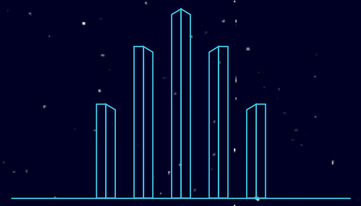
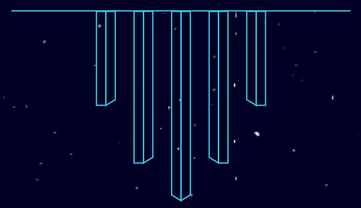


EXOPLANETS

Hunting for Exoplanets in Deep Space

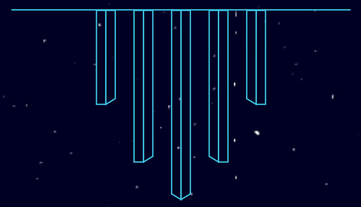


CAPSTONE PROJECT

Flatiron School Datascience Bootcamp (Full-time)

Author: Ru Keïn

Date: April 7, 2020



GLOSSARY

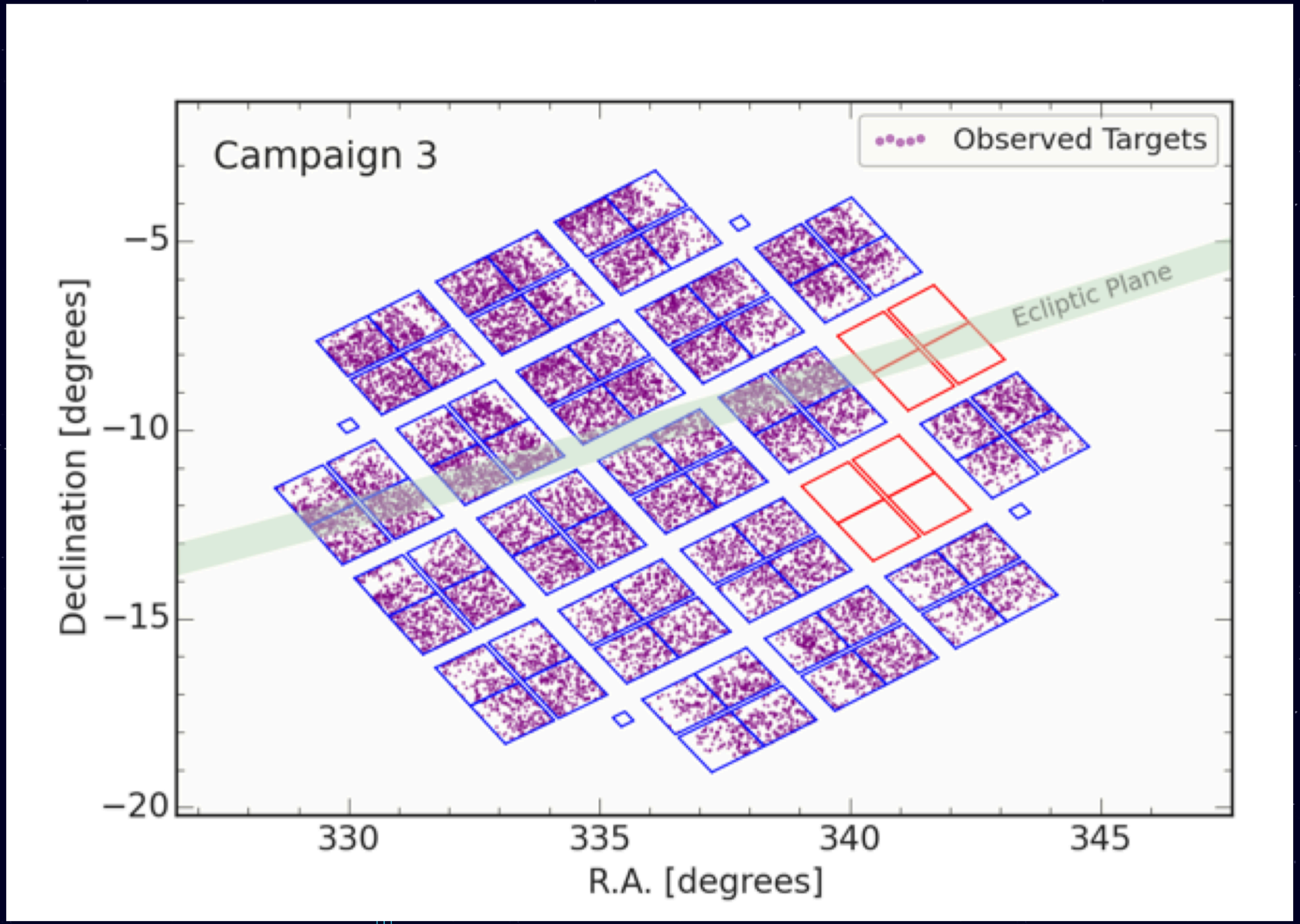
- EXOPLANET: planets outside of our solar system

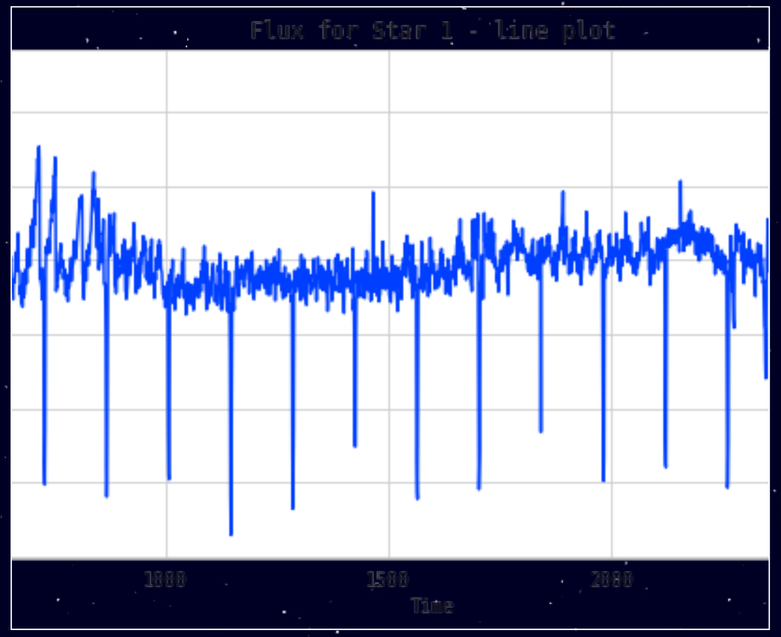
- FLUX: variation or change in light values of stars

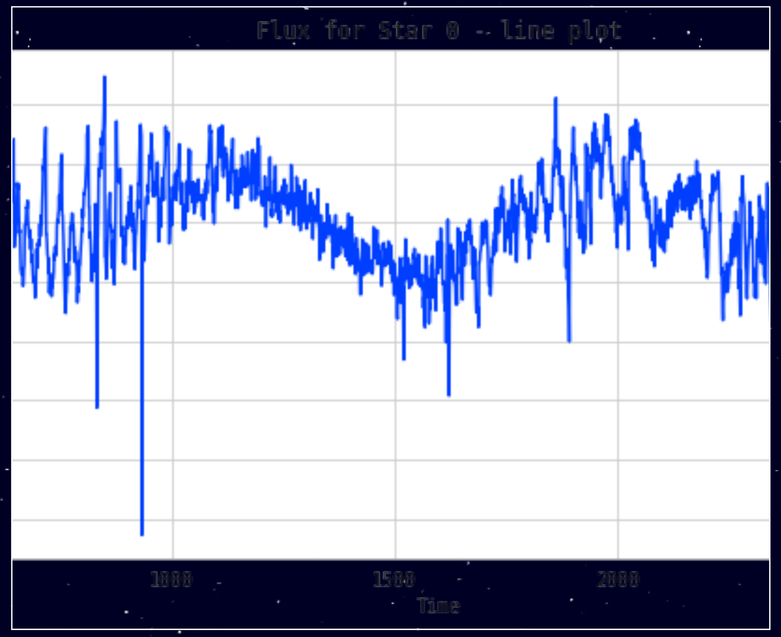
DATASET

- The training data including 3,197 flux observations for 5,087 stars.
- The test data included 570 stars for testing the model.
- All data comes from the K2 (Kepler) space telescope (NASA)

DATASET

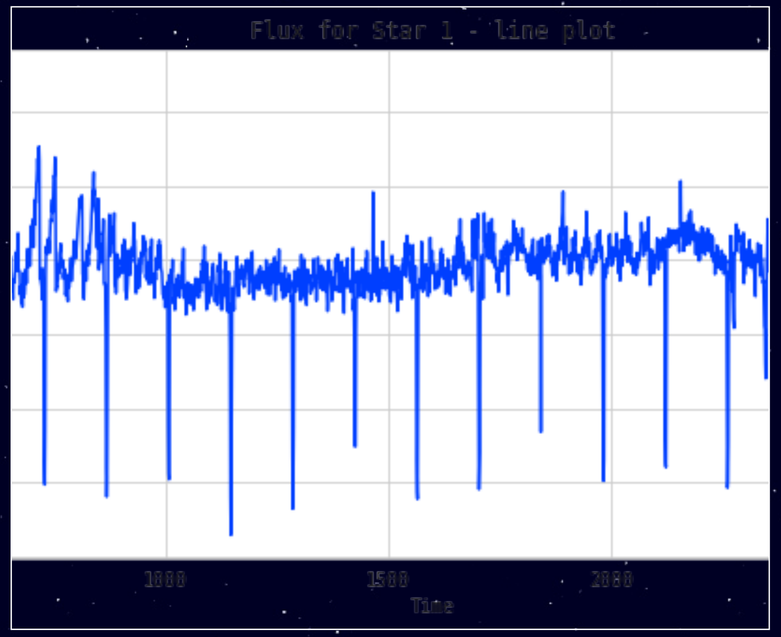

Campaign 3
Observed Targets
Ecliptic Plane
Declination [degrees]
−5
−10
−15
−20
330
335
340
345
R.A. [degrees]

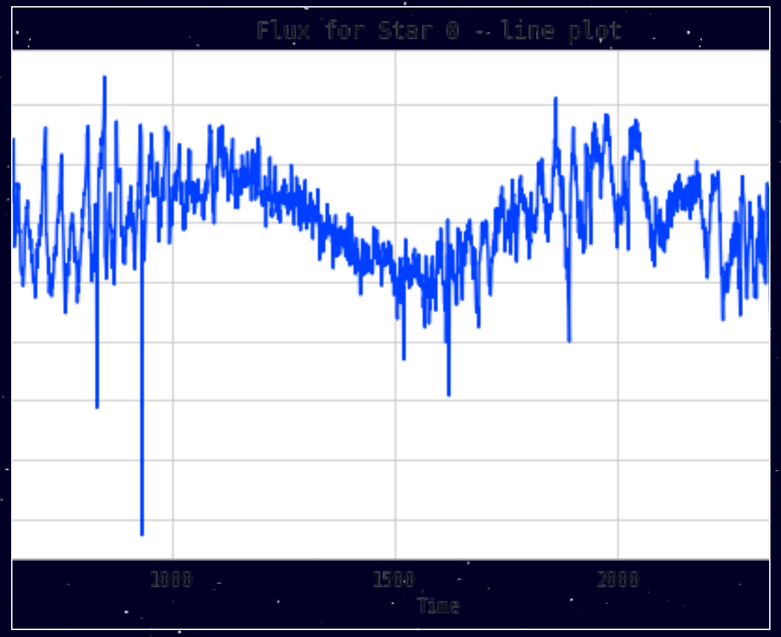




OBJECTIVE

Looking for "dips" (periodicity) in the light flux of stars (right image shows "dips")



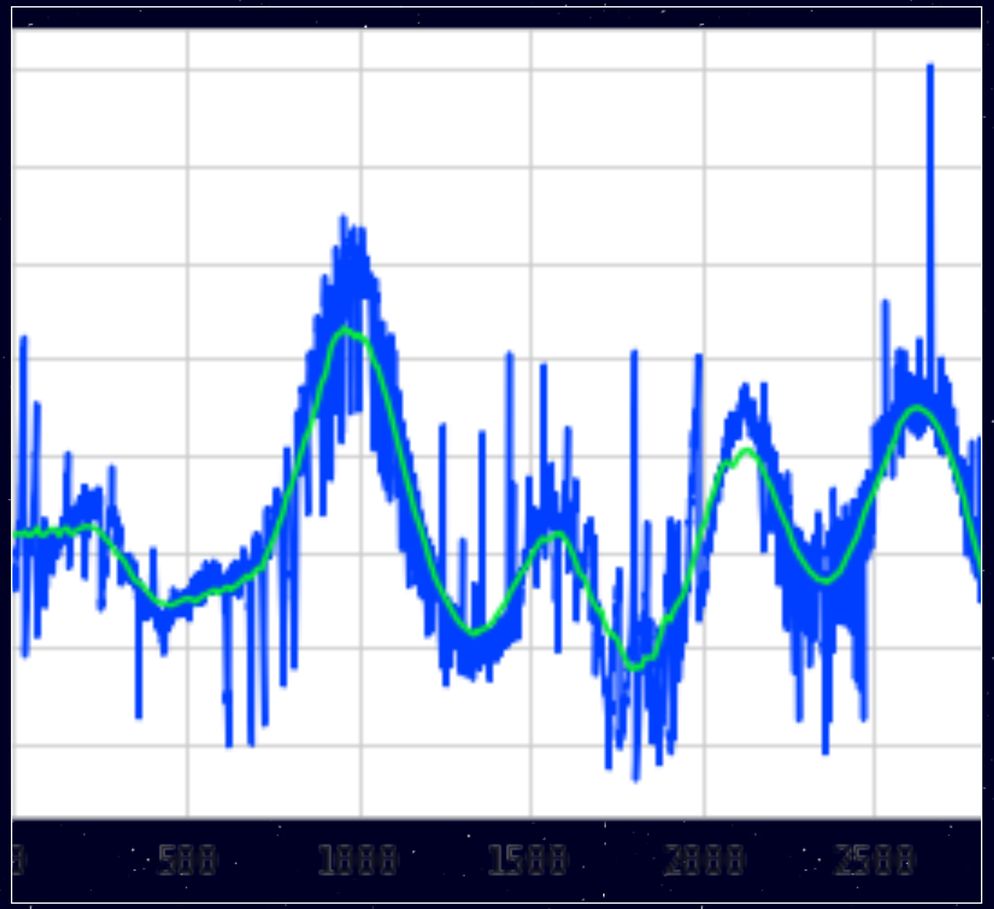


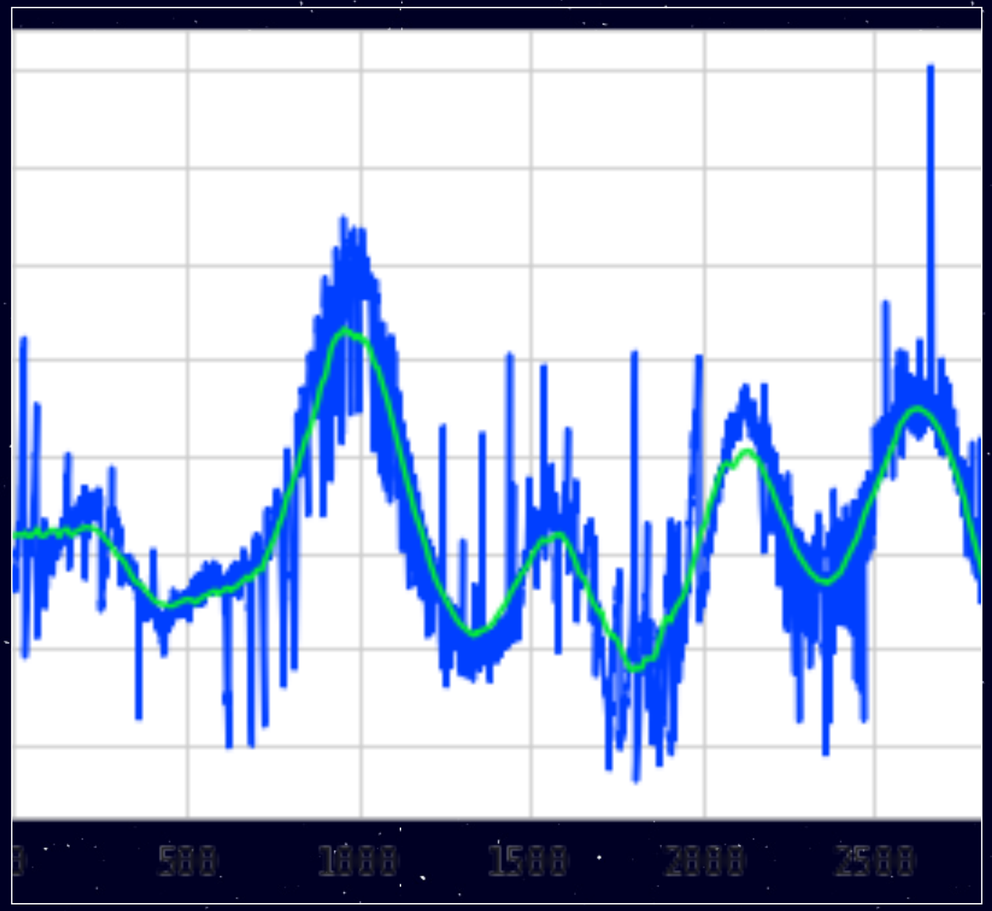
OBJECTIVE

Looking for "dips" (periodicity) in the light flux of stars (right image shows "dips")

MODEL 1

Looking for "dips" (periodicity) in the light flux of stars
(right image shows "dips")



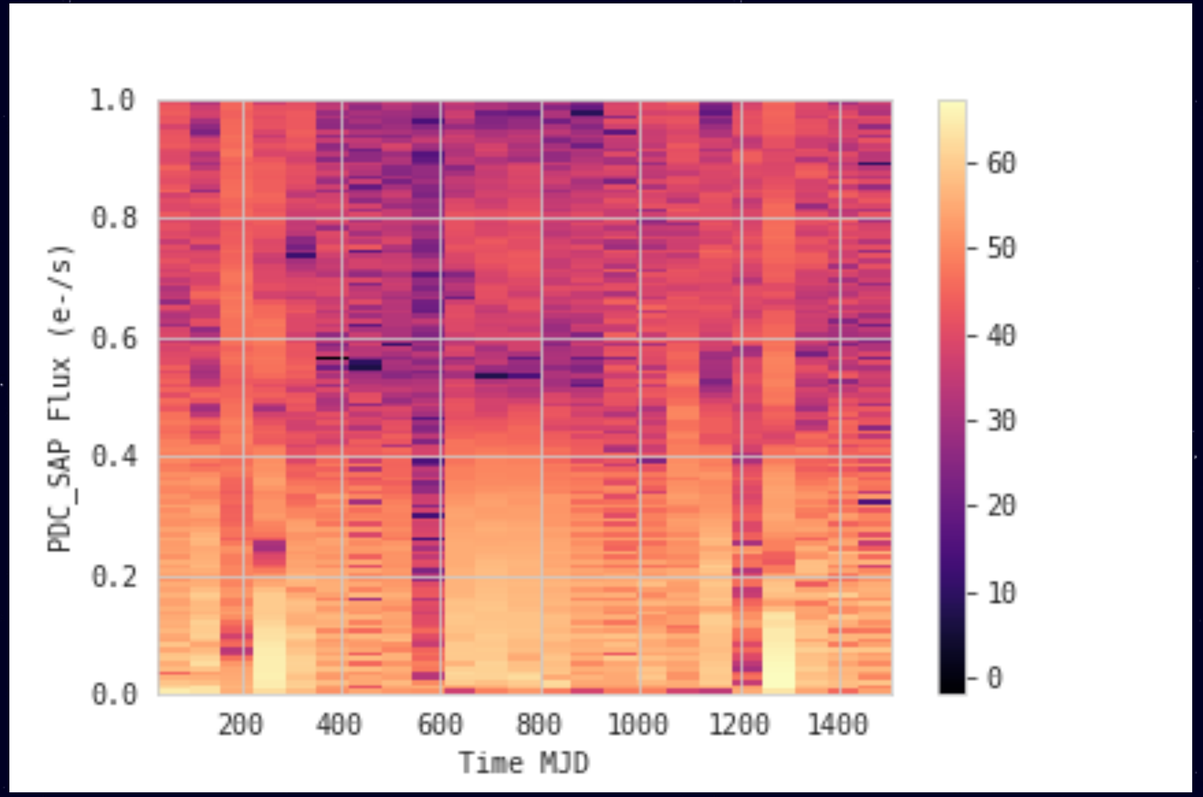


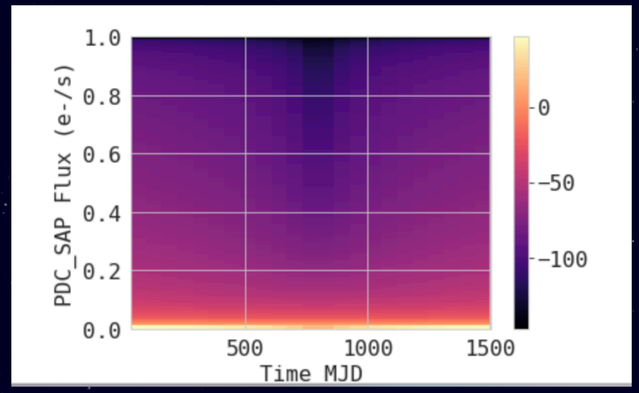
5 PLANETS

- Using two different machine learning models, 5 planets were identified successfully and matched the data confirmed by NASA / Kepler as exoplanets.

MODEL 2

Spectograph analysis using computer vision

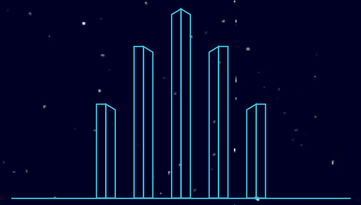




FUTURE WORK

1. Analyze spectrographs of fourier transformed flux observations

2. Run same computer vision models on original K2 data from Nasa's MAST website (via API)



THANK YOU