollander/postfire/blob/master/PReP_Tool.zip



Once unzipped, the directory will contain 2 items:

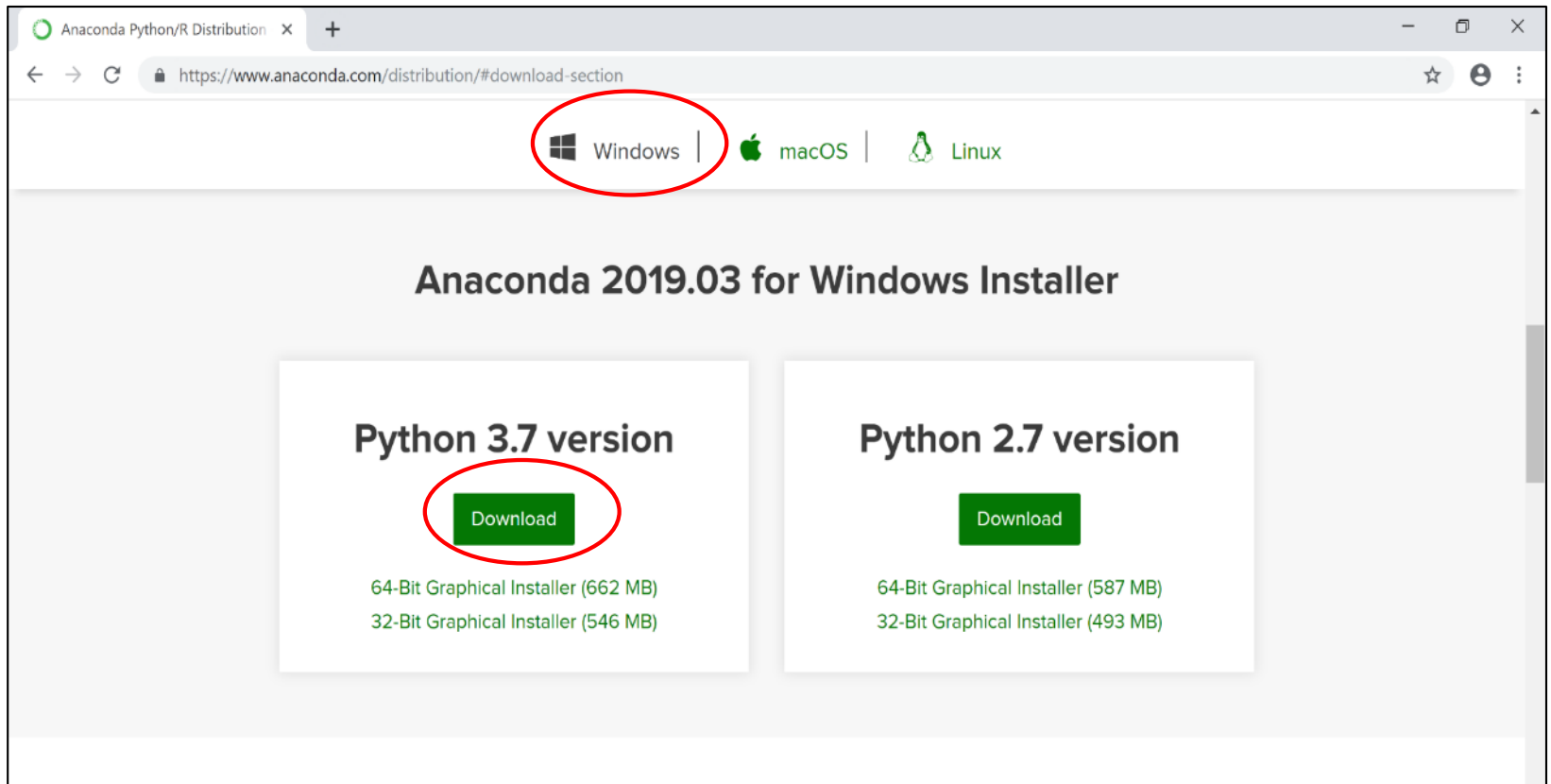
- /Datasets with 6 tif files for the Copper fire
- The PReP_Tool.ipynb file to run the Jupyter notebook



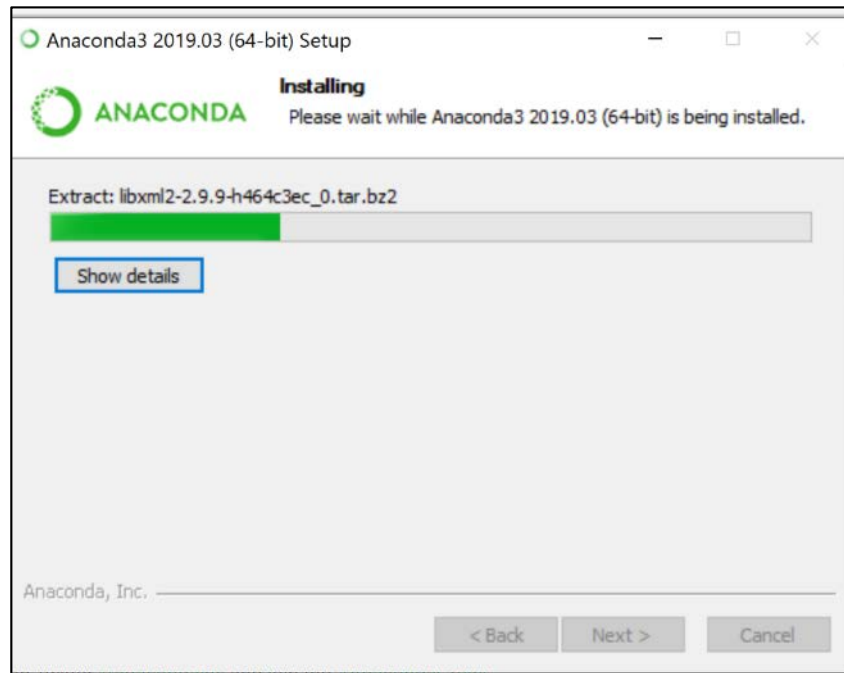
Step 2. To open up the Jupyter notebook file, it is necessary to download and install the Anaconda program from:

<https://www.anaconda.com/distribution/#download-section>

(note: select either the Windows or Mac version)



Step 3. Once Anaconda has downloaded, double click on the application to install it, using the default parameters

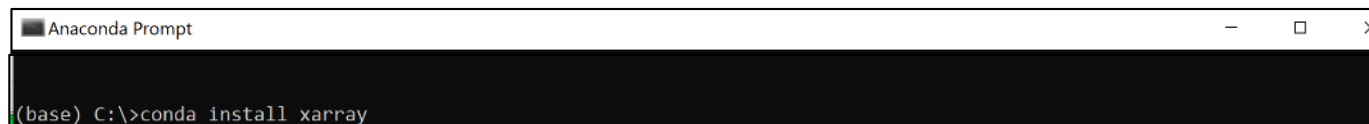


Step 4. Once Anaconda has downloaded, use the Start menu to open the 'Anaconda Prompt' and install the following Python libraries:

- xarray
- lpywidgets
- pyproj
- Gdal
- rasterio

Do this by typing:

C\> conda install **xarray**

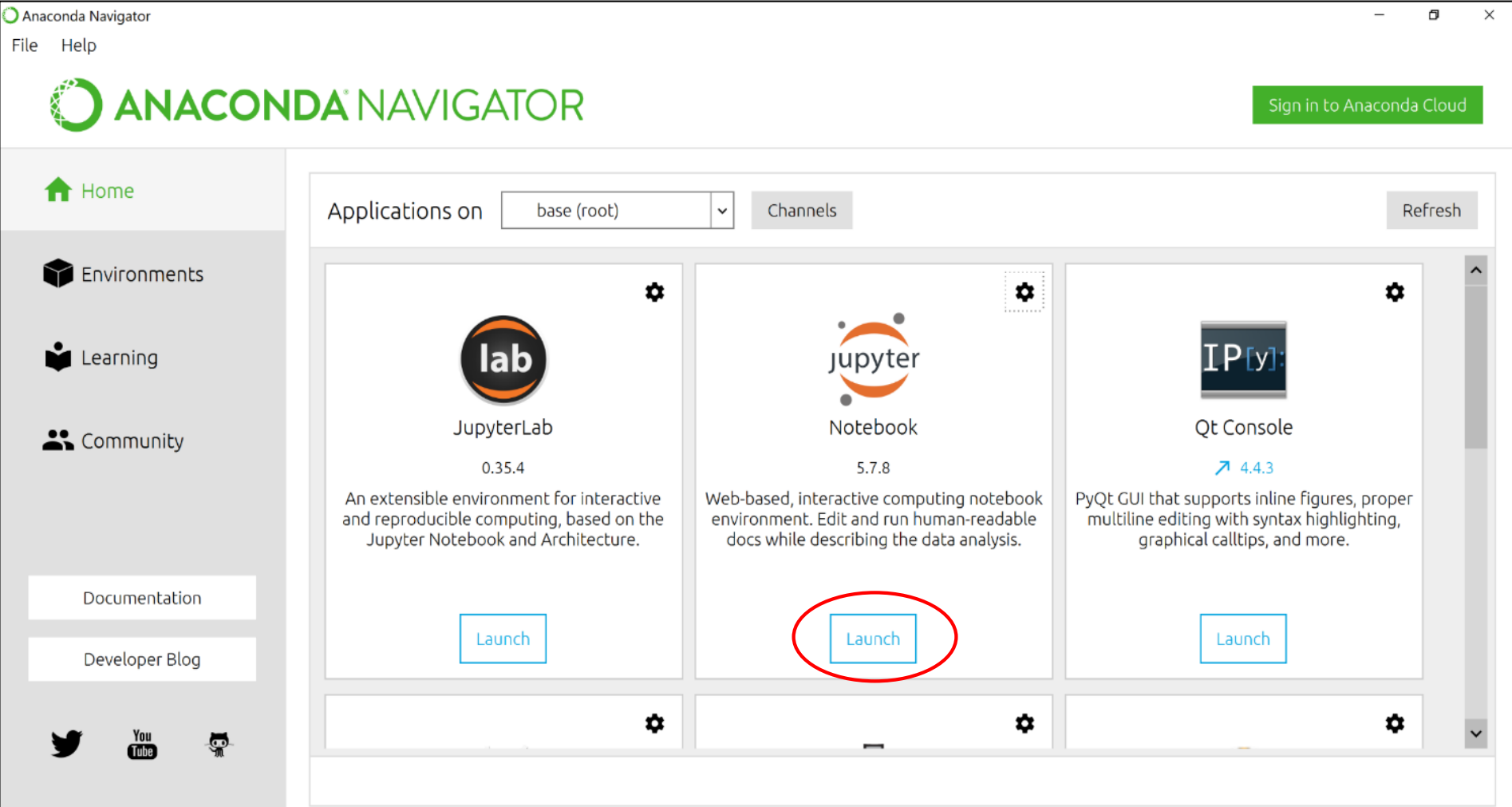
A screenshot of the Anaconda Prompt window. The title bar at the top says "Anaconda Prompt" and has standard window control buttons (minimize, maximize, close). The main area of the window is black with white text. It shows the command prompt "(base) C:\>" followed by the command "conda install xarray".

```
(base) C:\>conda install xarray
```

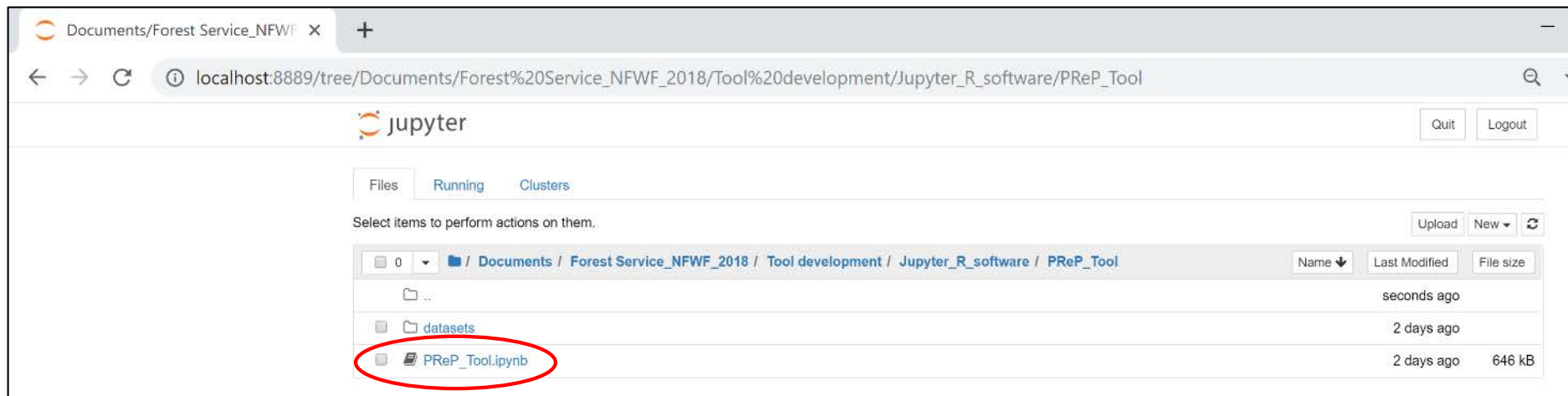
- Modify the word in bold for each of the other libraries
- Once completed for each library, exit this window
- Additional directions for installing these packages in Anaconda are available at:

<https://docs.conda.io/projects/conda/en/latest/user-guide/tasks/manage-pkgs.html>

Step 5. From the Windows menu, open 'Anaconda Navigator' and click 'Launch' on Jupyter notebook tile




Step 5. To run the Jupyter notebook (ipynb) file, click on 'Documents' and path to the directory where the file was installed, and select the ipnb file (using single mouse clicks)



Step 6. This will launch the interface for the tool.

Rationale for the decision rules and scoring system used can be found in the PReP Tool Technical Guide

ments/Forest%20Service_NFWF_2018/Tool%20development/Jupyter_R_software/PReP_Tool/PReP

jupyter PReP_Tool (autosaved)  Logout

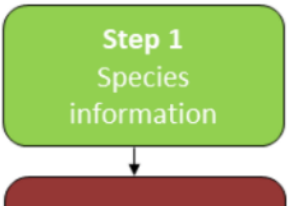
File Edit View Insert Cell Kernel Widgets Help Not Trusted Python 3

Save Add Open Recent Copy Paste Undo Redo Run Stop Restart Markdown

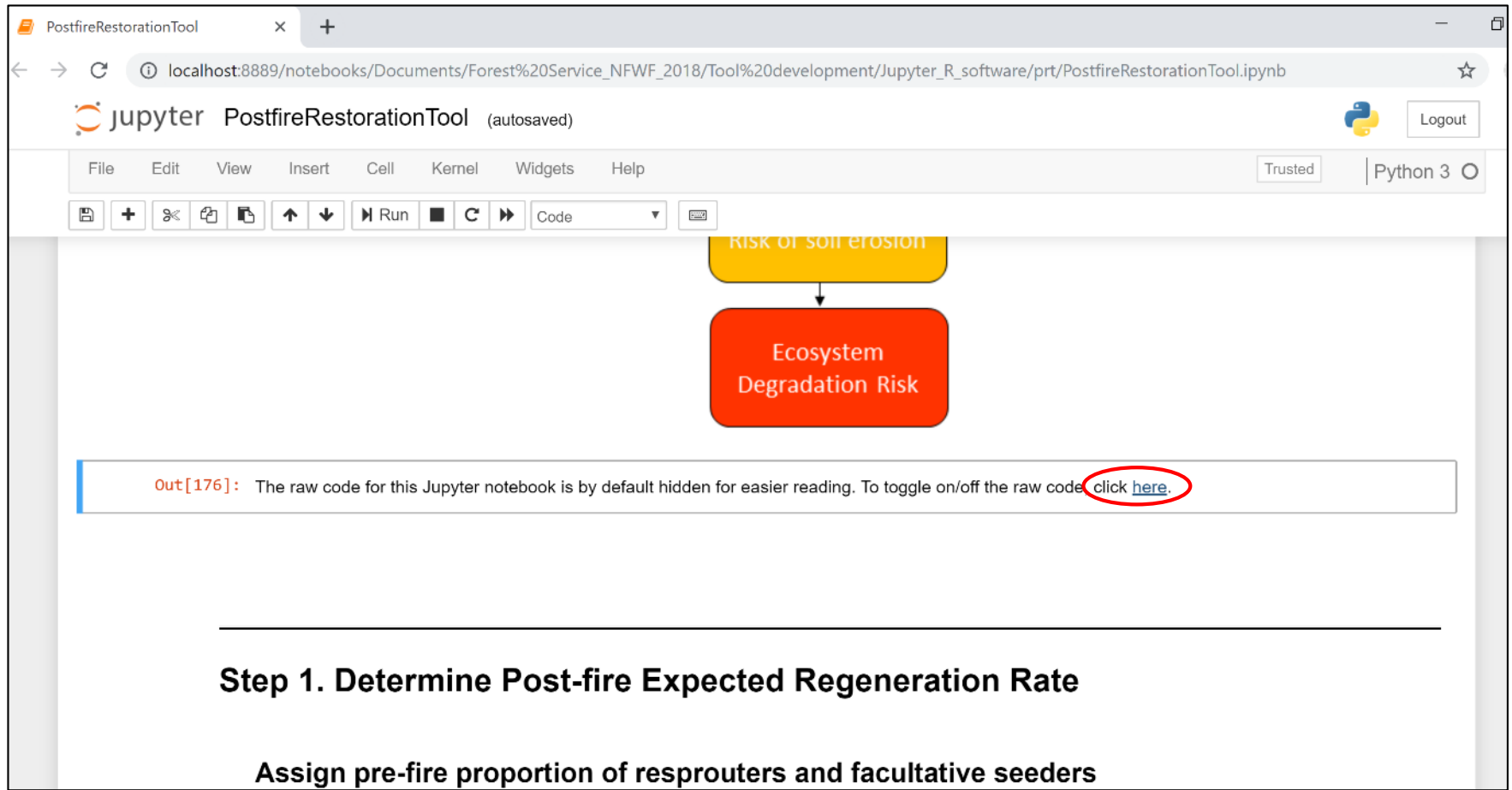
Post-fire Restoration Prioritization (PReP) Tool for Chaparral Shrublands

- The Post-Fire Restoration Prioritization (PReP) Tool provides a transparent and repeatable framework for resource managers to guide and prioritize post-fire restoration efforts in shrublands (see Technical Guide). The tool consists of five main steps (see schematic) to determine the regeneration capacity of the landscape post-fire based on the relative proportion of seeding, resprouting, and facultative seeding species, and the risk of post-fire soil erosion.
- Before running the tool it is necessary to have the data associated with the tool in the directory labeled 'datasets' below the location of the .ipynb file for the tool (see Technical Guide).
- To view the tool with the programming code, click on the link on the line below the figure.

Step 1
Species
information



Step 7. To toggle between formats of seeing the code and hiding the code, click the button where indicated below



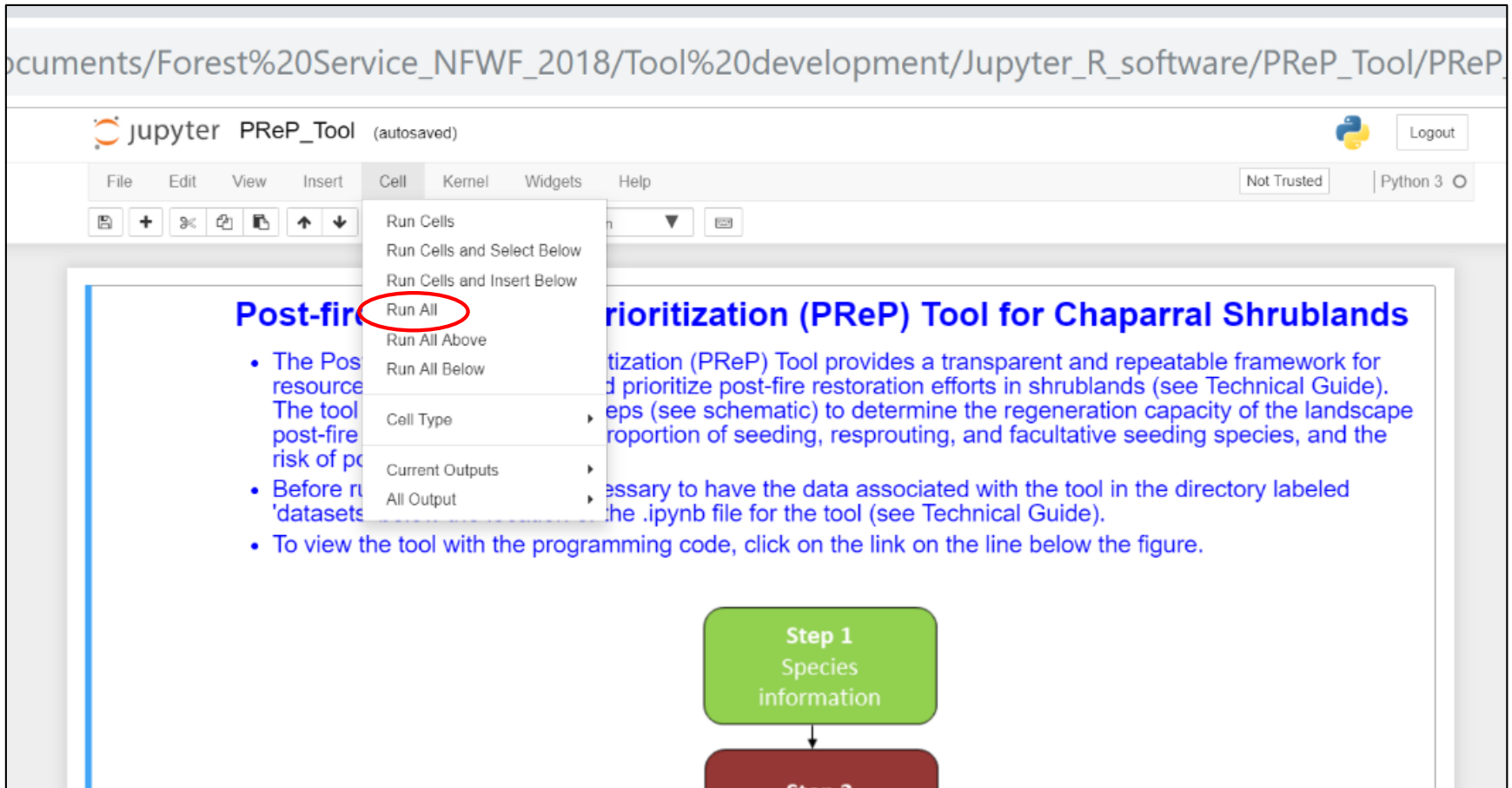
The screenshot shows a Jupyter Notebook titled "PostfireRestorationTool" running on a local host. The interface includes a menu bar (File, Edit, View, Insert, Cell, Kernel, Widgets, Help) and a toolbar with icons for saving, adding cells, and running code. The main content area displays a flowchart with two boxes: a yellow box labeled "RISK OF SOIL EROSION" and a red box labeled "Ecosystem Degradation Risk", connected by a downward arrow. Below the flowchart is a code cell with the output "Out[176]: The raw code for this Jupyter notebook is by default hidden for easier reading. To toggle on/off the raw code [click here.](#)". The text "click here." is circled in red. Below the code cell, there is a horizontal line followed by the text "Step 1. Determine Post-fire Expected Regeneration Rate" and "Assign pre-fire proportion of resprouters and facultative seeders".

Step 1. Determine Post-fire Expected Regeneration Rate

Assign pre-fire proportion of resprouters and facultative seeders

Step 8. Running the tool

To run the tool once open, you need to go to 'Cell' on the top menu bar and 'Run All'.



The screenshot displays the JupyterLab interface for the 'PReP_Tool'. The top menu bar includes 'File', 'Edit', 'View', 'Insert', 'Cell', 'Kernel', 'Widgets', and 'Help'. The 'Cell' menu is open, showing options: 'Run Cells', 'Run Cells and Select Below', 'Run Cells and Insert Below', 'Run All' (highlighted with a red circle), 'Run All Above', 'Run All Below', 'Cell Type', 'Current Outputs', and 'All Output'. The main content area shows a document titled 'Post-fire Prioritization (PReP) Tool for Chaparral Shrublands'. The document text describes the tool's purpose and usage, mentioning a 'Technical Guide' and a 'dataset'. A flowchart at the bottom shows 'Step 1 Species information' leading to 'Step 2'.

documents/Forest%20Service_NFWF_2018/Tool%20development/Jupyter_R_software/PReP_Tool/PReP

jupyter PReP_Tool (autosaved)

File Edit View Insert Cell Kernel Widgets Help

Run Cells
Run Cells and Select Below
Run Cells and Insert Below
Run All
Run All Above
Run All Below
Cell Type
Current Outputs
All Output

Post-fire Prioritization (PReP) Tool for Chaparral Shrublands

Post-fire Prioritization (PReP) Tool provides a transparent and repeatable framework for and prioritize post-fire restoration efforts in shrublands (see Technical Guide). Steps (see schematic) to determine the regeneration capacity of the landscape proportion of seeding, resprouting, and facultative seeding species, and the necessary to have the data associated with the tool in the directory labeled the .ipynb file for the tool (see Technical Guide).

- The Post resource The tool post-fire risk of po
- Before ru 'datasets
- To view the tool with the programming code, click on the link on the line below the figure.

Step 1
Species
information

Step 2

Step 9. Changing default options in tool

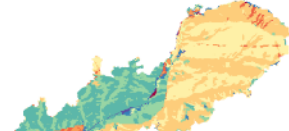
There are 5 places in the tool where the user has to enter data or change the default options (which relate to the Copper fire), if these values are changes from the default values, then the 'Update tool' button needs to be clicked to propagate these changes in the rest of the tool and output maps that follow, e.g., to select running the tool using WHR vegetation only, or updating the non-native species threshold

Assign pre-fire proportion of resprouters and facultative seeders

Landscape units ☐ Use WHR veg types only
☒ Use WHR veg types x aspect x topography

Update tool

Landscape units



- Other: north-facing slopes, valleys, depressions
- Other: south-facing slopes, summits, ridges
- Coastal scrub: north-facing slopes, valleys, depressions
- Coastal scrub: south-facing slopes, summits, ridges
- Valley foothill riparian: north-facing slopes, valleys, depressions
- Valley foothill riparian: south-facing slopes, summits, ridges

Step 4. Modify Regeneration Rate Based on Non-Native Grasses

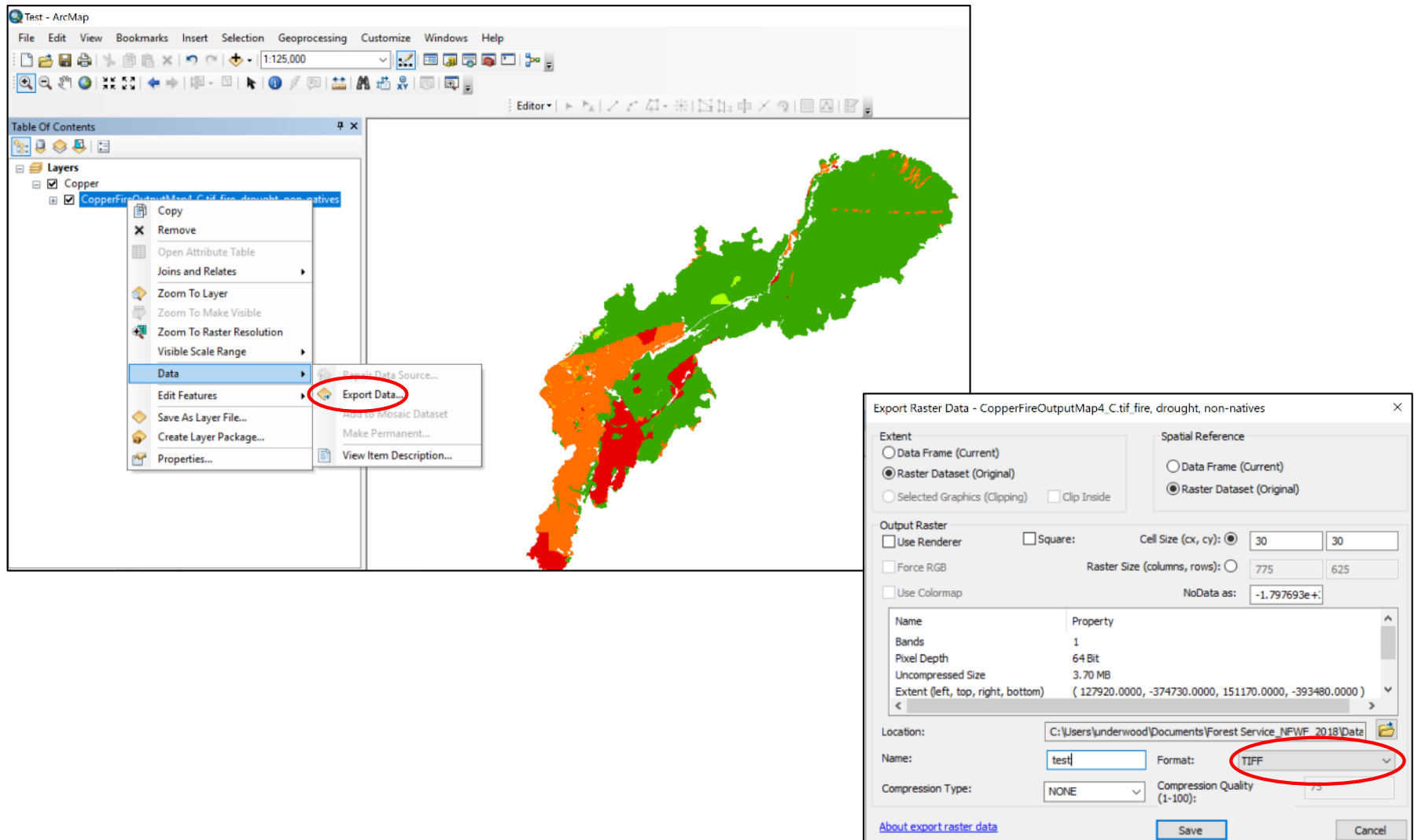
Specify abundance on non-native grasses

Enter % threshold of herbaceousou...

Update tool

Tips on viewing downloaded output maps

The five Output Maps from the PReP Tool can be downloaded in Geotiff format, which can then be opened in Arc or other GIS software. The easiest way to display the pixel values is to export this data as a new tiff (or ENVI) file format, and use this in Arc.



Displaying pixel values in Arc can be done using the 'lay properties' and selecting 'unique values'

