STScI | SPACE TELESCOPE SCIENCE INSTITUTE

EXPANDING THE FRONTIERS OF SPACE ASTRONOMY

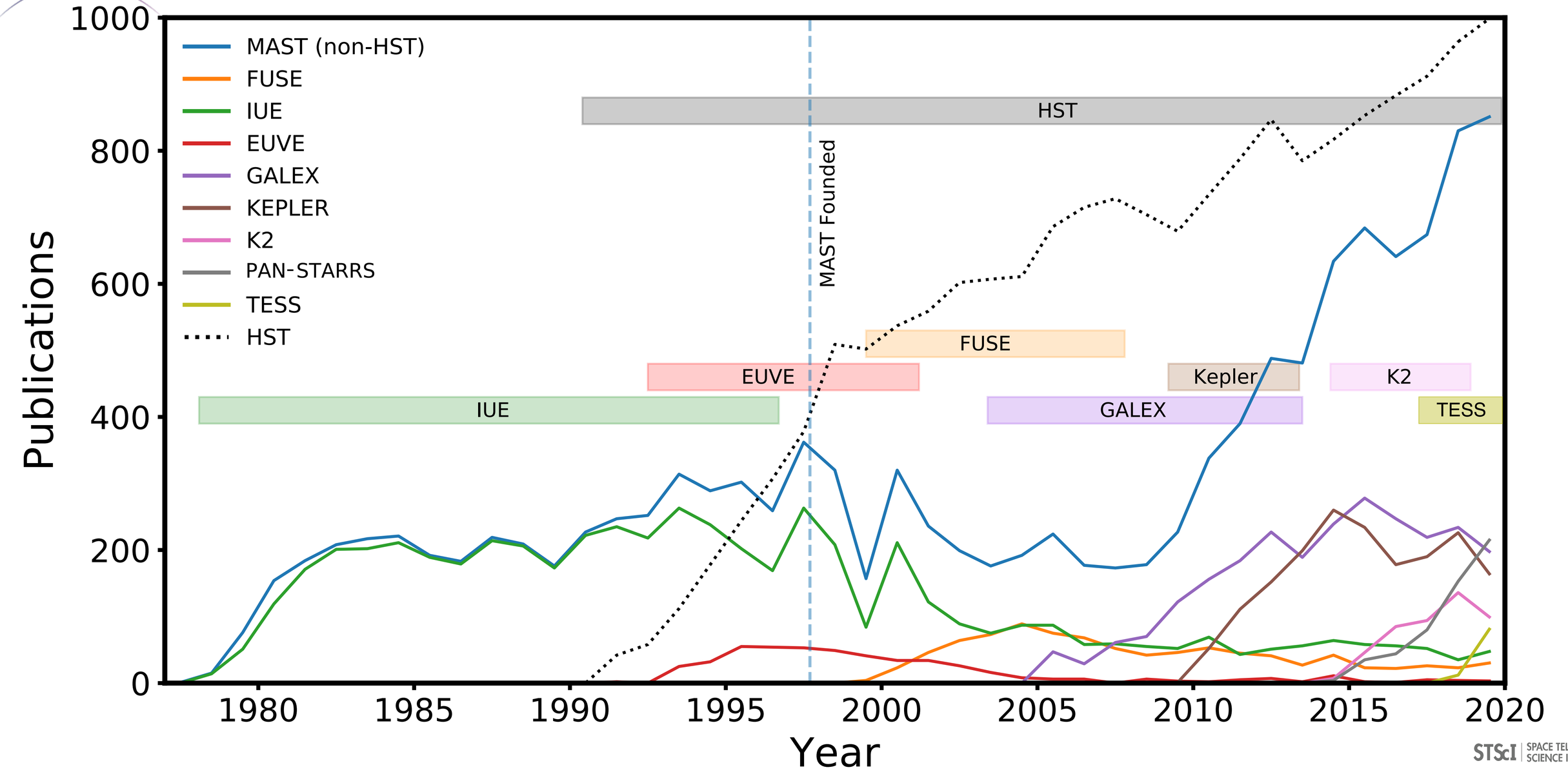
Big Data and Bigger Communities at MAST

Josh Peek

Principal Investigator,

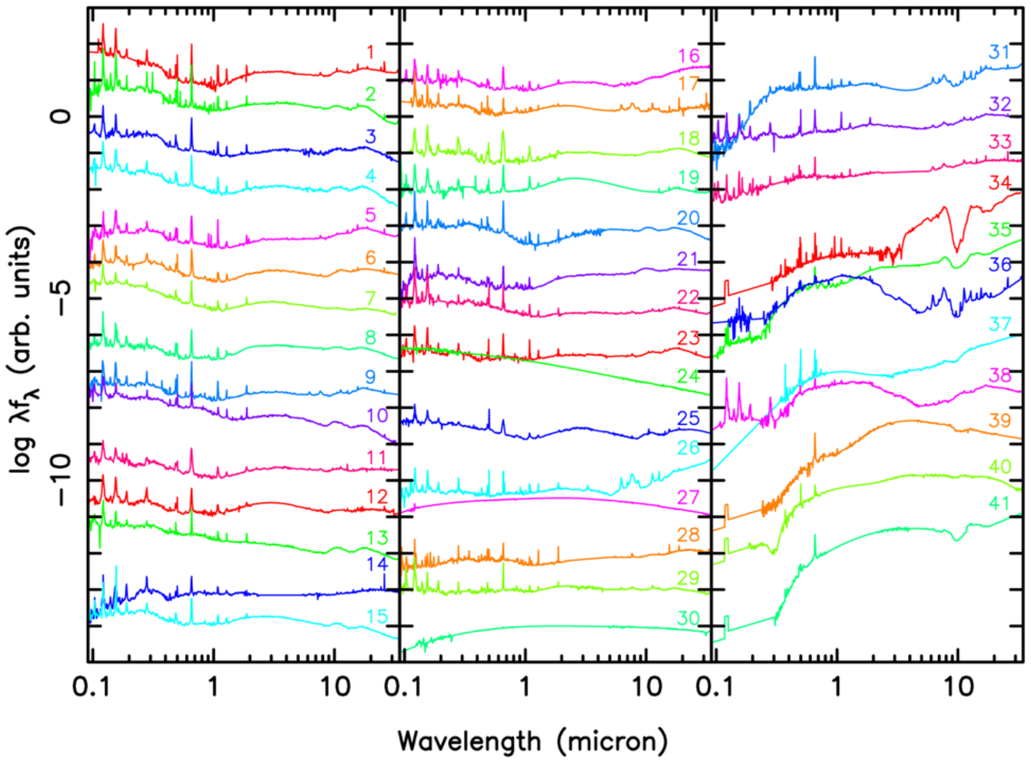
Mikulski Archive for Space Telescopes

The astronomical community is making amazing use of MAST



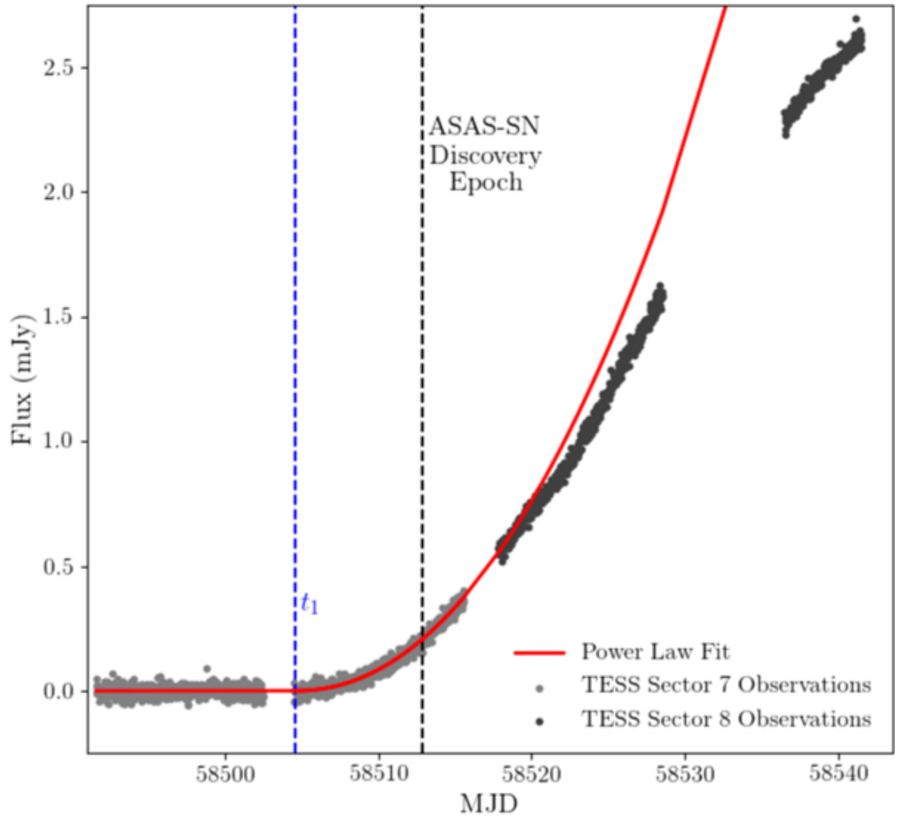
MAST provides data for a huge range of science

Comprehensive Spectral Energy Distribution Templates of Active Galactic Nuclei



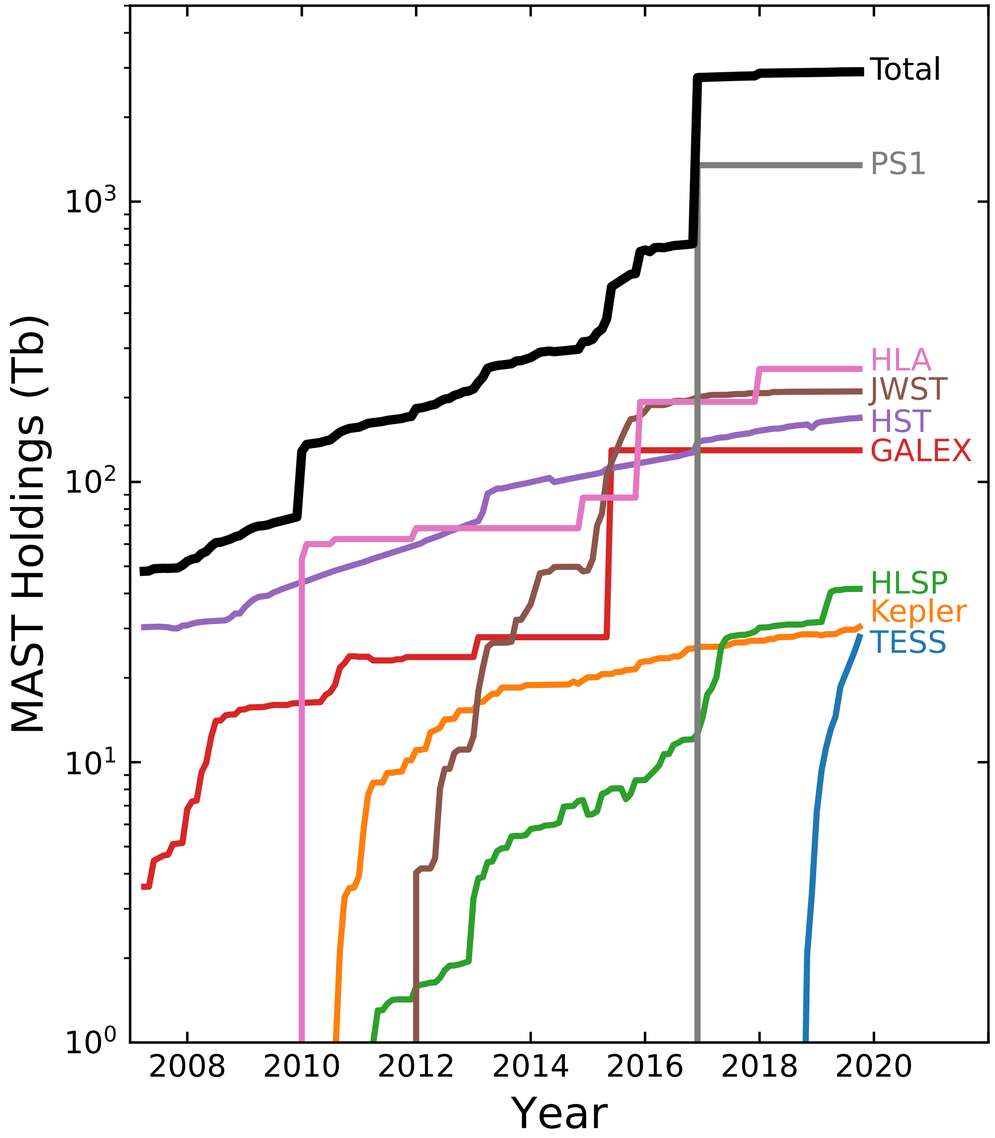
Brown+ (2019)

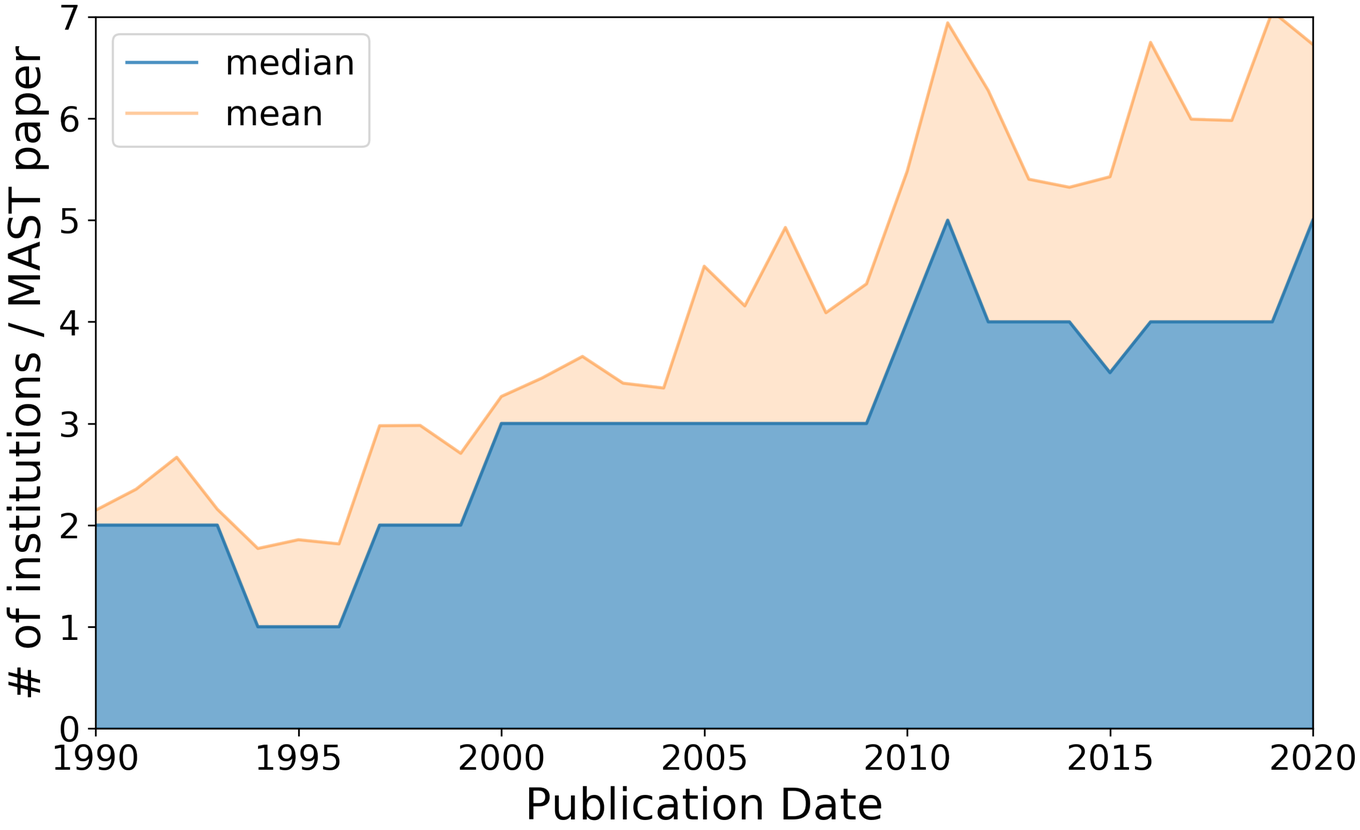
Early Evolution of a Tidal Disruption Event Measured by TESS



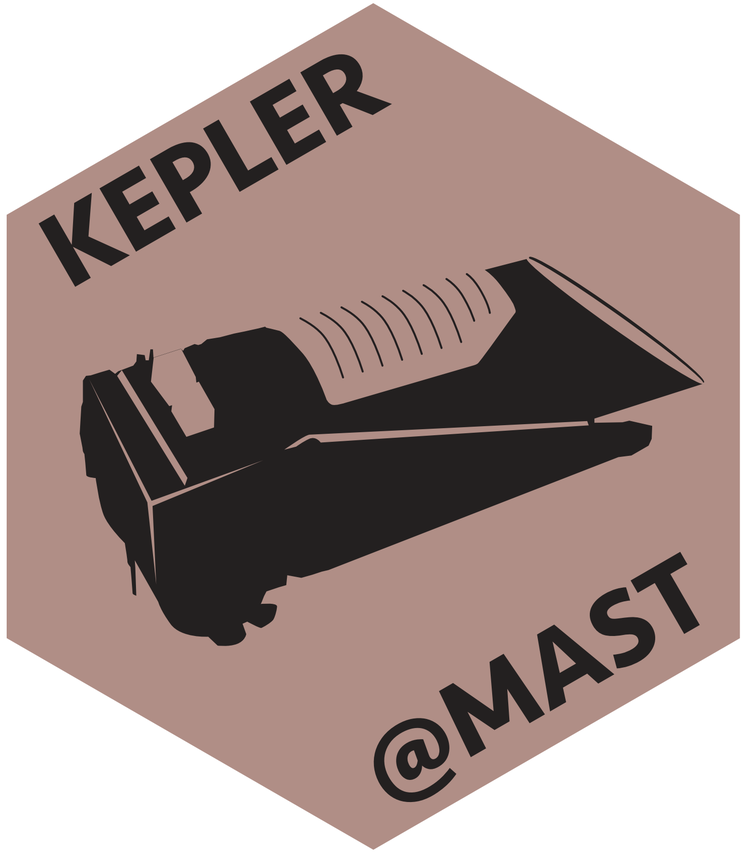
Holoein+ (2019)

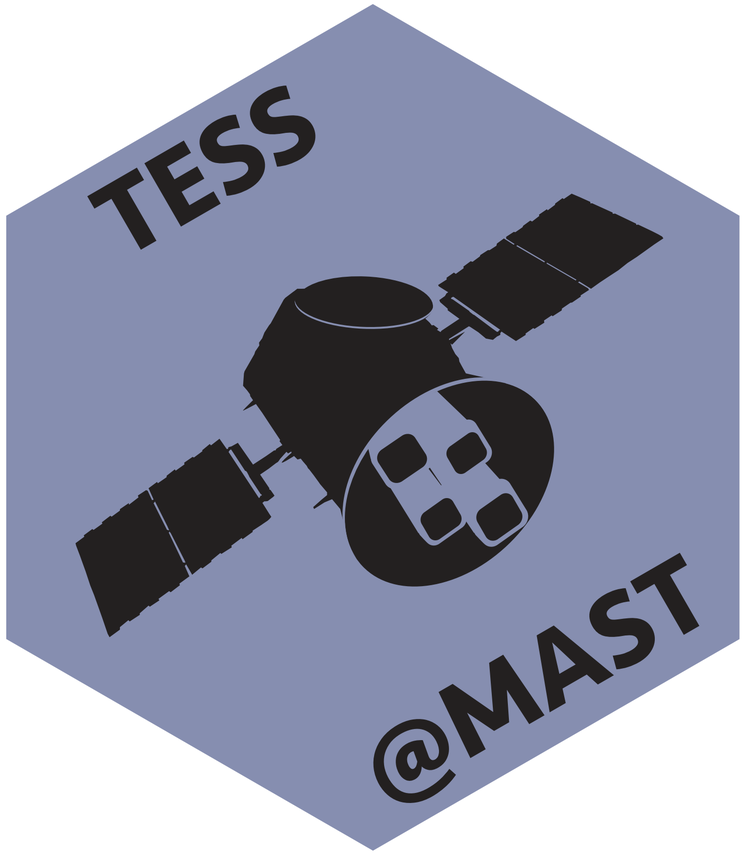
The data are getting big & the communities are getting bigger

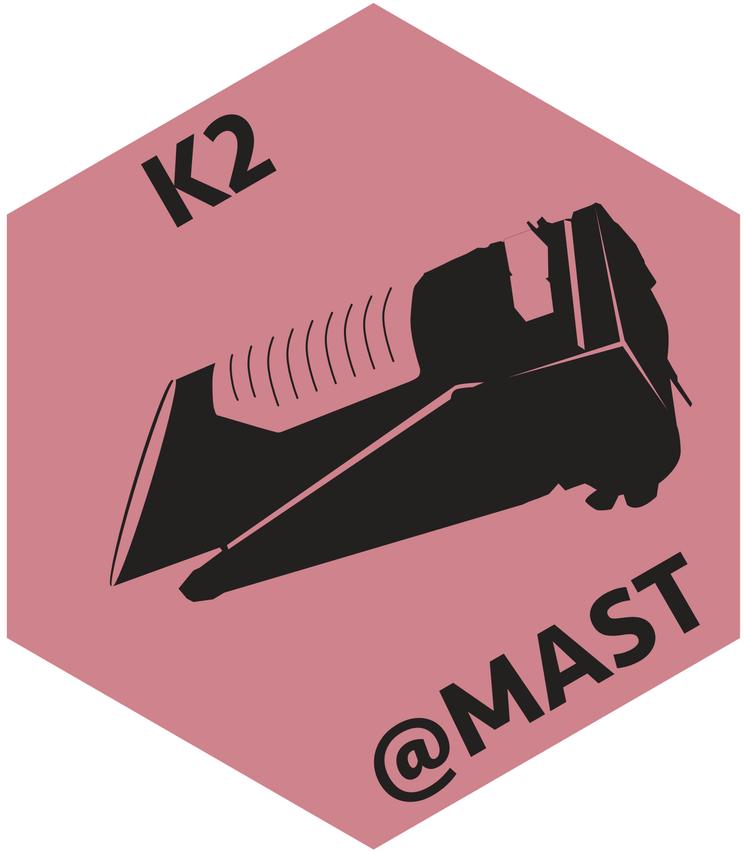




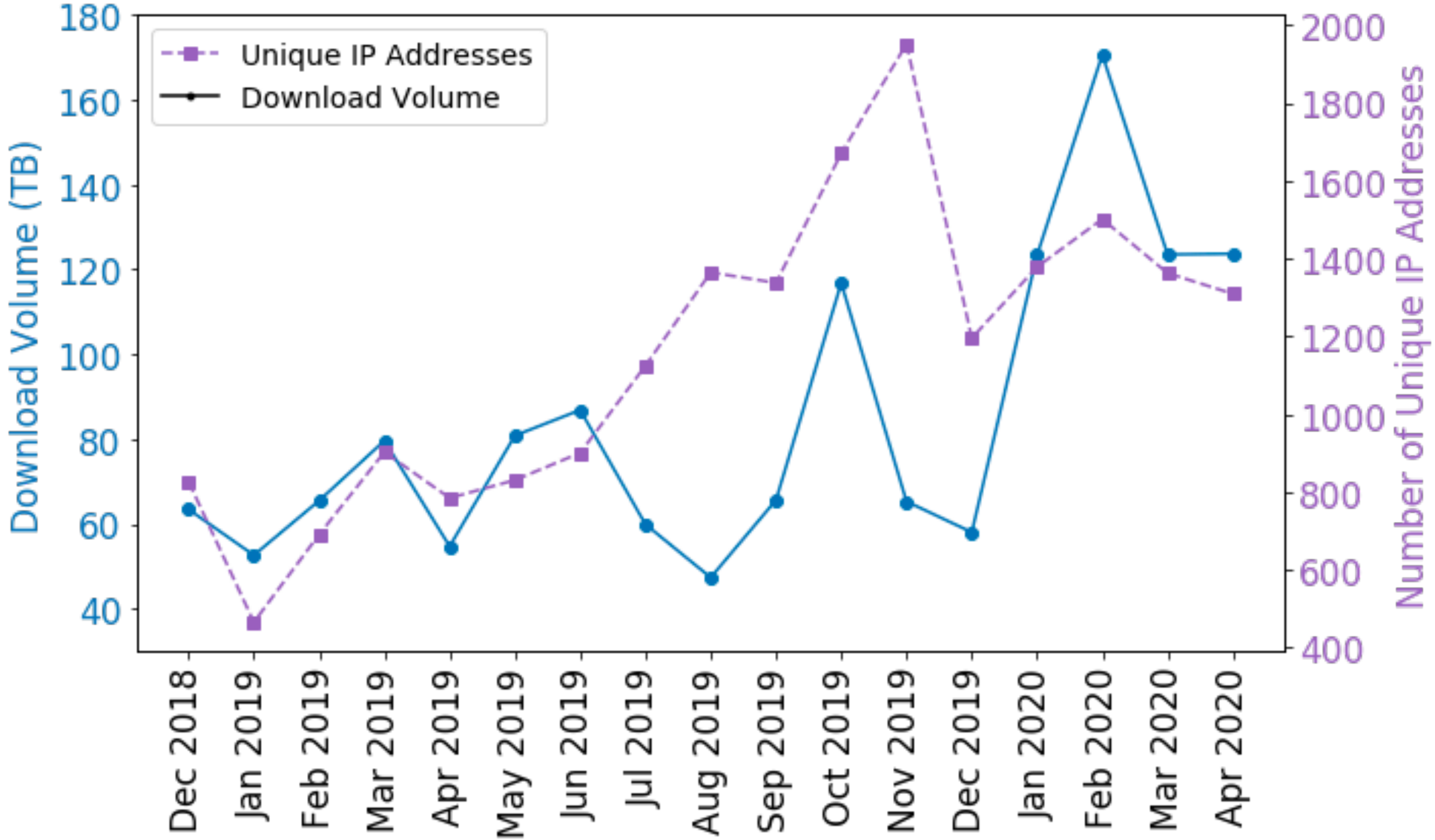
TESS extends MAST's exoplanet and time series data







TESS has a big community with growing data demand



TIME SERIES INTEGRATED KNOWLEDGE ENGINE

Coming this summer!

T.I.K.E.

A PUBLIC, CLOUD-BASED JUPYTER LAB ENVIRONMENT

PRE-INSTALLED SOFTWARE FOR TIME SERIES DATA

AN UPGRADED SUITE OF TESS AND KEPLER NOTEBOOKS

TESS AND KEPLER DATA

PARALLEL COMPUTING WITH DASK

SHARED DIRECTORIES FOR COLLABORATION

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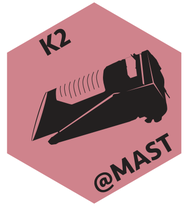
File Edit View Run Kernel Tabs Settings Help

/

Name	Last Modified
code	2 minutes ago
images	11 days ago
cloud-computing....	22 days ago
data-access-skills....	17 days ago
Introduction.md	2 minutes ago
learn-data-skills.md	15 days ago
news.txt	17 days ago
Plot-TESS-Metrics...	2 minutes ago
quick-visualization...	23 days ago
README.md	17 days ago
science-examples....	11 days ago
science-examples....	15 days ago
tess-icon.png	2 months ago
tesscut-in-the-clo...	2 months ago
Untitled.ipynb	7 days ago

Introduction.md | TIC_Panel_Example.ipynb

Welcome to the Time series Integrated Knowledge Engine



This JupyterHub instance running on AWS is intended to allow you to learn new data analysis tools, collaborate with your colleagues in a common workspace, customize data visualizations, and ultimately do research on TESS and Kepler data.

New to JupyterHub, take this quick tour.

This platform is pre-loaded with python software packages and Jupyter notebook tutorials that teach how to do research with the TESS and Kepler Data (see the directory `notebooks/` on the left). We use git to pull new and updated notebooks into this instance, so if you decide to alter these notebooks for your own purposes (and we hope that you do), you should first make a copy for yourself.

Terminal 1

```
(python37) mullally:code smullally$ ls
Dask_meanFTloop.ipynb                       old/
TIC_Panel_Example.ipynb                     tess-s0016-3-4_249.766583_60.699660_5x5_astrocut.fits
Untitled.ipynb                              tess-s0017-4-3_249.766583_60.699660_5x5_astrocut.fits
Untitled1.ipynb                             tess-s0018-4-3_249.766583_60.699660_5x5_astrocut.fits
Untitled2.ipynb                             tess-s0019-4-3_249.766583_60.699660_5x5_astrocut.fits
__pycache__/                                tess-s0020-4-3_249.766583_60.699660_5x5_astrocut.fits
cloud_astroquery.ipynb                      tesscut_20200519134309.zip
dask-worker-space/                          tesscut_20200519140046.zip
kepler-manifest.txt.gz                      test-cloud-lightkurve.py
lightkurve-cloud.ipynb                      tic_viz.py
mastDownload/
/Users/smullally/Python_Code/pilotTessContent/code
(python37) mullally:code smullally$
```

1 2 Terminal 1

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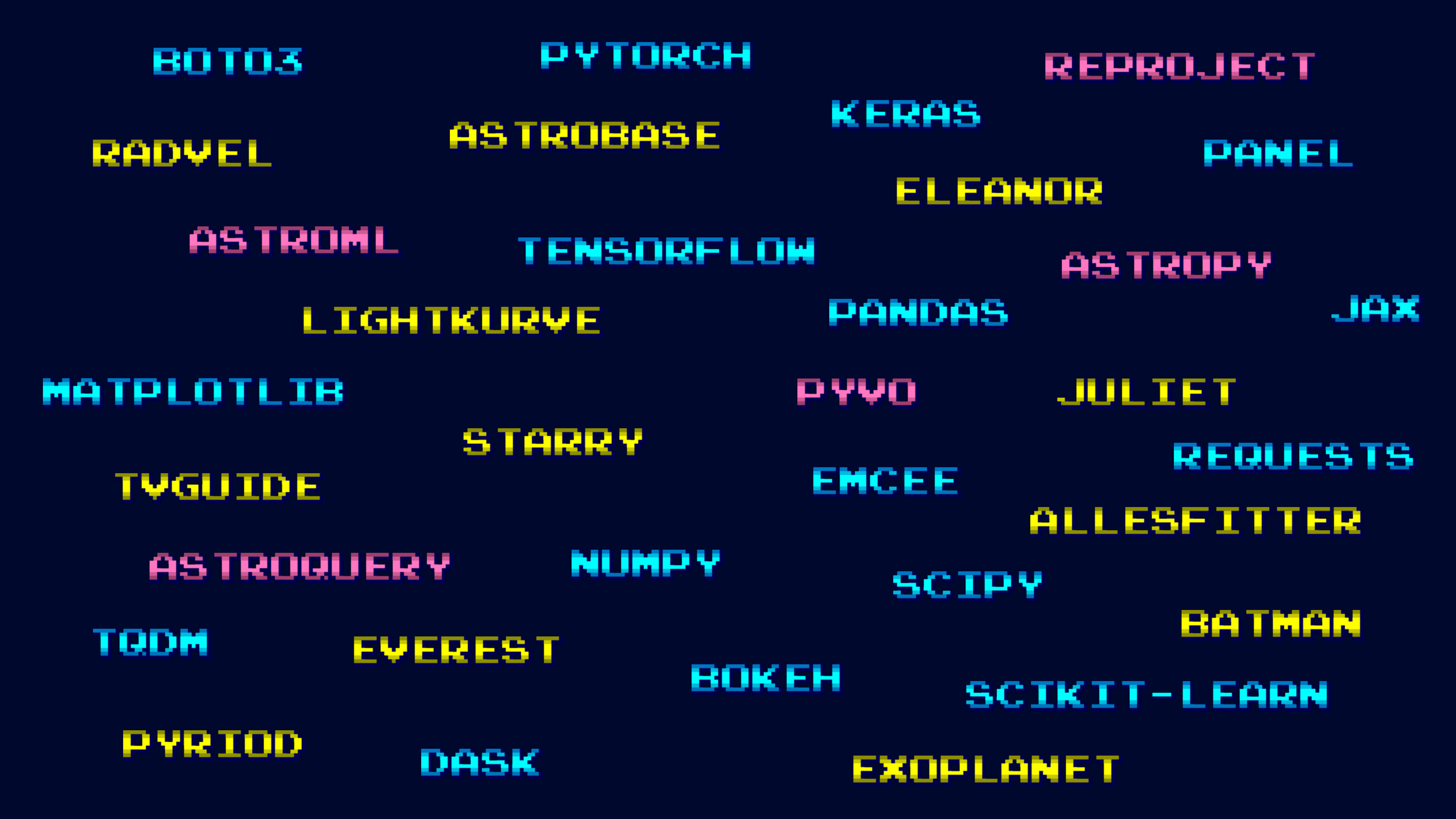
BOTO3
PYTORCH
REPROJECT
KERAS
ASTROBASE
RADVEL
PANEL
ELEANOR
ASTROML
TENSORFLOW
ASTROPY
LIGHTKURVE
PANDAS
JAX
MATPLOTLIB
PYVO
JULIET
STARRY
REQUESTS
TVGUIDE
EMCEE
ALLESFITTER
ASTROQUERY
NUMPY
SCIPY
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spacetelescope / notebooks

Watch 59

Code | Issues 27 | Pull requests 10 | Actions | Security 0 | Insights

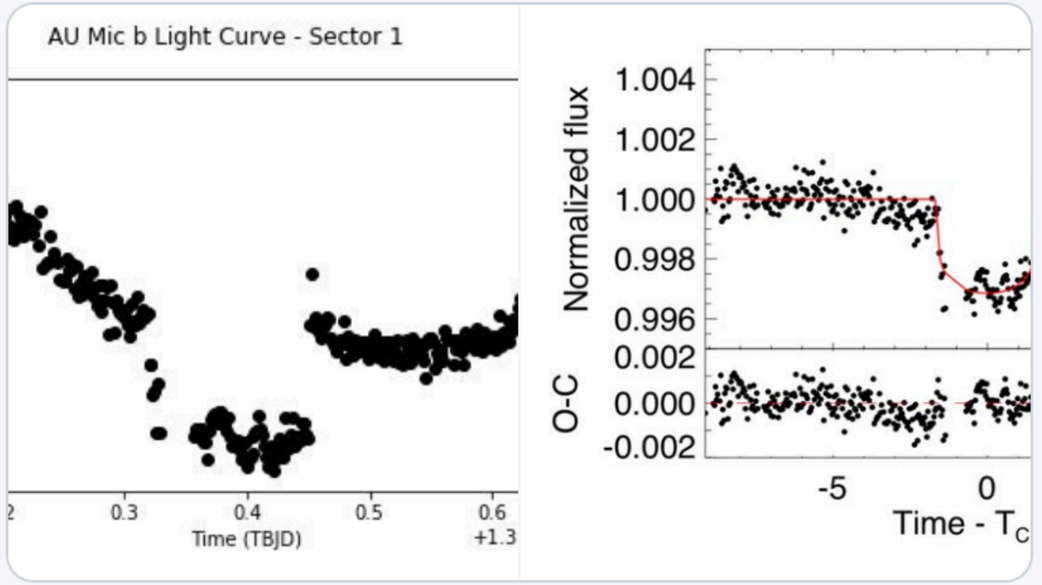
Branch: master ▾ notebooks / notebooks / MAST / TESS / Create new file

theresadower documentation updates and Mast.resolve_object ···

..	
beginner_astroquery_dv	a few more changes, one code update to filter_products
beginner_how_to_use_dvt	Updating logos to point to shared path
beginner_how_to_use_ffi	Updating logos to point to shared path
beginner_how_to_use_lc	Updating logos to point to shared path
beginner_how_to_use_tp	Updating logos to point to shared path
beginner_tess_exomast	adding mroe explanation per reviewer request
beginner_tess_tap_search	documentation updates and Mast.resolve_object
beginner_tic_search_hd209458	Updating logos to point to shared path
beginner_tour_lc_tp	Updating logos to point to shared path
interm_gi_query	Updating logos to point to shared path
interm_tasc_lc	adding suggestions from Susan
interm_tess_prf_retrieve	Changes after Clara comments
interm_tesscut_astroquery	Updating logos to point to shared path
interm_tesscut_dss_overlay	Updating logos to point to shared path
interm_tesscut_requests	downloading only one sector's cutout

Peter Plavchan @PlavchanPeter · Dec 7, 2018

I'm just going to put this out there now so I don't get scooped. We confirmed our predicted single transit event of a Jovian planet around AU Mic in the TESS sector 1 data. Working on the paper right now. We found this with NIR RVs, and this confirms it.



23 27 187

Scott Fleming @ScottWFleming · Dec 7, 2018

congratulations!

1 3

Peter Plavchan
@PlavchanPeter

Replying to @ScottWFleming

Thanks! I used your Jupyter notebook tutorials!

5:13 PM · Dec 7, 2018 · Twitter Web Client

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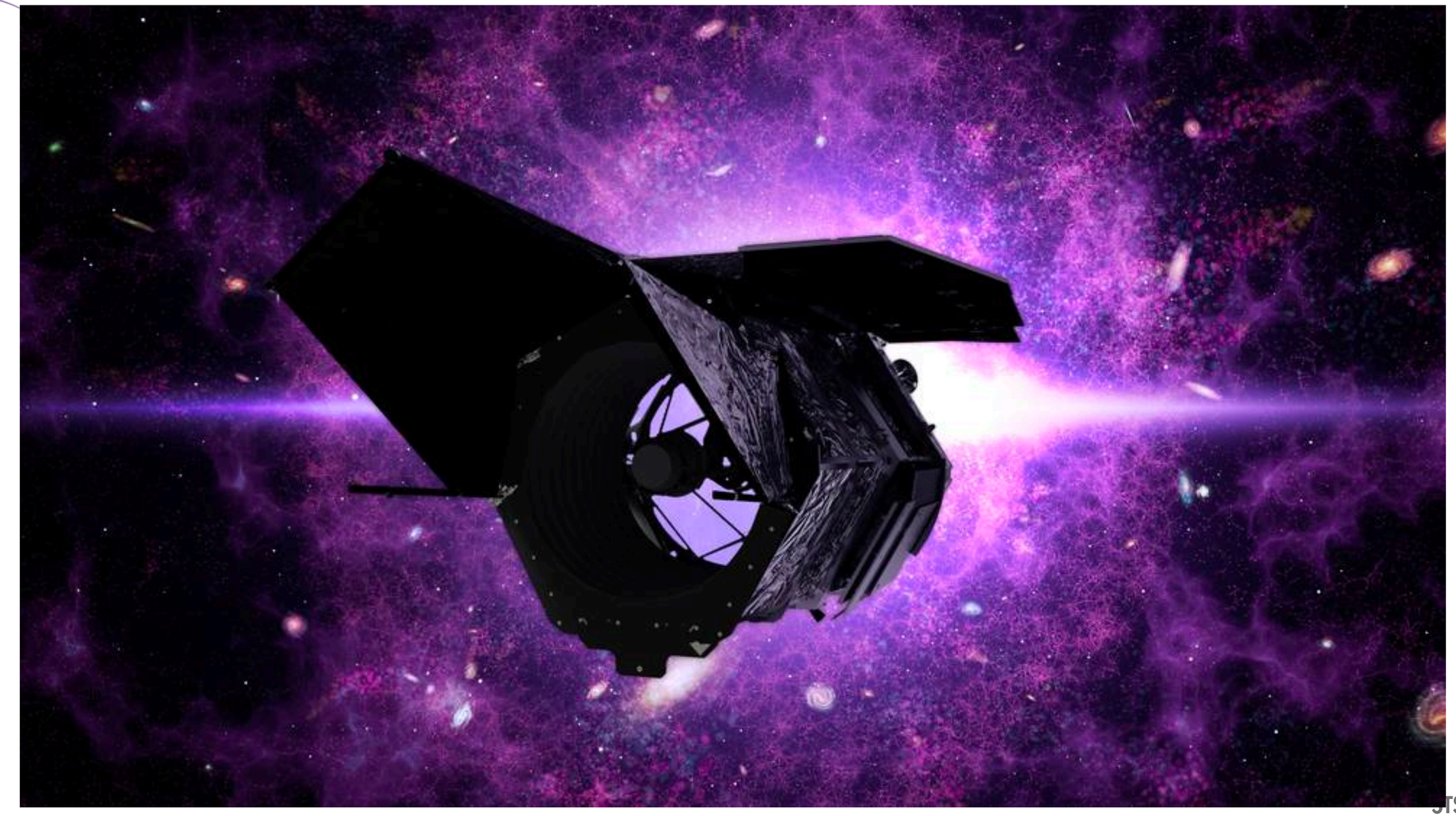
The T.I.K.E. is a precursor to more advanced systems for Roman