Prototype Input Catalog
12/15/2020
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The prototype catalog was made by taking a list of asteroids and checking with tess_ephem to see if they were observed by TESS. For the prototype, I only searched for the asteroids numbered 1-4999. There's another 100k asteroids to check into when we're ready! The catalog contains an entry for each unique combination of asteroid & sector. So if an asteroid (like Juno) shows up in multiple sectors, it will have multiple entries in the catalog.

The primary use I had in mind when putting this prototype together was to figure out which asteroids we should be generate photometry for, but I'm sure there are other uses…. Is there additional info we'd like to have in here? Are there other use cases that would change the design?

The first set of columns in the catalog are from JPL Horizons, the last set of columns are summaries from the tess_ephem results. We can trivially include any information that can be returned the JPL Small-Body database search (https://ssd.jpl.nasa.gov/sbdb_query.cgi). The code currently requires that the input file has a column of primary designations. All other columns in the input file will be included in the output file one-to-one.

I'm currently having tess_ephem check whether or not an object is in TESS once a day. So, things like the first_time, first_column, etc are going to be wrong by up to a day. (Think of these quantities as more like zip codes rather than GPS coordinates…)

Columns:

information from original JPL Horizons list	
pdes	Primary Designation
full_name	full asteroid name, including number, name and packed version of the preliminary designation
a	semi-major axis (au)
e	eccentricity
i	inclination angle with respect to the x-y ecliptic plane (degrees)
om	longitude of the ascending node (degrees)
w	argument of perihelion (degrees)
q	perihelion distance (au)
ad	aphelion distance (au)
per_y	orbital period in years
condition_code	orbit condition code (MPC 'U' parameter)
H	absolute magnitude. (rough measure of size. smaller H's are larger asteroids)
rot_per	rotation period in hours
class	orbital class. MBA = Main Belt Asteroids. (see screen shot below)

created from info returned by tess_ephem	
in_Tess	TESS observed it!
num_sectors	the number of sectors the asteroid passed through
num_of_days	the number of days the asteroid was observed by TESS in this sector
sector	the sector the asteroid passed through
num_cameras	the number of cameras the asteroid passed through in this sector
camera	the first camera the asteroid passed through in this sector
num_ccd	the number of ccds the asteroid passed through in this sector
ccd	the first ccd the asteroid passed through in this sector
first_day	the time stamp of the first pixel in JD - 2457000
first_column	the first pixel column the asteroid was in in this sector
first_row	the first pixel row the asteroid was in in this sector
last_day	the time stamp of the last pixel in JD-2457000
last_column	the last pixel column the asteroid was in in this sector
last_row	the last pixel row the asteroid was in in this sector
max_pix_per_hour	the maximum rate of apparent motion in pixels per hour
min_Vmag	minimum V magnitude
mean_Vmag	mean V magnitude
max_Vmag	maximum V magnitude
min_phase_angle	minimum phase angle
mean_phase_angle	mean phase angle
max_phase_angle	maximum phase angle
min_sun_distance	minimum distance between sun and asteroid
mean_sun_distance	mean distance between sun and asteroid
max_sun_distance	maximum distance between sun and asteroid
min_tess_distance	minimum distance between TESS and asteroid
mean_tess_distance	mean distance between TESS and asteroid
max_tess_distance	maximum distance between TESS and asteroid

Orbital class abbreviations:

JPL doesn't provide a look up table of their orbital class abbreviations, but here are the orbital classes they let you select. (Atira, Aten, Apollo, and Amor are all near-earth asteroids. The others will all be further away…)