How to find and access **TESS** data

NASA's Transiting Exoplanet Survey Satellite (TESS) is a space-based observatory that is performing a near all-sky survey to search for planets transiting nearby stars, as well as a variety of transient and variable events. During science operations, continually over 27 days TESS takes takes a stream of images which are later reprocessed into three data products: Full-Frame Images (FFIs) are stacked, full-CCD images. Target Pixel Filles (TPFs) are CCD cutouts of regions around selected targets stacked at the 20-second or 2-minute cadences. Light Curve Files are time-series measurements of source targets in the high-cadence TPFs.

Tools to discover if TESS data of an object(s) exist:

TESS-Point Web Tool

- Enter an individual ra, dec or upload target list csv file on an interactive web page

TESS-Point
- Command line python script
- Enter an individual RA, Dec or pass a csv file
- Most accurate, but requires download & setup

tesswcs
- python package that can be used to check TESS pointings, create TESS field of view maps, and more!

Tools to discover if TESS data of an object(s) exist, and access that data:

lightkurve
- Used to find and download TESS data at the start of many Python Jupyter Notebooks and pipelines
- Individual search methods for different data products
  - search_lightcurve() will search for SPOC calibrated TESS 20-s or 2-minute light curves
  - search_targetpixelfile() will search for tpfs associated with SPOC calibrated light curves
  - search_tesscut() will use TESSCut's API (below) to create a custom target pixel files
  - search_result.download() to download search data

MAST Web Portal

- Individual target search and file upload
- Can also browse data products and products across missions

TESScut

- Allows you to create a 'postage stamp' cutout (TPF) from a given sector's FFIs
- Single target via website and API for automation and bulk downloads

Tools to access large amounts of TESS bulk data

MAST TESS Bulk Downloads

- Bulk Download options for FFI's, TPF's & Light Curves and TIC/TOI/TCE Catalogs

TICA Calibrated FFIs
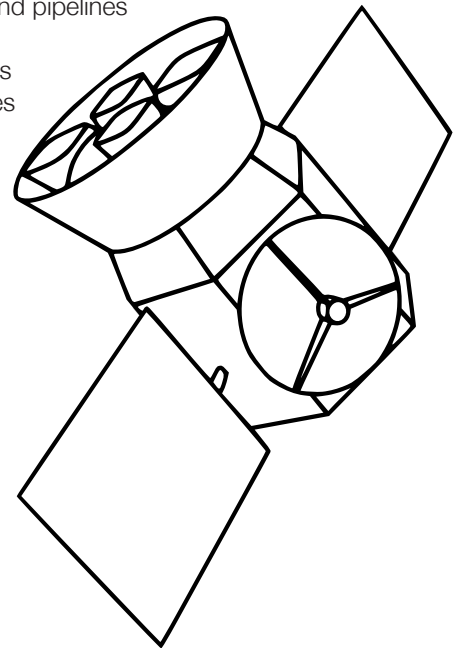- A High Level Science Product (HLSP) of calibrated TESS FFI's that serve as the input to the MIT Quick Look Pipeline

General information and resources on TESS data products & pointings:

Timeseries Integrated Knowledge Engine (TIKE) - Online JupyterHub for accessing and processing TESS data in the cloud
TESS Pointings - Details of where TESS has observed and future plans

TESS Input Catalog (TIC) - TIC is a compiled catalog of every persistent, non-solar systen object in the sky that is a potentially observable TESS target. All TESS GI targets will have a unique TIC, but not all TICs will have been targeted with high cadence observations
Exoplanet Follow-up Obsering Program (ExoFOP) - ExoFOP serves as a repository for project and community-gathered data by allowing upload and display of data and derived astrophysical parameters

Check to see **if a target was observed** by TESS

A few targets:	**Lots of targets:**
TESS-Point Web Tool	TESS-Point Web Tool
TESS-Point	TESS-Point
MAST Portal Search	MAST Portal Search
TESScut Web Service	tesswcs
tesswcs	

Check to see **what kind of data exists** for a target

A few targets:	**Lots of targets:**
Lightkurve - search_lightcurve AND tesscut	Lightkurve - search_lightcurve AND tesscut
MAST Portal Search	MAST Portal Search
toco	

Get TESS **processed lightcurves** for high-cadence targets

A few targets:	**Lots of targets:**
Lightkurve - search_lightcurve()	Lightkurve - search_lightcurve()
MAST Portal Search	MAST Portal Search
	MAST Bulk Downloads

Get TESS **processed target pixel files** for high-cadence targets

A few targets:	**Lots of targets:**
MAST Portal Search	MAST Portal Search
Lightkurve - search_targetpixelfile()	Lightkurve - search_targetpixelfile()
	MAST Bulk Downloads

Get TESS **custom target pixel files** for targets in FFI data

A few targets:	**Lots of targets:**
Lightkurve - search_tesscut()	Lightkurve - search_tesscut()
TESScut Web Service	TESScut API

Get **bulk downloads for any kind of TESS data** & products

	Lots of targets:
	MAST Bulk Downloads
	TICA Calibrated FFI's