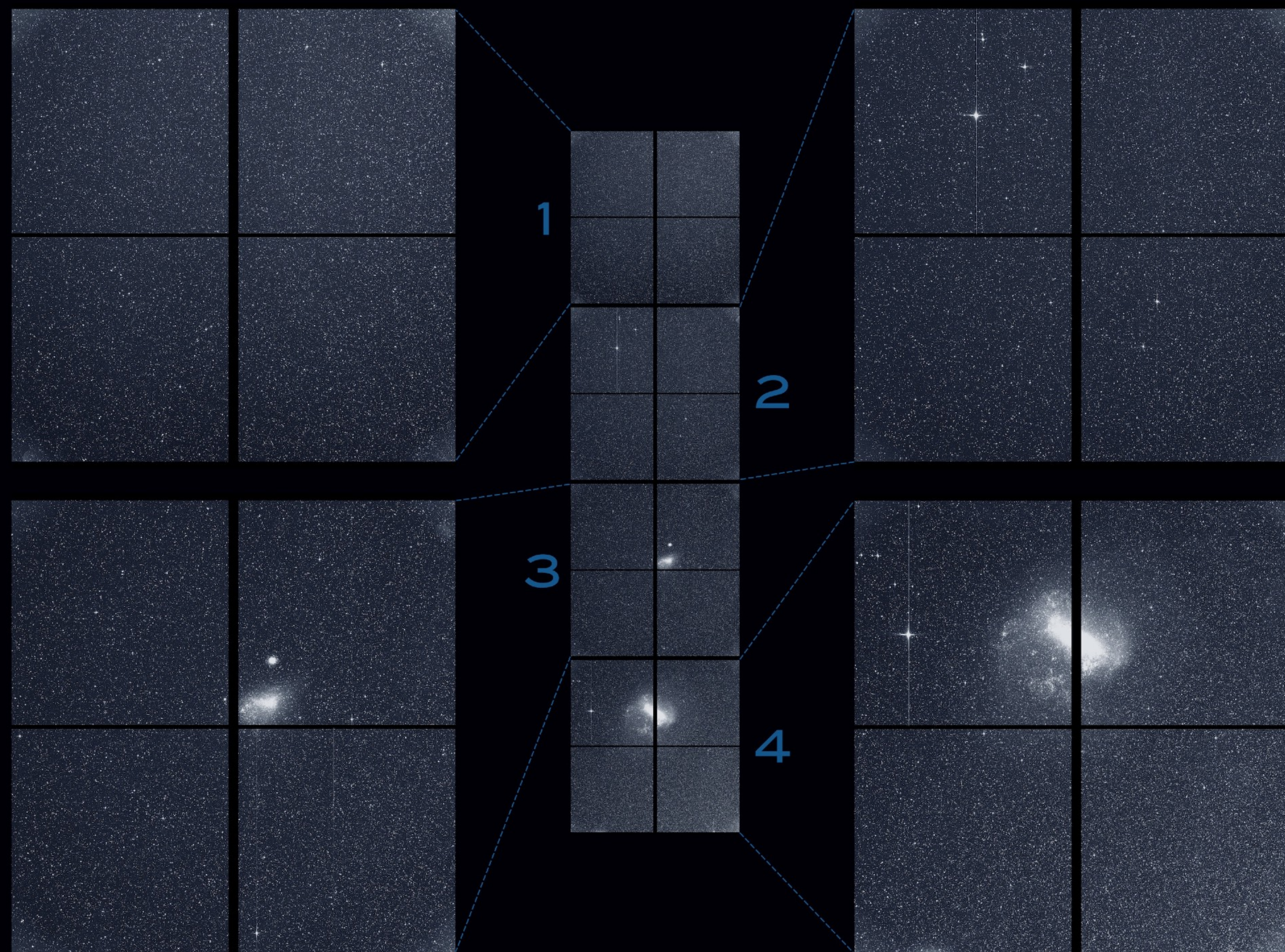


Using **eleanor** to create light curves from the *TESS* Full-Frame Images

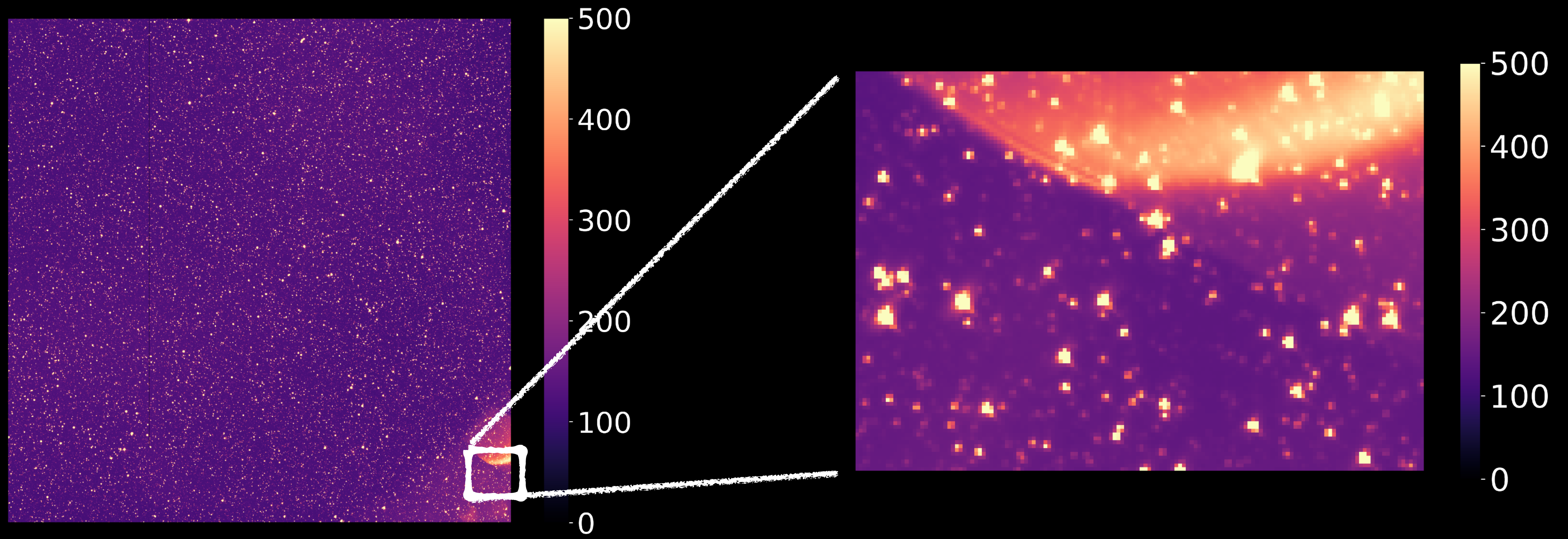
Adina Feinstein, Benjamin Montet, Megan Bedell, Jessie Christiansen,
Daniel Foreman-Mackey, Christina Hedges, Rodrigo Luger, Nicholas
Saunders, Jose Vinicius De Miranda Cardoso



1 observing sector contains $\sim 10^6$ stars, but light curves are only released for 20,000 short-cadence targets.

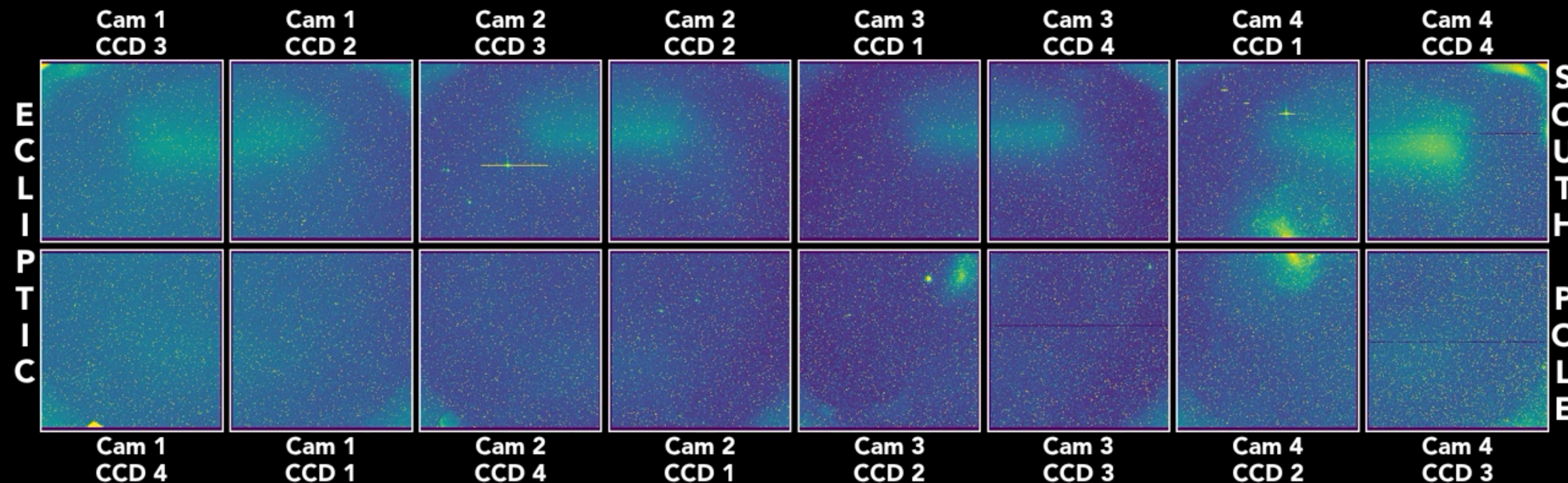


The FFIs are not in the most user-friendly format and take up 45 GB, for just one CCD alone.



The major challenges in using the FFIs are the Earth and the moon.

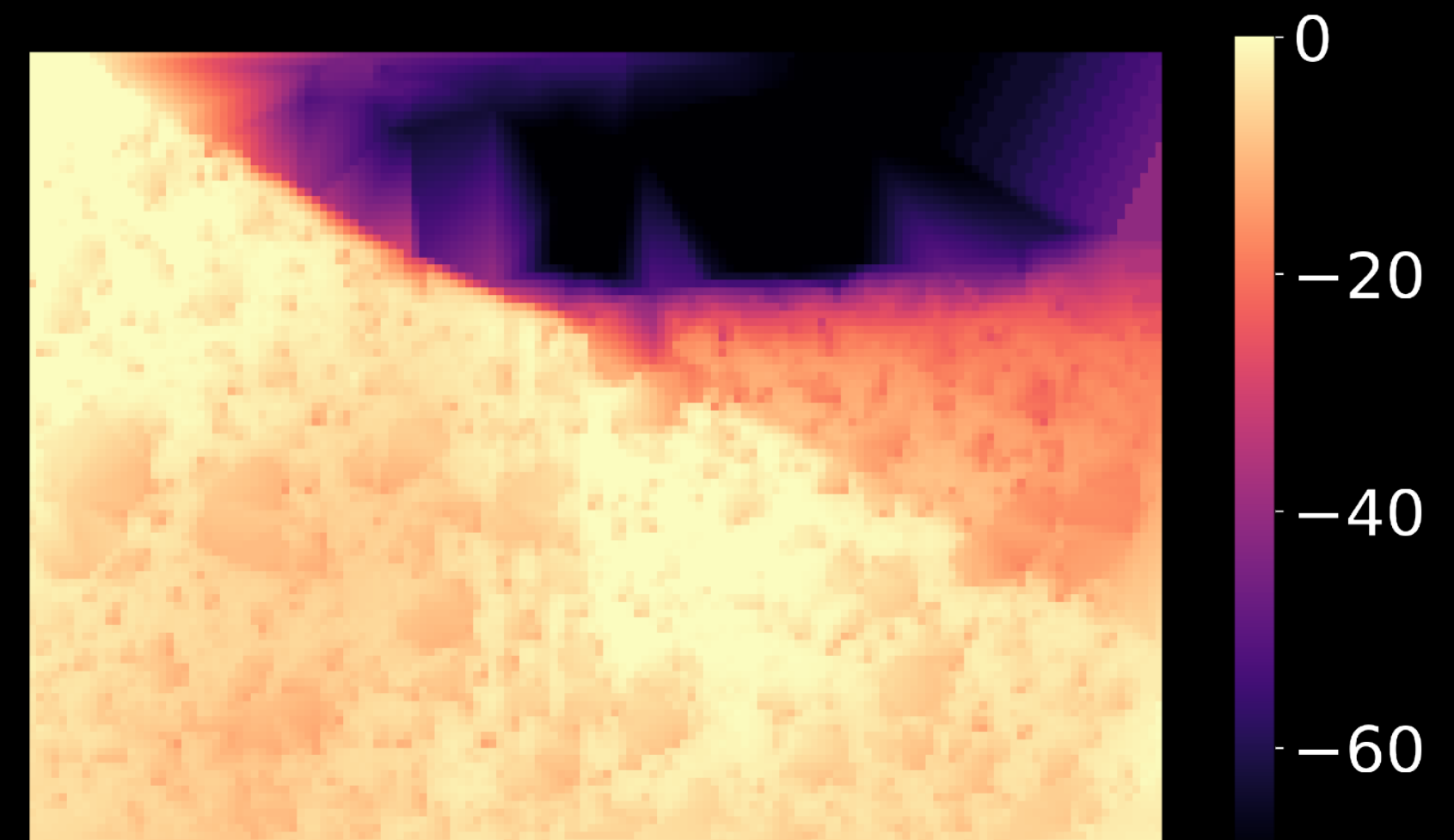
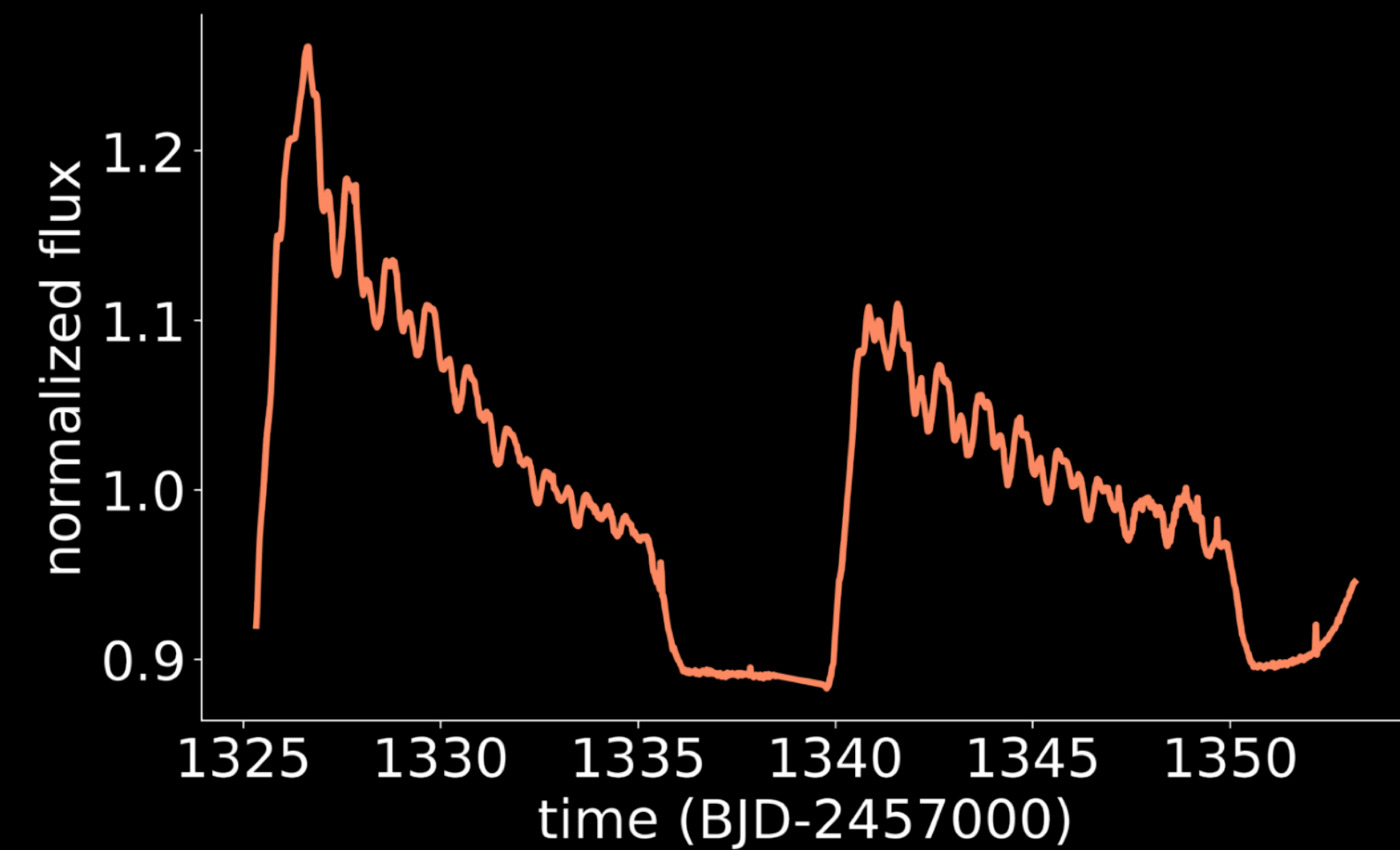
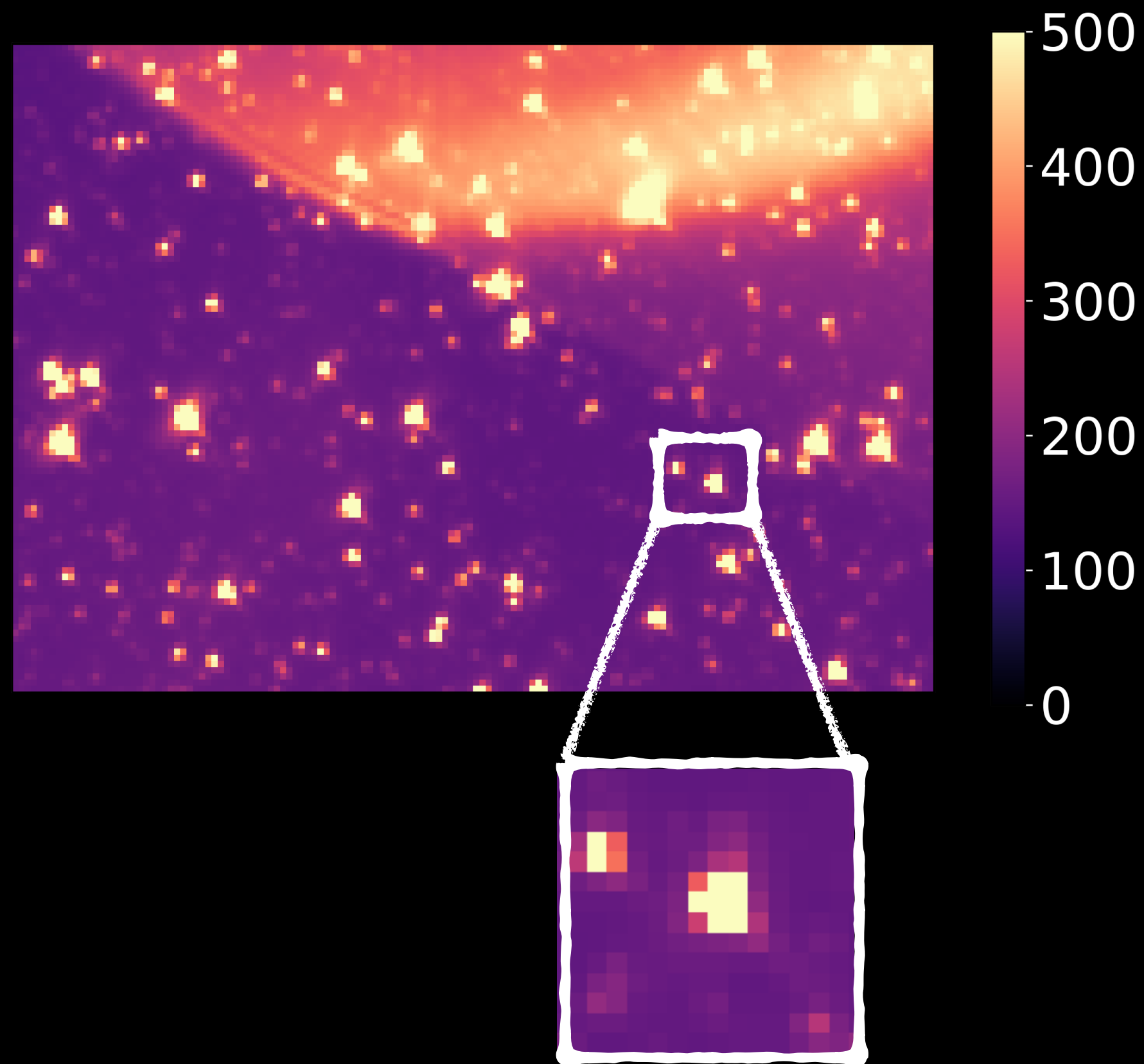
TESS: The Movie
Sector 1
11 Aug 2018 05:44



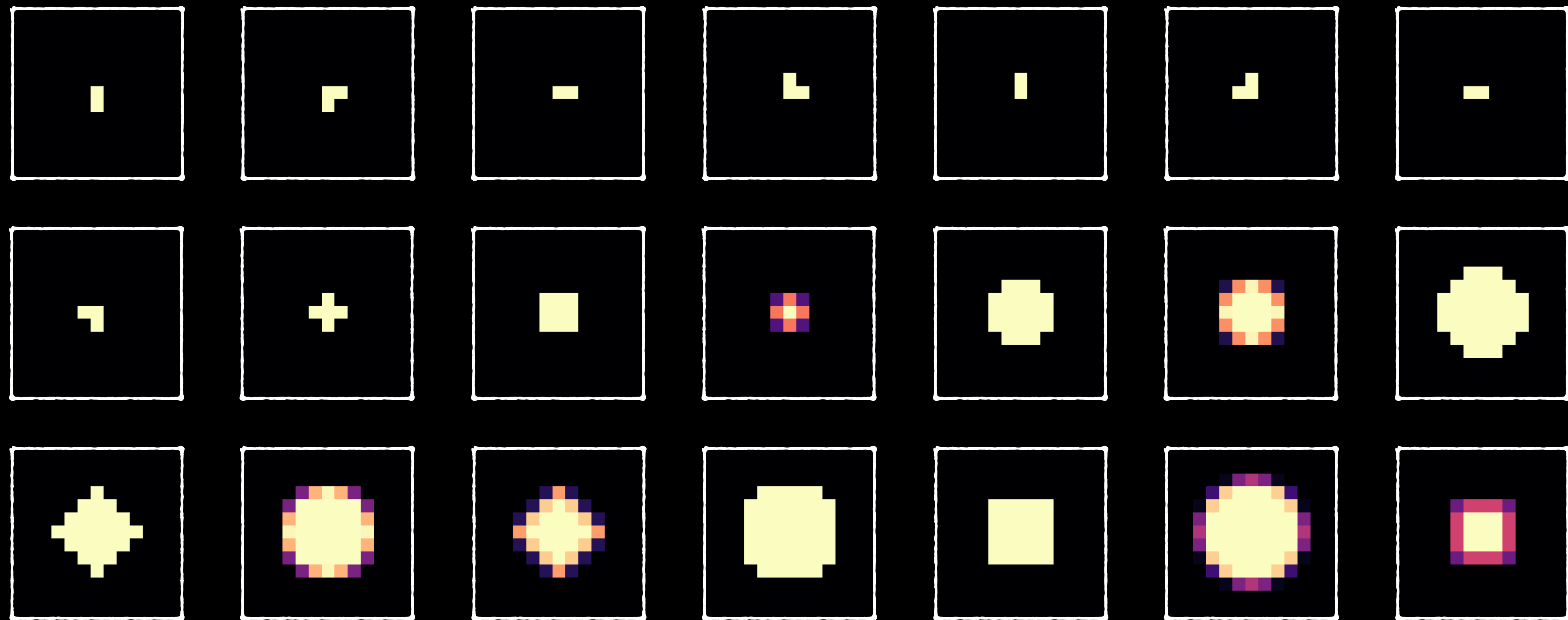
By Ethan Kruse
@ethan_kruse

Calibrated Flux

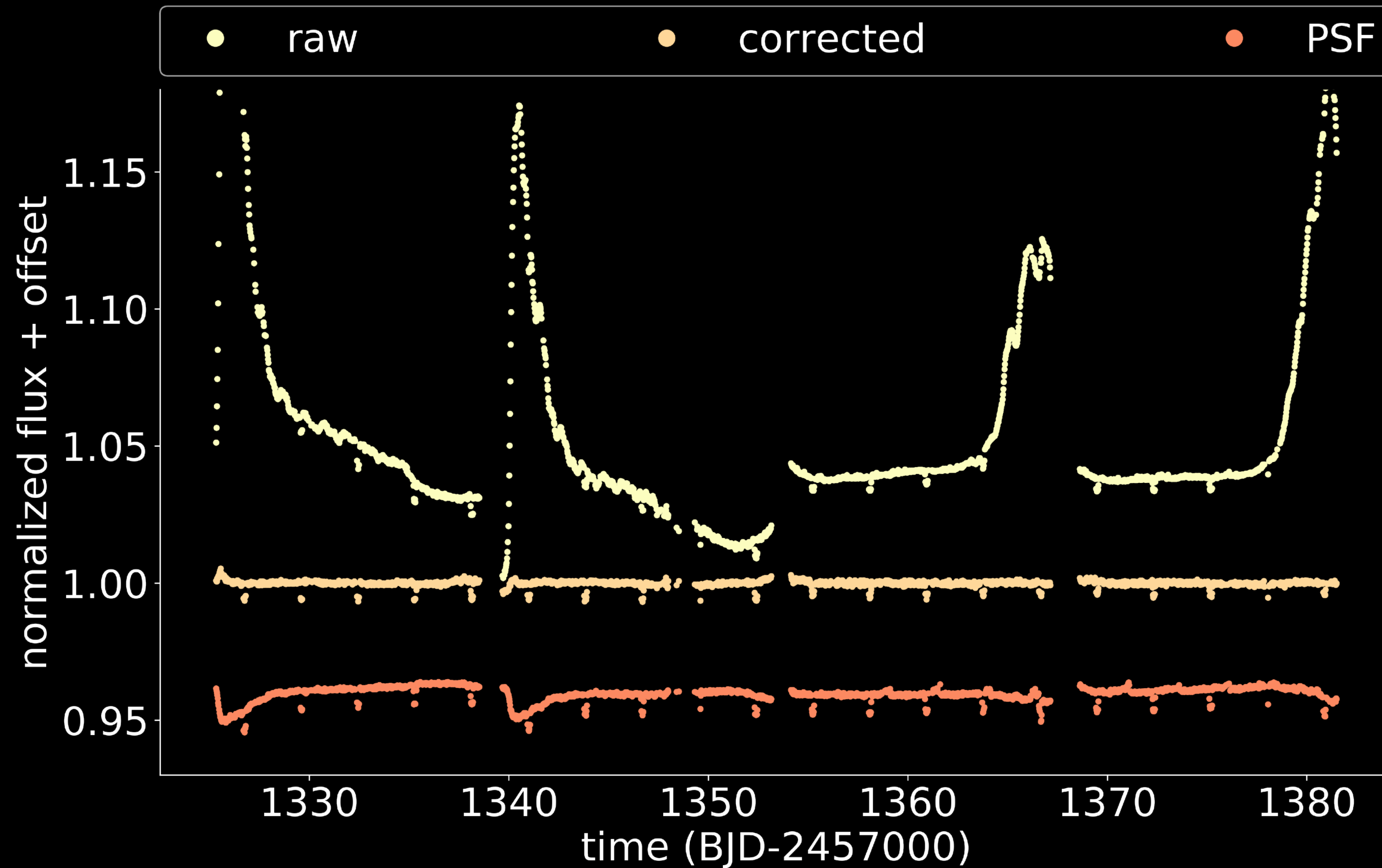
We model the background on the postcard level as either a constant or from a 2D interpolated model.



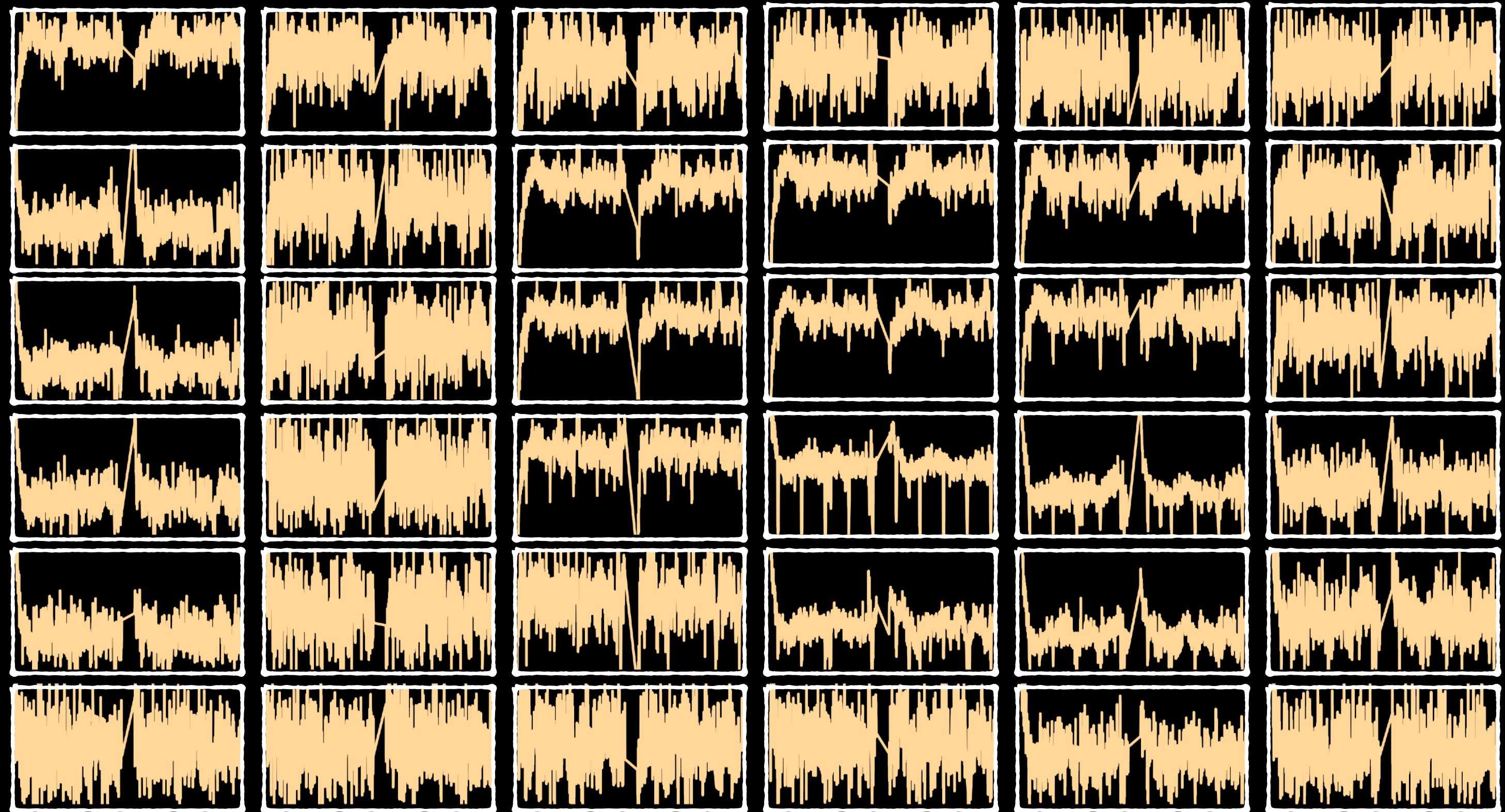
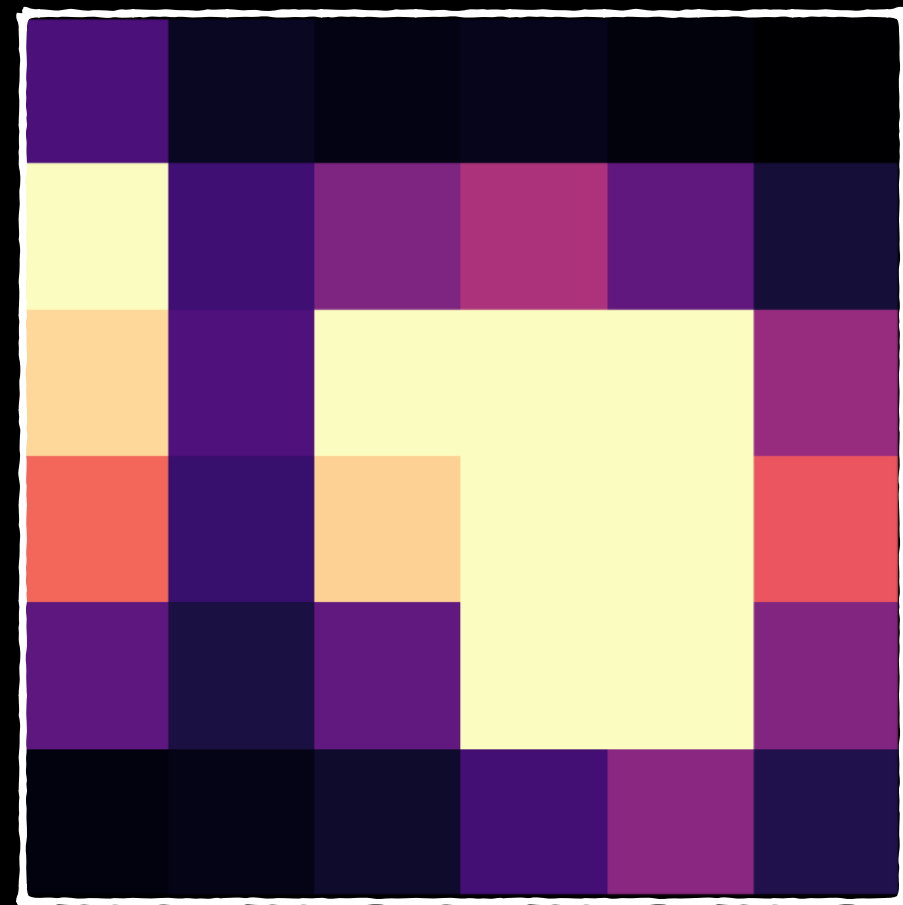
We test a large sample of apertures for photometry and a "best" aperture is selected.



Analysis of different correction techniques for light curves of TIC 234503282.



We're implementing a new class of vetting diagnostic tools to help disentangle false positives.



It's very easy to use **eleanor**, even if you've never coded in Python before!

```
import eleanor
```

```
tic = 394340319
```

```
star = eleanor.Source(tic=tic, sector=[1], tc=True)
```

```
data = eleanor.TargetData(star, do_pca=True, do_psf=True)
```

```
stars = eleanor.multi_sectors(tic=tic, sectors="all", tc=True)
```

```
data = []
```

```
for star in stars:
```

```
    datum = eleanor.TargetData(star)
```

```
    data.append(datum)
```


Summary

- We have created an **open-source software** for extracting light curves from the *TESS* FFIs.
- We take into account **background subtraction**, test **multiple apertures** for photometry, and try a **variety of systematic removal methods**, including PCA and PSF modeling.
- Light curves for sources < 16th mag. will be **hosted on MAST**; identified planet candidate light curves will also be hosted on ExoFOP-TESS.
- Make your own light curves **NOW!**

pip install eleanor

<https://adina.feinste.in/eleanor>