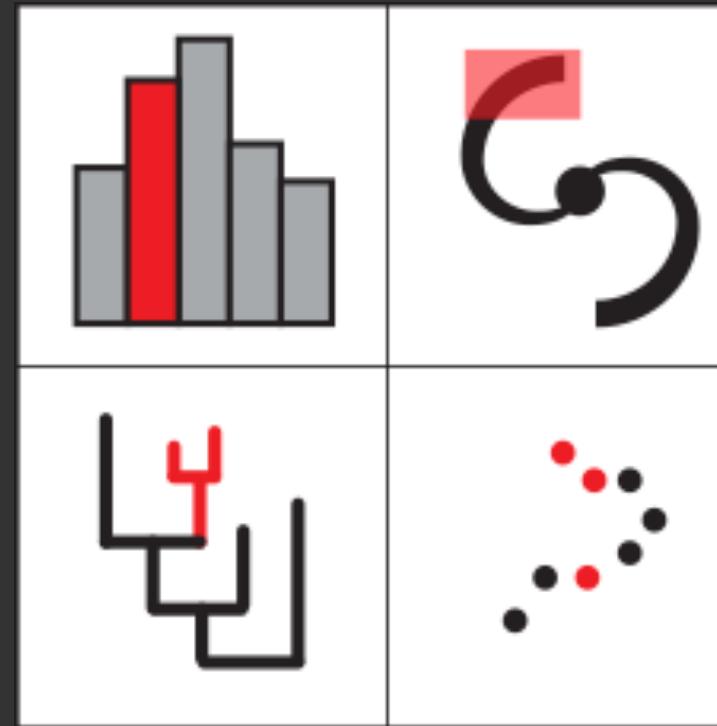


Multi-dimensional linked-data exploration with glue



Tom Robitaille

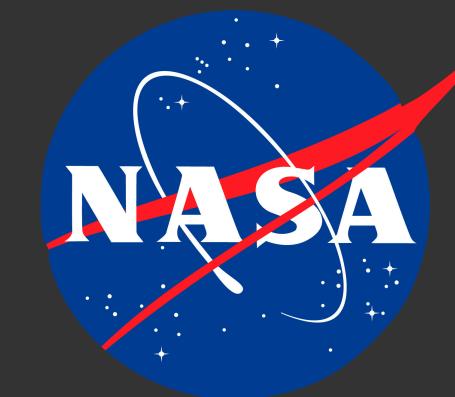
Scientific Software developer @ Aperio Software



@astrofrog



*Alyssa Goodman (PI), Chris Beaumont, Maarten Breddels,
Catherine Zucker, Hope Chen, Michelle Borkin*



glue is a **multi-disciplinary**
Python package for
multi-dimensional and **linked**
data exploration

Data can be **highly-dimensional**

Need linked interactive visualizations

Data can be **heterogeneous**

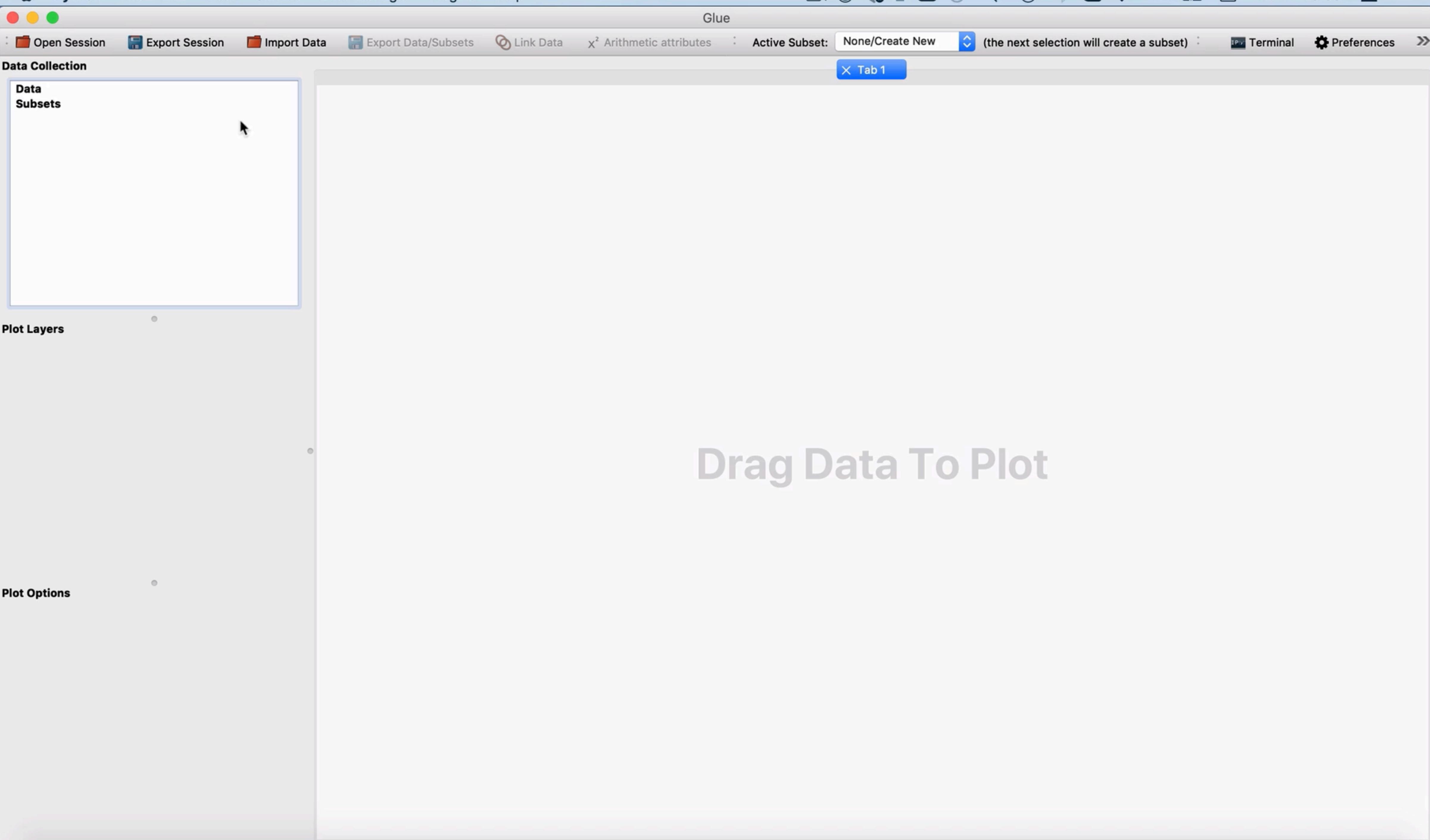
(multiple files, varying dimensionality, conventions, etc.)

Need linking of data

Often interested in a **subset** of the data

Need a way of constructing/combinining selections

Written in **Python**, and has both a
Qt and now a **Jupyter** user interface



Auto-linking of n-dimensional
datasets and on-the-fly **reprojection**

Glue

Open Session Export Session Import Data Export Data/Subsets Link Data x² Arithmetic attributes Active Subset: None/Create New (the next selection will create a subset) Terminal Preferences >

Data Collection

Data Subsets

Plot Layers

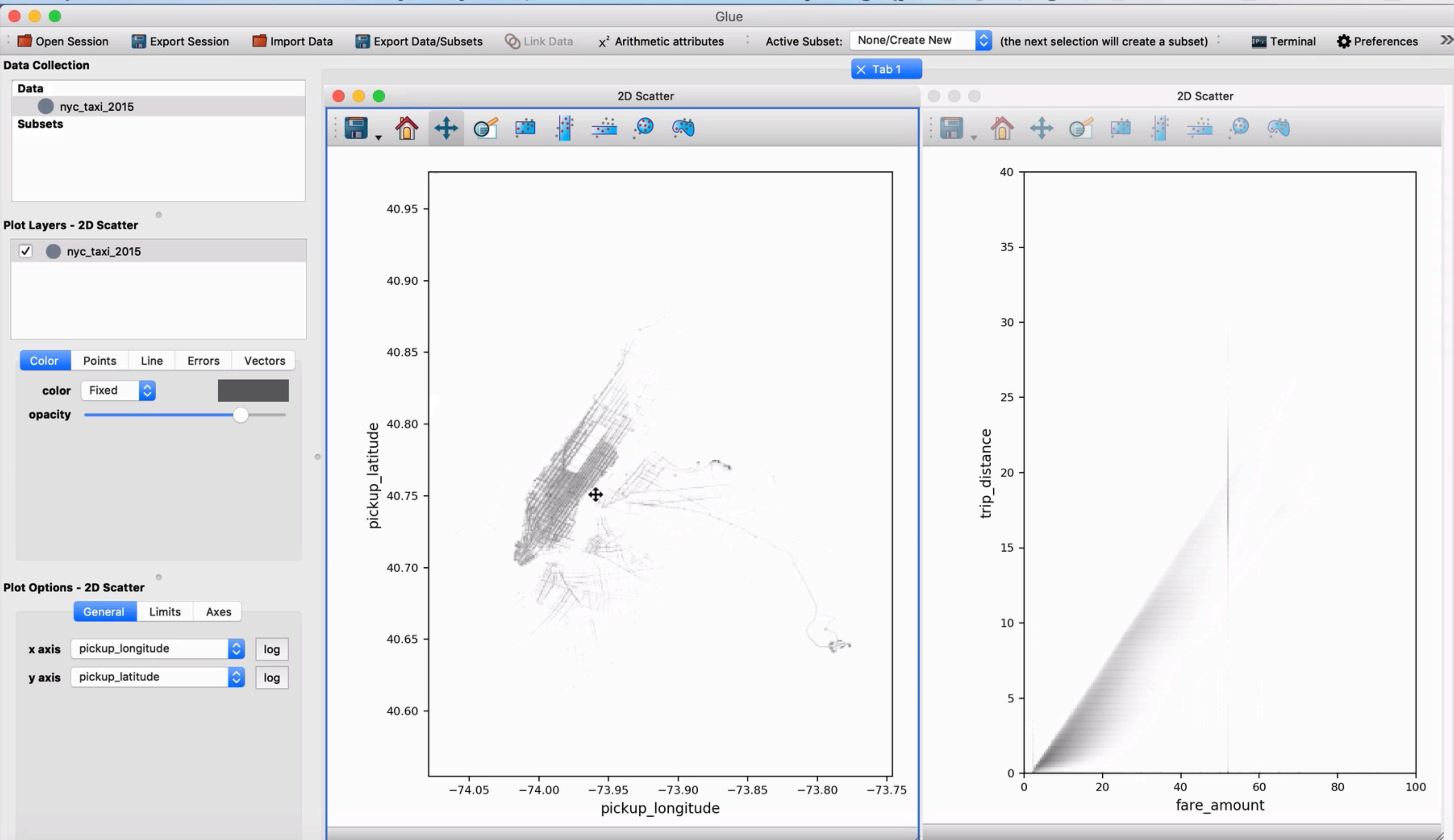
Plot Options

X Tab 1

Drag Data To Plot

Support for **large/remote/unstructured** datasets

[demo data with 146 million rows from <http://vaex.astro.rug.nl/latest/datasets.html>]



Highly customizable/extensible

```
from glue.config import data_factory
from glue.core import Data
from skimage.io import imread

def is_jpeg(filename, **kwargs):
    return filename.endswith('.jpeg')

@data_factory('JPEG image loader', is_jpeg)
def read_jpeg(filename):
    im = imread(filename)
    return Data(cube=im)
```

```
from glue.config import link_function

@link_function(info="Link from deg to rad",
               output_labels=['rad'])
def deg_to_rad(deg):
    return deg * 3.14159 / 180
```

Extensible with **plugin** packages

glue-geospatial

Support for geospatial file formats

<https://github.com/glue-viz/glue-geospatial>

glue-medical

Support for medical file formats (e.g. DICOM)

<http://github.com/glue-viz/glue-medical>

glue-wwt

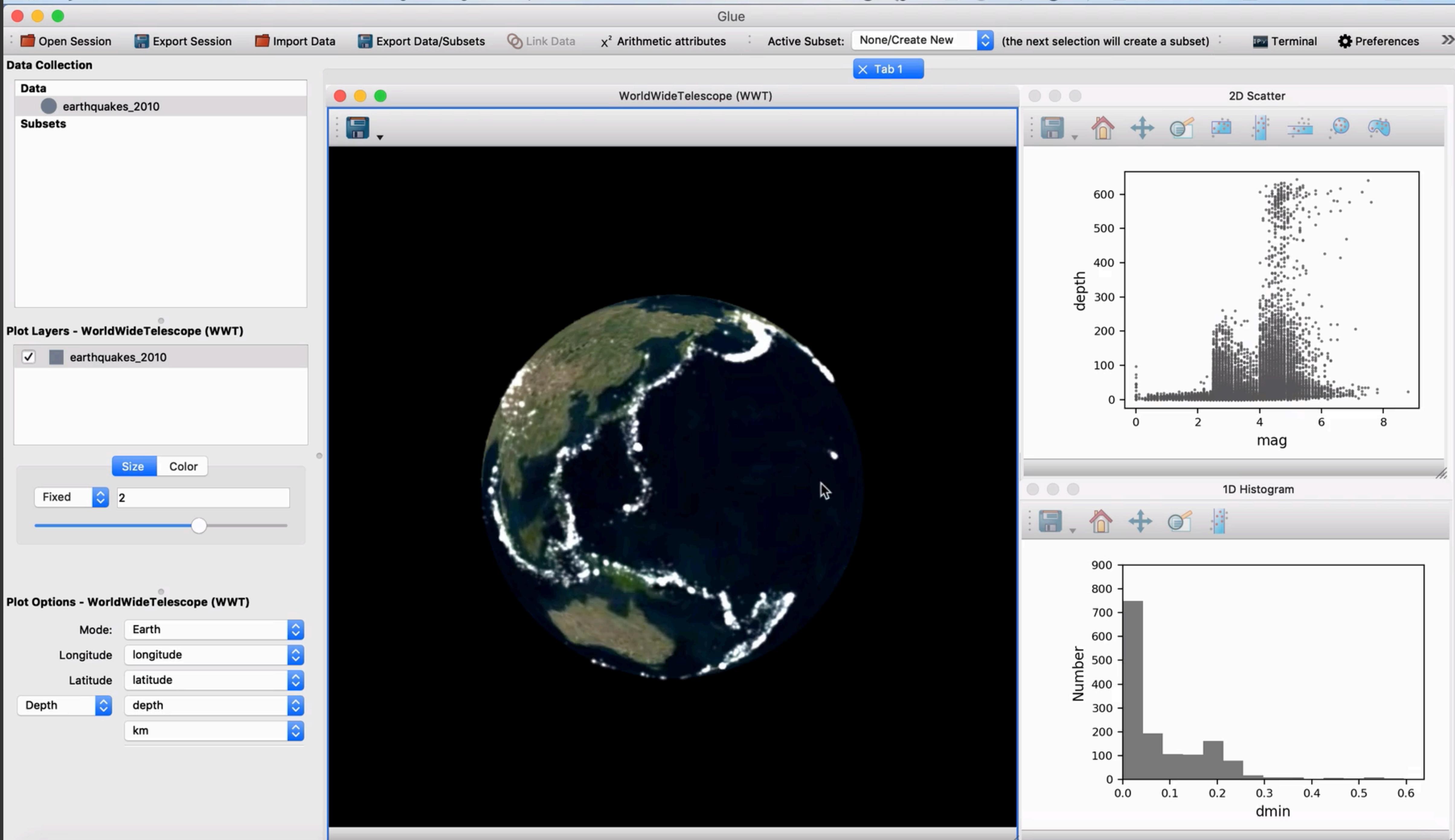
Embedding of WorldWideTelescope in glue

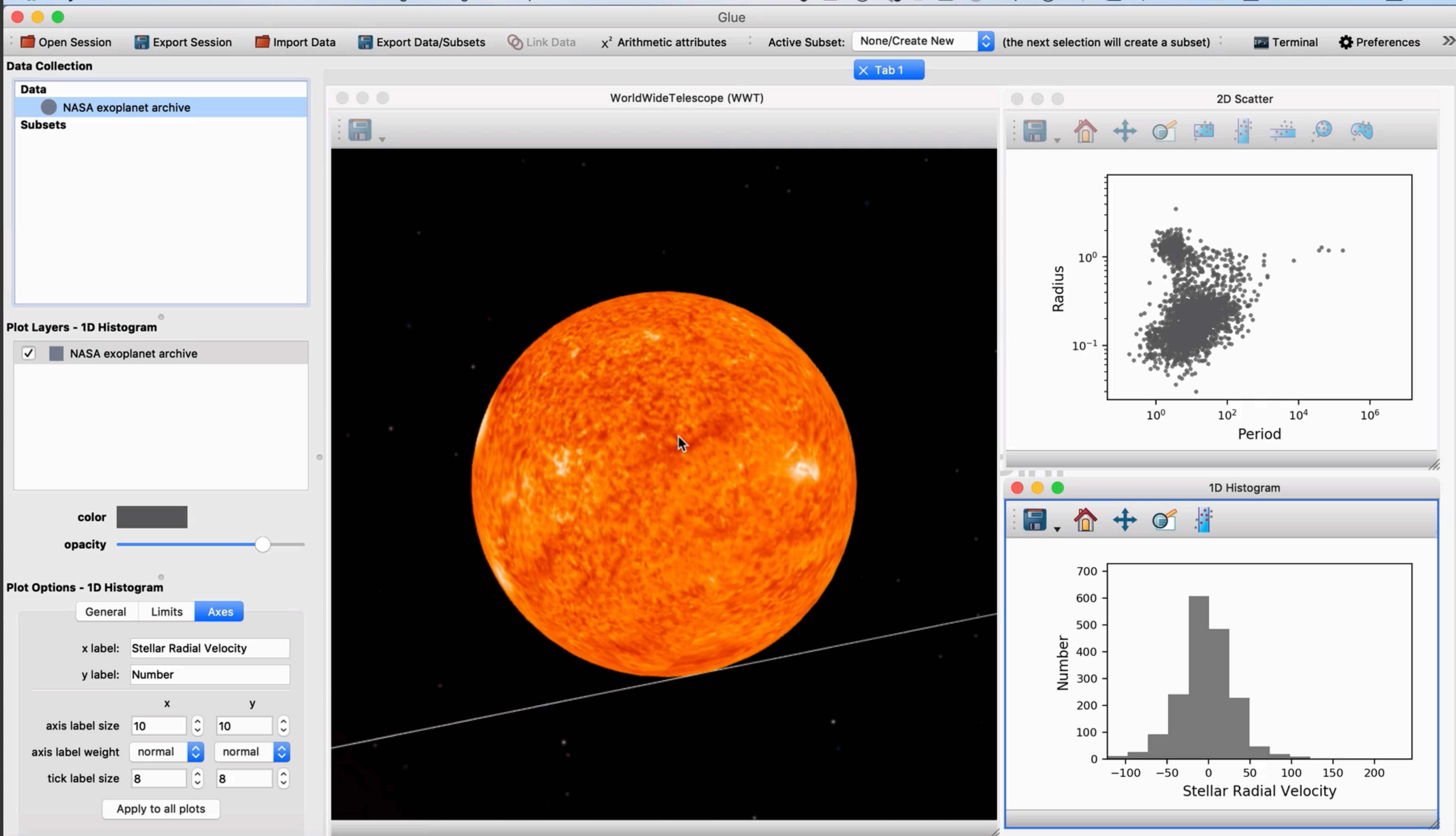
<http://github.com/glue-viz/glue-wwt>

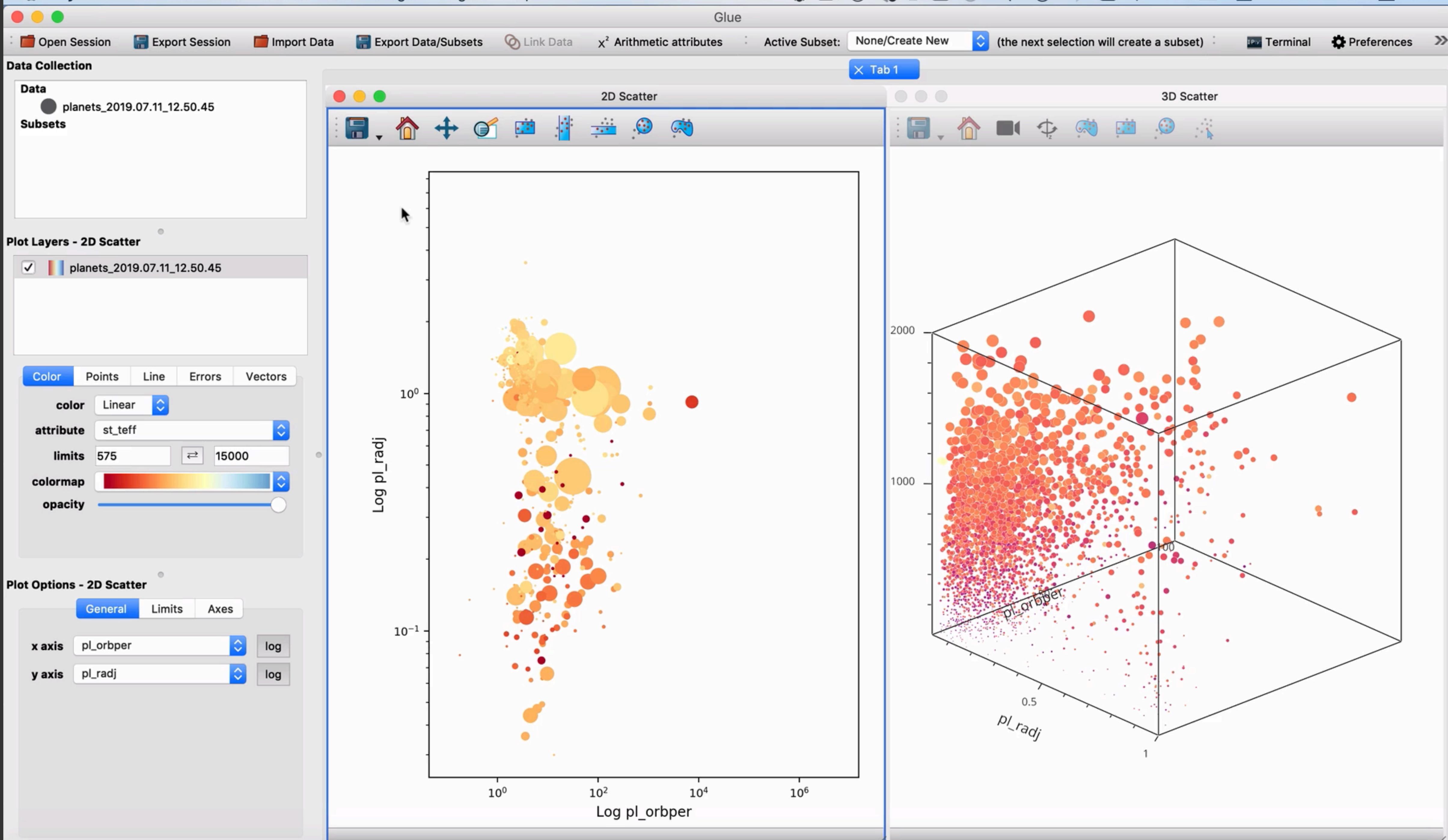
glue-plotly

Support for exporting plots from glue to plot.ly

<https://github.com/glue-viz/glue-plotly>







glue-plugin-template

An empty plugin package to help you get started!

<https://github.com/glue-viz/glue-plugin-template>

glue in Jupyter notebook and Lab

“*glupyter*”

Much of glue is front-end independent

Relies on other widget libraries, e.g. bqplot

Still at prototype phase



notebooks/Planes/ x Boston Planes x +

← → C https://hub.gke.mybinder.org/user/glue-viz-glue-jupyter-xlo31ap3/notebooks/notebooks/Planes/Boston%20Planes.ipynb

File Edit View Insert Cell Kernel Widgets Help Trusted Python 3

Snakes on a Plane (well, Planes in Python)

This notebook explores a CSV files that contains the position, speeds and other related information for planes in the Boston area over a period of 6 hours.

About the data

These data were collected by directly recording publicly available [Automatic dependent surveillance – broadcast \(ADS-B\)](#) transmissions from planes from a single location (hence the data should not be considered complete). The data can be found in <https://github.com/glue-viz/glue-example-data/tree/master/Planes/>.

For convenience we can use the `require_data` function to automatically download them here:

```
In [ ]: from glue_jupyter.data import require_data  
require_data('Planes/boston_planes_6h.csv')
```

Starting up the glue Jupyter application

Let's start up glue:

```
In [ ]: import glue_jupyter as gj  
app = gj.jglue()
```

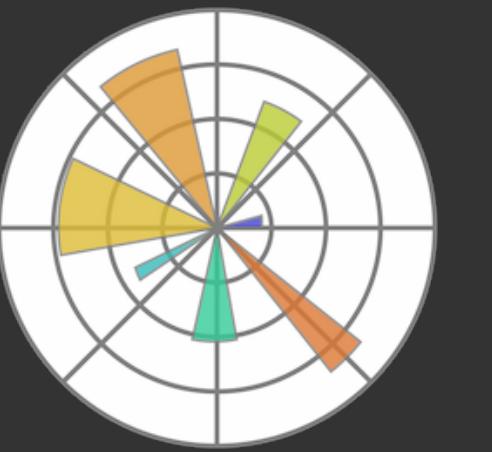
and load in the data:

Compatible with **Python 2.7 and 3.5+**

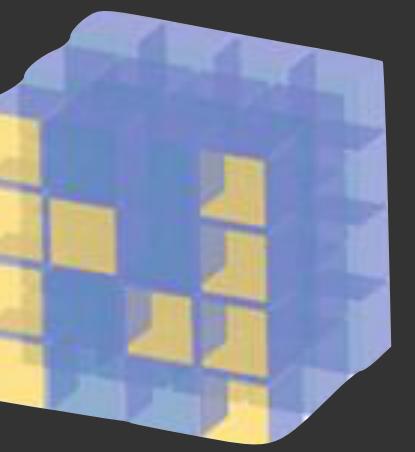
(0.15 is last major Python 2-compatible release)

Works on Mac/Linux/Windows

BSD Licensed



VisPy

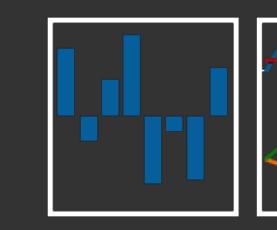
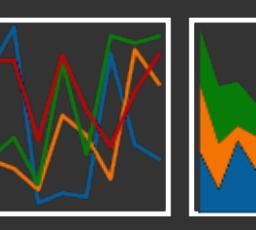


jupyter

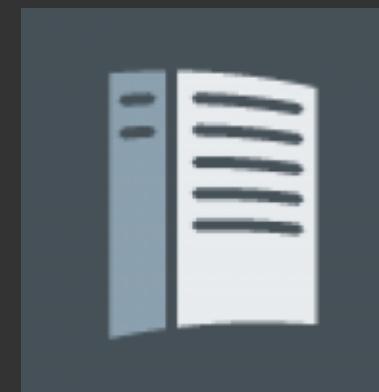


IP[y]:

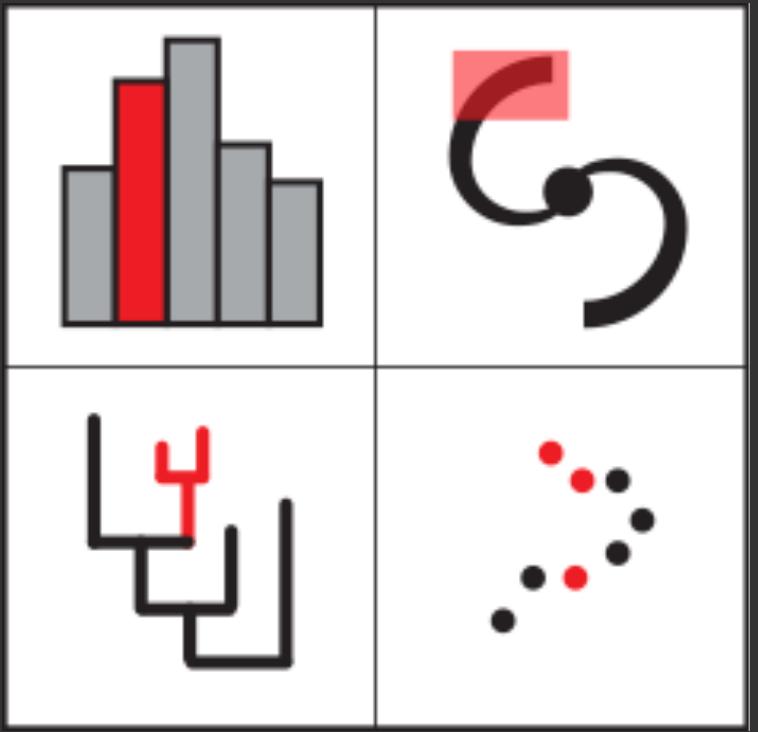


  
pandas

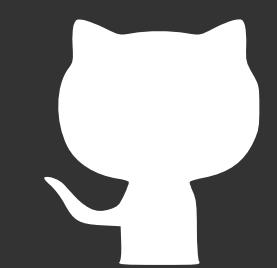

 pytest



and more!



<http://glueviz.org>



<https://github.com/glue-viz/glue>

<https://github.com/glue-viz/glue-jupyter>



@glueviz

Join mailing list and/or Slack! See <http://tinyurl.com/glue-help> for details